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# SWEET'S CATALOG FILE

A File of Manufacturers' Catalogs designed for the use of Architects, Engineers, Contractors and others whose practice it is to select, specify or purchase building materials, equipment and allied services.

## SWEET'S CATALOG SERVICE

DIVISION OF F. W. DODGE CORPORATION
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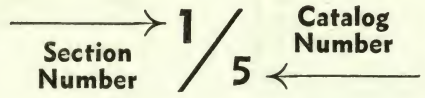

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# ALUMINUM COMPANY OF AMERICA

Member of The Producers' Council, Inc.

Manufacturers of Alcoa Albron Paste and Powder for Aluminum Paint

1844 Gulf Building
PITTSBURGH, PA.

For Sales Offices, see Metals Section
For Other Pages on Alcoa Aluminum, Its Alloys and Uses, see File Index

ALCOA ALUMINUM ALBRON

## PRODUCTS

ALCOA ALBRON PASTE and ALCOA ALBRON POWDER for use as pigment in aluminum paint.

## WHERE TO BUY ALUMINUM PAINT

Most reputable paint manufacturers, their jobbers and dealers supply aluminum paint made with pure Alcoa Albron Paste or Powder and carefully compounded vehicles. When specifying or purchasing aluminum paint, be sure the pigment portion is Alcoa Albron and the vehicle is of the best quality suited for the surface to be painted.

## SPECIFICATIONS

Complete specifications for aluminum paint (A.I.A. File No. 25-B-252) made with Alcoa Albron Paste or Powder may be obtained from ALUMINUM COMPANY OF AMERICA. These specifications are designed especially for architects' and specifications writers' use. They include both vehicle and pigment specifications, as well as instructions for mixing and applying aluminum paint on various types of surfaces.

Also request "Aluminum Paint Its Uses and Applications" and the Aluminum Paint Manual.

## QUALITIES

(1) Durability
(2) High resistance to moisture penetration
(3) Good reflectivity
(4) Opaqueness
(5) Resistance to corrosion by industrial atmospheres
(6) Ease of application
(7) Economy




*For bridges and other outdoor structures aluminum paint offers maximum protection and attractiveness*



*Interiors painted with aluminum paint have increased light and brilliance*

## USES

### Industrial

There are many uses for Aluminum Paint about the plant; inside for reflectivity and resistance against smoke and fume; outside for corrosion-resistance and for wood priming or top coats on company houses.

Large users who have facilities for making tests have discovered two important facts about Aluminum Paint—Best results are obtained when genuine Alcoa Albron Paste or Powder with a quality vehicle suitable for each surface and purpose is used. Then efficient "leafing" of the millions of tiny Aluminum flakes is obtained, and high reflectivity and an enduring coat of metal protection are assured.

### General

On houses for priming, on store exteriors, in basement and workrooms as well as in the most attractive shops, studios and restaurants, Aluminum Paint is widely spreading its metal coat of beauty and durability.

On any and all of these surfaces, this distinctive action takes place—when you brush on Aluminum Paint, millions of tiny flakes, by "leafing" form a continuous coat of metal protection; rapid moisture changes in wood are resisted; corrosion of metal surfaces is retarded; a long life of protection is assured; and in interior decoration, bright silvery Aluminum Paint harmonizes beautifully with other colors.

ALCOA ALUMINUM ALBRON



*Aluminum paint for priming increases the life of the finish coat and the lumber*

ESTABLISHED 1900

# ARNESTO PAINT COMPANY, INC.

Manufacturers of Paint, Varnish, Enamel and Waterproofing

546-50 West 46th Street
NEW YORK, N. Y.

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WASHINGTON, D. C.

**The Company**

Established in 1900, we have been manufacturing the Arnesto line for nearly 40 years. We have specialized in the manufacture of paint to the specifications of the United States Government and for many States and municipalities.

**Products**

ARNESTO

Lead and Zinc House Paint, Satin Flat Washable Paint, Primo Gloss White, Gloss Stippling Paint, Enamel Undercoat, Quick Drying Enamel, Arnesto Primer and Sealer, Porch and Deck Enamel, Concrete Floor Paint, Varnish Stain, Penetrating Oil Stain, Shingle Stain, Zone Mark Paint, Floating Silver Aluminum Paint, Barn and Roof Paint, Permanent Greens, Imperial Paste Paint, Semi-gloss Paint, Tinting Colors in Oil, Varnishes, Red Lead Paint, Integral Waterproofings, Roof Coatings, Caulking Compound, and Putties.

## IMPERIAL PASTE WHITE

*"The Whitest Outside Paint"*

Imperial Paste White is an exterior paint in paste form, which, when properly thinned will cover 2100 sq. ft. per gal. It is composed of titanium, lead, zinc, pure linseed oil and driers.

The perfectly balanced formula for this superior product was developed after years of research and tests. It is guaranteed not to chip, crack, peel or mildew.

**Application**—One gallon of Imperial Paste can be thinned with 5 qts. of linseed oil and 1 qt. of turpentine. (For priming cypress wood, thin with turpentine only.) The user of this product shall be the ultimate judge as to the proper amount of thinners required, depending upon the condition of the particular job.

## PRIMO

*"The All Purpose Paint"*




Primo can be used for sealing, priming, or finishing. It is a heavy body gloss white paint made from a titanium pigment base and tung oil vehicle. Extremely easy brushing, it can be used inside or outside. A perfect coating for plastered walls, ceilings, woodwork, and metal surfaces. Primo can be tinted to any shade desired, and will retain its whiteness when used uncolored.

**Application**—*Sealing*: Thin Primo 1 qt. to the gal., thinners to consist of half pure linseed oil and half turpentine. *Priming*: Thin Primo at least ¼ to the gallon with turpentine or mineral spirits. *Finishing Coat*: Thin Primo to brushing consistency with turpentine. If a high gloss is desired, half of the thinners should be pure linseed oil.

## SATIN FLAT PAINT

Satin Flat Paint is a time tested, guaranteed washable interior paint. It is a titanium pigment product possessing extremely high covering qualities. Satin Flat brushes freely and levels out leaving no brush marks. It dries to a hard satin finish and is recommended as an excellent enamel undercoating.




Satin Flat Paint is made in white and 16 pastel shades.

**Application**—Should be thinned to an easy brushing consistency with turpentine or mineral spirits, and when thus used is an excellent finish for plastered walls, ceilings, woodwork, and metal ceilings.

## CONCRETE FLOOR PAINT

Arnesto Concrete Floor Paint is a waterproof, alkaliproof, quick drying, scientifically prepared paint especially adapted to all concrete surfaces. Can be used outside or inside. It dries with a high gloss and has a flintlike finish. It can be washed with boiling water and still retain its sheen. It is made in eleven durable colors.

**Application**—Thin to brushing consistency with turpentine only. *For New Concrete Floors*: Add 1 pt. of turpentine to 1 gal. for the first coat and brush well into the concrete. Allow at least 12 hours to dry, and to subsequent coats add sufficient turpentine to thin to a brushing consistency.



Madison Square Garden Swimming Pool
Protected with Arnesto Concrete Paint

## SUPERFINE INTERIOR ENAMEL




Superfine Interior Enamel is a high grade white enamel made from a titanium base. The remarkable covering qualities of Superfine Interior. Enamel is exceeded only by its high gloss. It brushes freely with no pull and will not sag. This enamel will remain white and maintain its gloss after washing. Recommended for walls, woodwork and ceilings, and metal surfaces.

**Application**—Thin to an easy brushing consistency with turpentine. Where an undercoating is necessary use Arnesto Satin Flat Paint, the perfect undercoat.

*Do not use over a porous surface.*

*Arnesto Paint Products are Approved by "The Investigating Committee of Architects and Engineers"*

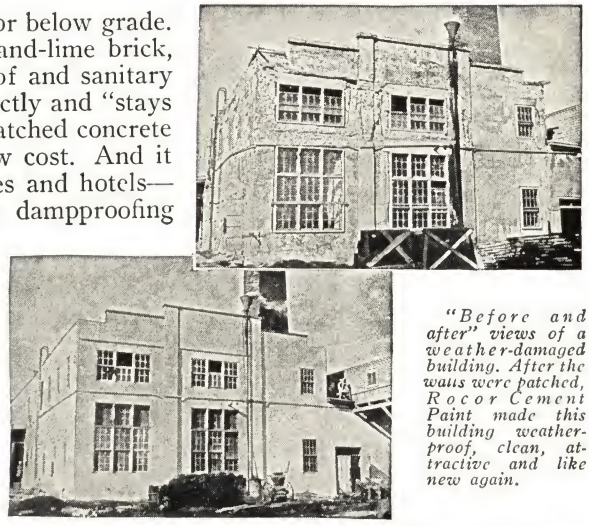
# ARTSTONE ROCOR CORPORATION

45th Street and First Avenue, Bush Terminal, BROOKLYN, N. Y.

For other Artstone products, see File Index

## ROCOR CEMENT PAINT

For all exterior and interior porous masonry surfaces, above or below grade. Concrete, stucco, brick, cement block, cinder concrete block, sand-lime brick, hollow tile and stone become bright, fresh, attractive, dampproof and sanitary with a protective coating that hardens like concrete, bonds perfectly and "stays put." Rocor Cement Paint is the ideal paint for old unsightly patched concrete structures, giving them the appearance of new buildings at low cost. And it is ideal, too, for the light wells and courts of apartment houses and hotels—increasing light reflection and, at the same time, effectively dampproofing spalled and leaky brick.



*"Before and after" views of a weather-damaged building. After the walls were patched, Rocor Cement Paint made this building weatherproof, clean, attractive and like new again.*

**Rocor Cement Paint Gives Spalled, Repaired Concrete Structures the Appearance of New Buildings**

### Character of Rocor Cement Paint

Rocor Cement Paint is an inorganic paint with a colloidally treated portland cement base. It bonds to and becomes an inseparable part of the surface. It is amazingly easy to use. Packaged as a dry powder, it is mixed with ordinary tap water to produce a paint that looks, acts, and works very much like a good flat paint. But there the similarity stops, for Rocor Cement Paint contains no oils, glues or any organic substance whatever. Rocor does not settle out. Mixed with water, it stays mixed, the consistency and "body" remaining true.

Rocor Cement Paint is fireproof, does not peel or crack off, or decay. It has no odor when applied and does not develop one later. It is, therefore, ideal as a decorative and dampproof paint for damp or musty basements, cellars, tunnels and subways. It may be washed with soap and water.

Rocor Cement Paint is not hurt by salt air, steam, vapor, or condensation. Rocor Cement Paint is, in fact, used for swimming pools, wading pools and fountains, and indoors in laundries, shower and steam rooms, and wherever moisture would ruin other paints.

### Sixteen Colors

A standard range of 16 attractive colors, including snow white, is available. Color card and descriptive leaflet will be sent upon request. Special colors manufactured include such colors as Brownstone, Black, Turquoise Blue, etc.

### Coverage

Rocor Cement Paint is economical. One pound covers from 20 to 36 square feet in one coat. Two coats are recommended. It is handily packaged in 10 pound metal pails and 50 pound steel drums, and for larger jobs in 350 pound steel drums. All containers are moistureproof and air tight. Full directions are enclosed in each container.

### Rocor Cement Paint Specifications—Short Form

"All surfaces (exterior/interior—indicate) shall be painted with two coats of Rocor Cement Paint as made by Artstone Rocor Corporation, Building 65, Bush Terminal, Brooklyn, N. Y. Material shall be delivered to the job in unopened, sealed containers. Nothing but clean, drinkable water shall be added and the paint shall be mixed and applied over properly prepared, clean surfaces and cured with water, all in accordance with printed directions which the manufacturer will furnish to the contractor upon request."

***Note:*** *Indicate whether brush or spray application is desired. On old buildings, Rocor Cement Paint should be specified for pointing joints and filling cracks prior to application of material as paint.*

## ROCORLITE — One-Coat Does the Job!

Rocorlite is an interior flat paint in concentrated paste form, easy to mix and use. Rocorlite decorated walls and ceilings are completely finished one hour after application. There is no tedious preparation work, no unpleasant paint odor and one coat usually does the job.

*The following checking points will briefly summarize the many advantages of this unusual paint product:*

√ Rooms ready to occupy one hour after application.
√ Double hiding power—one coat does the work of two.
√ No disagreeable paint odor.
√ Washes easily with soap and water after the paint has set.
√ Non-yellowing. Colors remain bright, fresh and attractive.
√ Unusually high light reflection for white. No hard glare or sheen.
√ Economical. One gallon of Rocorlite in concentrated paste form makes 1½ gallons of paint.
√ No costly thinners, oils or turpentine required. Only ordinary tap water is needed.
√ Free-flowing, easy-spreading, with brush or spray.
√ Non-inflammable and non-explosive. Safe to use.
√ Will not peel, crack, flake, or rub off.

And Rocorlite makes a perfect primer or first coater for other types of paint. It can be used on practically any surface, with no tedious or costly preparation.

Rocorlite comes in 12 attractive colors, including white and black. It is conveniently packaged in quart and gallon cans and in 5 gallon drums. All containers have large removable covers and can be used for mixing. One-half gallon of ordinary tap water is added to each gallon of Rocorlite paste, giving 1½ gallons of Rocorlite paint ready for use.

### Rocorlite Specifications—Short Form

"All interior surfaces (not otherwise specified—or indicated) shall be painted with Rocorlite Interior Paint as made by Artstone Rocor Corporation, Building 65, Bush Terminal, Brooklyn, N. Y., in color selected by the architect. Material shall be delivered to the job in unopened, sealed containers and nothing but clean drinkable water shall be added to the material. It shall be mixed and applied over clean, dust-free surfaces, all in accordance with the printed directions which the manufacturer will furnish to the contractor upon request."

*Rocorlite has been widely used and praised for its value and economy. It is an ideal maintenance paint, easy to use, low in cost. Leaflet describing Rocorlite Interior Paint, showing colors available, will be sent upon request.*

ARTSTONE PRODUCTS
TRADE MARK

ESTABLISHED 1858

# BERRY BROTHERS, INC.

## Varnishes—Enamels—Lacquers—Paints

FACTORY AND MAIN OFFICE
DETROIT, MICHIGAN
CANADIAN FACTORY: WALKERVILLE, ONTARIO

BRANCHES

BROOKLYN, N. Y., 129 26th St.—South 87640
BOSTON, MASS., 21 Power House St.—South Boston 3668
CHICAGO, ILL., 300 W. Hubbard St.—Superior 6760
CINCINNATI, OHIO, 130 W. Court St.—Cherry 7113
ST. LOUIS, MO., 6513 Page Ave.—CABANY 0076
WINNIPEG, MAN., 58 Victoria St.—92-644
MONTREAL, QUE., 1091 Wellington St.—Elwood 7286
TORONTO, ONT., 146 Jarvis St.—Randolph 1904

### THE COMPANY

BERRY BROTHERS, INC. was founded in Detroit in 1858 and through the 80 years that have followed has established a reputation for quality architectural finishes. From the very beginning high standards were set and have since been rigidly maintained. A large technical staff tests all raw materials and also controls every step in the production of our finishes.

Our Architectural Department is ready to furnish finished panels of our standard products and to assist you with special finishing problems that may arise.

### BERRY BROTHERS' BERRYCRAFT HOUSE PAINT

Berrycraft House Paint is composed of those pigments which insure the ultimate in durability, hiding and color retention. The vehicle is composed of Premium Linseed Oil and Lionoil. It is finely ground, the colors are clear and it dries with a good full gloss. The addition of Lionoil to Berrycraft House Paint produces a hard, glossy surface and one that will retain that gloss for a much longer time than is usually expected of the best exterior paints.

### BERRY BROTHERS' LIONOIL FLOOR ENAMEL

The base of this product is Lionoil Clear, thus adding sealing and waterproofing properties to Lionoil Floor Enamel not found in ordinary floor paints. This enamel is recommended for floors wherever a tough, waterproof finish is desired. It dries with a full gloss and will level out without showing brush marks. Under ordinary conditions it will dry in 4 hours, hard overnight.

### BERRY BROTHERS' LIONOIL METAL TRIM ENAMEL

A Lionoil processed enamel that is well known among architects and one that has been used on many of the country's finest office buildings, hotels and industrial buildings.

It dries harder than lead and oil—shows no brush marks—in fact, it closely resembles a baked enamel finish. Dries to a rich satin luster.

We manufacture Lionoil Metal Trim Enamel for both exterior and interior use. While it was originally made for finishing metal trim and steel sash, it is now frequently specified for steel stairs, ornamental iron and various other metal surfaces.

### BERRY BROTHERS' LIQUID GRANITE VARNISH

Liquid Granite Varnish is, we believe, the best known varnish made today. It is tough, elastic and can be used with equal success on floors or standing trim. Because of its very long life, Liquid Granite is an economical varnish to use. Architects appreciate the value of having one varnish on a job which can be used with excellent results on all wood surfaces. Liquid Granite is particularly recommended for window stools and frames.

### BERRY BROTHERS' BERRYSPAR

A varnish that has every good quality of the old slow drying spar varnishes. Berryspar dries dust free in 2 hours and hard in 8 hours under ordinary conditions. It is absolutely waterproof and alcoholproof.

It is the perfect varnish for exterior doors and other woodwork exposed to the weather.

### BERRY BROTHERS' FERROCHROME PRIMER

More as a habit than for any substantial reason, Red Lead has for years been the standard primer for structural steel. Only recently have paint manufacturers been able to produce a material that will do a far better job of priming than Red Lead can do, and will have none of its faults.

Berry Brothers' Ferrochrome Primer produces a film not as heavy as Red Lead and, consequently, the entire painted surface is always well covered. This primer dries to a tough hard surface in 4 hours which enables the fabricators to ship steel in much better condition, as a surface painted with Berry Brothers' Ferrochrome Primer will not show the usual abrasions caused by the rough handling of cranes and heavy chains used in transporting steel to the job.

The phenomenal results obtained from the use of Ferrochrome Primer are due to two things:

(1) The vehicle of Ferrochrome Primer is composed of rust inhibiting products.

(2) The pigment is zinc chromate blended with ferric oxide—both rust inhibiting pigments which on actual test have proven to be the best pigments for preventing the formation and spread of rust.

### BERRY BROTHERS' GRANITE FLOOR SEAL

Granite Floor Seal is a penetrating, wear-resisting, waterproof finish for wood, concrete, terrazzo and composition floors. It is very light in color and does not discolor light woods. Granite Floor Seal is particularly recommended for use on gymnasium and dance floors for the reason that it is marproof and will not heel-burn. The finish produced by Granite Floor Seal is non-porous and leaves no place for germs to penetrate, thus eliminating the danger of spreading foot infection commonly encountered in gymnasiums. This product may be used as a final finish, an undercoat for gloss or dull varnishes or it is an ideal surface for wax. Granite Floor Seal is economical, covering 550 sq. ft. per gal., one coat. It dries fast and may be recoated the same day. Ask for panels showing this finish.

# PAINTING SPECIFICATIONS

*The following specifications are brief but serve as an accurate guide to good painting practices. Specifications in complete detail are given in our Architectural Catalogue which will be mailed to any architect on request.*

| | |
|---|---|
| Structural Steel Priming | 1 brush coat Berry Brothers' Ferrochrome Primer. |
| Exterior Steel Sash<br>(Ornamental Iron and all other exterior metal surfaces) | 2 brush coats Berry Brothers' Lionoil Exterior Metal Trim Enamel of standard color selected. |
| Interior Steel Sash<br>(Metal Trim, metal clad doors and all other interior metal surfaces) | 2 brush coats Berry Brothers' Lionoil Interior Metal Trim Enamel of standard color selected. |
| Exterior Wood Work | (Painted) New Work<br>3 coats Berry Brothers' House Paint applied according to directions of manufacturer. |
| Exterior Wood Shutters and Blinds | 2 coats Berry Brothers' Trim & Trellis Green or Berry Brothers' House Paint. |
| Exterior Concrete, Stucco and Brick surfaces | 1 coat Berry Brothers' Lionoil Clear straight or mixed with Berry Brothers' House Paint of the shade desired.<br>2 coats Berry Brothers' House Paint. |
| Exterior Wood Doors or other Wood surfaces | (Varnished) Open Grained Woods<br>1 coat Berry Brothers' Paste Wood Filler of color selected.<br>2 coats Berry Brothers' Berryspar Varnish.<br>Close Grained Woods<br>1 coat Berry Brothers' Penetrating Oil Stain.<br>2 coats Berry Brothers' Berryspar Varnish.<br>***Note:*** *Do not use Shellac on any wood surface exposed to dampness.* |
| Wood Floors | (Varnished) Open Grained Woods<br>1 coat Berry Brothers' Paste Wood Filler.<br>3 coats Berry Brothers' Liquid Granite Varnish.<br>(Liquid Granite Varnish may be obtained in Gloss, Dull or Satin Finish.) Where Dull or Satin Finish is desired, use Gloss on first 2 coats, final coat either Dull or Satin Finish. |
| Wood Floors | (Varnished) Close Grained Woods<br>1 coat Berry Brothers' Penetrating Oil Stain.<br>3 coats Berry Brothers' Liquid Granite Varnish.<br>(Liquid Granite Varnish may be obtained in Gloss, Dull or Satin Finish.) Where Dull or Satin Finish is desired, use Gloss on first 2 coats, final coat either Dull or Satin Finish. |
| Concrete Floors | 1 coat Berry Brothers' Lionoil Clear either straight or mixed with Floor Enamel of shade selected for final coat.<br>2 coats Berry Brothers' Floor Enamel.<br>***Note:*** *A coat of Berry Brothers' Liquid Granite Varnish or Berrywax over the above finish will greatly add to the life of the Floor Enamel.* |
| Gymnasium Floors | (Varnished) Close Grained Woods<br>2 coats Berry Brothers' Granite Floor Seal or two coats Berry Brothers' Lionoil Clear. |
| Interior Wood Work | (Enamel Finish)<br>1 coat Berry Brothers' Enamel Undercoat.<br>2 coats Berry Brothers' Enamel Undercoat and Luxeberry Enamel mixed half and half.<br>1 coat Berry Brothers' Luxeberry Enamel Gloss.<br>*(Specify if rubbed finish is desired.)*<br>For an Eggshell finish, specify the last coat Luxeberry Enamel Eggshell Gloss. |
| Interior Wood Work | (Varnished) Open Grained Woods<br>1 coat Berry Brothers' Penetrating Oil Stain.<br>1 coat Berry Brothers' Paste Wood Filler.<br>1 coat Berry Brothers' SDC White Shellac.<br>2 coats Berry Brothers' Luxeberry Wood Finish or Liquid Granite.<br>*(Specify if rubbed finish is desired.)* |
| Interior Wood Work | (Varnished) Close Grained Woods<br>1 coat Berry Brothers' Penetrating Oil Stain.<br>1 coat Berry Brothers' SDC White Shellac<br>2 coats Berry Brothers' Luxeberry Wood Finish or Liquid Granite.<br>***Important Note:*** *The commonly used open-grained woods are oak, walnut, chestnut and mahogany. The close grained woods ordinarily used are pine, gumwood, birch, maple and poplar.* |
| Plaster Wall | (Flat Finish)<br>1 coat Berry Brothers' Primer and Sealer.<br>2 coats Berry Brothers' Flat Wall Finish.<br>(Stippled Finish)<br>1 coat Berry Brothers' Primer and Sealer.<br>2 coats Berry Brothers' Heavy Body Stipple Flat Wall Finish. (Last coat to be stippled with brush or sponge.) |
| Plaster Wall | (Gloss Finish)<br>1 coat Berry Brothers' Primer and Sealer.<br>2 coats Berry Brothers' Interior Finish. |
| Plaster Wall | (Eggshell Finish)<br>1 coat Berry Brothers' Primer and Sealer.<br>2 coats Berry Brothers' Lusterlo. |
| Industrial Wall Finishes | 1 coat Berry Brothers' Primer and Sealer.<br>2 coats Berry Brothers' Mill White.<br>(Mill White is produced in Flat, Eggshell and Gloss.) |
| Dado | 1 coat Berry Brothers' Primer and Sealer.<br>2 coats Berry Brothers' Lionoil Floor Enamel or Dado Enamel. |
| Bakery, Brewery or Distillery Wall Finish | (Fume Proof)<br>1 coat Berry Brothers' Primer and Sealer.<br>1 coat Berry Brothers' Flat Wall Finish.<br>1 coat Berry Brothers' Fume Proof Enamel. |
| Stadium Seating | 1 coat Berry Brothers' Enamel Undercoat.<br>2 coats Berry Brothers' Quick Drying Enamel. |
| Wall Board | 1 coat Berry Brothers' Lionoil Wall Board Primer Sealer.<br>1 or 2 coats Berry Brothers' Wall Finish Flat, Semi-Gloss or Gloss as directed. |

# BOSTON VARNISH COMPANY

Everett Station
BOSTON, MASS.

## Kyanize Self-Smoothing
## PAINTS VARNISHES ENAMELS

### Kyanize Super Service Paint

A paint of outstanding qualities for the outside of houses or buildings of all kinds where extreme durability, long wear, and economy in application are desired.

KYANIZE Super Service Paint is a pure paint, the vehicle content being composed of 92% refined Linseed Oil and 8% Turpentine and Turpentine Japan, the pigment content being composed of pure Carbonate of Lead, pure Oxide of Zinc and Titanox in the White and tinting materials in the colors in variable quantities, depending on the depth of shade produced, producing a paint that has most excellent coverage and hiding properties with extreme durability.

Made in twenty-seven modern non-fading colors in addition to White and Black. Coverage—350 to 400 sq. ft.—two coats, or 250 to 300 sq. ft.—three coats.

**Specification**—All wood surfaces to be painted shall be thoroughly dry and free from dampness during the entire painting operation. No paint shall be applied immediately after a rain or during frosty or wet weather.

*New Wood Outside*—First Coat: On new soft wood or old weathered lumber, KYANIZE Super Service Paint should be thinned with 1 pt. of raw Linseed Oil and 1 qt. of Turpentine to the gallon of paint. For woods containing resinous content, such as Cypress or Yellow Pine, add 2 qts. of Turpentine and 1 pt. of raw Linseed Oil to each gallon of paint. After the priming coat has been permitted to dry, all nail holes and cracks shall be filled with a good grade of putty.

Second Coat: To each gallon of KYANIZE Super Service Paint, add 1 pt. of Turpentine.

Third Coat: Apply the paint as it comes from the can. If thinning is necessary, thin slightly with pure raw Linseed Oil.

*Repainting Work Outside*—Same as above, except omitting the first or priming coat.

### Kyanize Preservative Shingle Stains

Composed of refined Creosote and Linseed Oil in combination with strong pigment colors giving permanency and outstanding durability; deep penetration in the wood is especially characteristic, preventing dry rot in shingles and wooden surfaces wherever used.

Red, Brown, Greens and Grays are the regular colors. Special colors furnished.

**Specification**—*Painting Wood Shingles—New Work*—First Coat: All wooden shingles shall receive one dip coat of KYANIZE Preservative Shingle Stain without reduction but as furnished by the manufacturer and in the color selected by the architect. The shingles shall be dipped two-thirds their length and thrown in loose piles to dry.

Second Coat: After shingles are laid, one brush coat of KYANIZE Preservative Shingle Stain of the same color shall be applied as it comes from the can.

### Kyanize Stucco and Concrete Finish

Made especially for the exterior of stucco surfaces to prevent penetration of moisture as well as to enhance the beauty through decorative effect of color. An oil paint drying to an eggshell finish. Made in White or furnished in colors as desired.

**Specification**—All exterior Stucco or Concrete surfaces shall receive two coats of KYANIZE Stucco and Concrete Finish in the color selected by the architect. All surfaces shall be thoroughly dry and free from loose grit or dirt. Any effervescence on the surface shall be thoroughly removed and where effervescence appears shall be washed with a solution of Zinc Sulphate in the proportion of 2 lbs. to the gallon of water. Let dry thoroughly.

First Coat: Shall be thinned with pure Turpentine in the proportion of 1 pt. of Turpentine to the gallon of paint, allowing 24 hours to dry before applying the second coat as the material comes from the can.

### Boston Metal Primer

A dependable coating for metal to insure against subsequent peeling of the painted surface as it firmly knits the painted film to the metal.

The metal surface should be thoroughly clean and free from rust spots and galvanized iron should first be prepared by washing with copper acetate solution made in the proportion of 6 oz. copper acetate to 1 gal. of water.

### Kyanize White Enamel "Blue Label"

Time alone has proven the extreme durability of this enamel. Surfaces finished two decades ago are today in perfect condition. No shrinking of the finish, permanency of whiteness, retention of lustre, and full bodied, are its characteristics. Its long oil composition assures free flowing and easy working properties, leaving a surface free from brush marks, streaks or laps.

**Specification**—*New Interior Woodwork*—Any open grain wood shall first be filled with KYANIZE Paste Filler well rubbed in. Allow time to set, then rub off with burlap across the grain. In 24 hours, sand the surface smoothly with fine sandpaper. Close grain woods shall be sanded thoroughly with fine sandpaper and all knots and sappy places given a coat of White Shellac.

First Coat: KYANIZE Enamel Undercoat. Reduce with 1 pt. of pure Turpentine to a gallon of Undercoat.

Second Coat: KYANIZE Enamel Undercoat as it comes from the can.

Third Coat: One-half KYANIZE Enamel Undercoat and half KYANIZE White Enamel.

Fourth Coat: KYANIZE White Enamel in the body supplied by the manufacturer, sanding lightly with fine sandpaper between coats. Each coat to dry thoroughly before applying the next, the last coat to be left in the gloss.

*Refinishing Old Surfaces*—Remove all dirt and grease and if the surface is in the high gloss, sand with fine sandpaper to remove the gloss and proceed as outlined above, omitting the first or priming coat.

### Kyanize Celoid Finish

A washable, waterproof, medium gloss enamel with remarkable hiding qualities for both walls and woodwork. The ideal finish to use where a high gloss is objectionable and especially adaptable in finishing public buildings where surfaces are easily soiled and repeated washings are necessary. Made in fourteen pastel colors in addition to White, which can be easily tinted to special shades.

**Specification**—*New Wall and Ceiling Work*—Walls and celings of plaster shall be thoroughly dry and evidences of "hot spots" shall be treated with a wash coat of Zinc Sulphate solution in the proportion of 1½ lbs. of Zinc Sulphate to 1 gal. of water. Allow to dry.

First Coat: Apply KYANIZE Seal Rite Surfacer as a sealing coat as it comes from the can.

Second Coat: Apply KYANIZE Celoid Finish in the color selected by the architect.

Third Coat: Apply KYANIZE Celoid Finish of the same shade as second coat, full bodied, as it comes from the can well flowed on.

*Repainting Old Work*—Wash surface thoroughly, removing all dirt, grease and loose surfaces. Fill up all patches or cracks with Plaster of Paris or Crack Filler. Touch up bare spots and patches with Seal Rite Surfacer.

First Coat: Apply KYANIZE Celoid Finish as it comes from the can.

Second Coat: Apply KYANIZE Celoid Finish as taken from the can well flowed on.

*New Interior Trim, etc.*—Any open grain wood shall first be filled with a good paste filler well rubbed in. When dry, and hard, sandpaper thoroughly. Close grain woods shall be sanded thoroughly with fine sandpaper and all knots and sappy places given a coat of White Shellac.

First Coat: Apply KYANIZE Seal Rite Surfacer thinned with 1 pt. of Turpentine to a gallon of Seal Rite Surfacer.

*By ROYAL BARRY WILLS*

*Write Department 801 for Measured Drawings of Cape Cod Cottage Details*

Second Coat: Apply KYANIZE Celoid Finish as taken from the can.

Third Coat: Apply KYANIZE Celoid Finish as taken from the can well flowed on. Allow 36 hours to dry between second and third coats, and sand lightly with fine sandpaper the first coat of Seal Rite Surfacer after it has been allowed to dry 24 hours.

## Kyanize Super Flow Flat White

A flat white of the highest quality and durability. Its outstanding qualifications are: *easy working—free flowing*—and *exceptional hiding properties.* It will not show laps or edges in coating large surfaces. The hard film produced permits of repeated washings without injury to the surface. It will not check, crack or chalk, retains its whiteness indefinitely, and is impervious to fumes that discolor ordinary flat whites.

Super Flow Flat White is made in white only but can be easily tinted to any desired shade as it takes tinting materials perfectly. However, where color is desired, eight pastel shades are found in KYANIZE Flat Wall Finish in which the same free flowing and easy working properties are found as in KYANIZE Super Flow Flat.

**Specification**—*New Unpainted Plastered Walls, Concrete, Wall Board, etc.*—After they are thoroughly dry shall first be primed with one coat of KYANIZE Seal Rite Surfacer. Second and third coats apply KYANIZE Super Flow White as it comes from the can. If there are evidences of "hot spots" on the walls, they shall first be treated with a solution of Zinc Sulphate in the proportion of 1½ to 2 lbs. of Zinc Sulphate to a gallon of water, and after this is dry, proceed as above.

*Old Painted Surfaces*—Wash thoroughly to remove any grease, dirt or grime, and especially Cold Water Paint if it has been used previously. Loose and scaling paint on walls shall be removed and crevices filled and evened up with Plaster of Paris. Touch up all bare spots with Seal Rite Surfacer and apply two coats of KYANIZE Super Flow Flat White as it is taken from the can.

*High Gloss Surfaces*—Shall be sandpapered to partially remove the gloss to provide a proper foundation and to give adhesion.

*New Interior Woodwork*—See Specification for KYANIZE Celoid Finish, substituting Super Flow Flat White for second and third coats.

## Kyanize Enamel Undercoat

Especially made for use as the priming coats under high grade enamels. Works easily under the brush and dries with a non-porous surface that is readily sanded, providing a smooth, ridgeless foundation for the finishing coats of enamel. Should be used where an especially high grade enamel finish is desired.

## Kyanize Floor Finish

A long-wearing, durable, waterproof floor varnish. Made to withstand rough usage on floors. Flows freely under the brush, and dries without the slightest trace of brush marks in 4 hours, leaving a clear, high lustre, transparent finish that will not scratch or mar white. KYANIZE Floor Finish, clear or natural, is pale in color and does not discolor the lightest floorings; also in colors such as American Walnut, Light, Golden and Dark Oaks, etc.

**Specification**—*Open Grain Woods: Oak, Ash, Walnut, Mahogany, etc.*—Surfaces of all floors must be sanded down to an even smoothness, filling the grain of the wood with KYANIZE Paste Filler colored to match the wood. Allow time to set, then rub off with burlap across the grain. In 24 hours, sand the surface with fine sandpaper.

Follow with three coats KYANIZE Floor Finish Natural, allowing 12 hours drying time between coats. The first coat may be thinned slightly with pure Turpentine in the proportion of ½ pt. to the gallon, the varnish to be applied in full flowing coats.

*Close Grain Woods: Birch, Maple, Yellow Pine, etc.*—Dispense with the application of the paste filler and proceed as above.

## Kyanize Dull Floor Finish

A real waterproof and durable floor varnish with a rich soft velvety finish, more beautiful than wax, without its disadvantages, as KYANIZE Dull Floor Varnish is not a wax material; therefore free from slipperiness and does not spot white with water. Builds as well as KYANIZE Floor Finish. In fact, it is the same varnish only so made as to give it its rich characteristic sheen.

**Specification**—Refer to Specification for KYANIZE Floor Finish, substituting KYANIZE Dull Floor Varnish for last coat to be well flowed on.

## Kyanize Floor Enamel

The ideal coating for floors where the solid color effect is desired. Especially good for cement floors as it forms a bond with the cement and gives a coating that is extremely durable for wear and waterproofness. Repeated washings do not injure its gloss.

Floors of basements, hospitals, dormitories, etc., are kept more sanitary and clean through its use. Also excellent for use for dadoes in public buildings. Made in twelve clear toned colors.

**Specification**—*Cement and Concrete Floors*—Shall be thoroughly dry, and newly laid cement or concrete shall first be treated with a solution of Zinc Sulphate in the proportion of 2 lbs. of Zinc Sulphate to 1 gal. of water to neutralize any alkali that may be present, and which is always in evidence on newly laid concrete. Allow it to dry thoroughly.

First Coat: Apply KYANIZE Seal Rite Surfacer full body as furnished by the manufacturer.

Second Coat: Apply KYANIZE Floor Enamel of the shade selected by the architect.

Third Coat: Same as above, allowing 24 hours to dry between coats.

*Old Wood Floors*—Shall be thoroughly cleaned with soap and water, well rinsed with clear water and allowed to thoroughly dry before painting. If wax has been applied previously, the wax shall be thoroughly removed by washing the floors with pure Turpentine to remove all trace of wax. Apply two coats of KYANIZE Floor Enamel of the shade selected by the architect, allowing 24 hours drying time between coats.

## Seal Rite Surfacer

A primer and sealer for new plaster or cement surfaces: it prevents absorption and acts as a perfect primer for succeeding coats of flats, enamels, etc. On wood surfaces, including floors, it is an excellent sealer and first coater. Light in color, works freely under the brush, dries hard overnight and produces a tough, very durable and binding film.

## Kyanize Interior Finish

A pale colored, free flowing, hard drying, high lustre varnish that will not scratch white. Dries dust free in 4 to 6 hours. Is extremely tough and elastic and will not crack or check. A most excellent varnish for hand rubbing or can be left in the gloss. One of the old time Kauri gum varnishes that has stood the test of years for high grade varnish finishing.

**Specification**—*For All Interior Trim*—Open Grain Woods: Sand the surface to an even smoothness, fill nail holes with putty, colored to match the wood. Fill the grain with KYANIZE Paste Filler, also colored to match the wood. Allow time to set, then rub off with burlap across the grain. In 24 hours sand the surface smoothly with fine sandpaper. Follow with three coats of KYANIZE Interior Finish, the first coat to be thinned with pure Turpentine in the proportion of ½ pt. to the gallon; second and third coats to be applied just as the varnish comes from the can. Allow a drying period of at least 24 hours between coats.

Close Grain Woods: Dispense with the application of Paste Filler and proceed as above.

## Kyanize Quick Drying Spar

A Bakelite Varnish, the gum content being composed of 100% Bakelite gum—a truly phenomenal varnish for its waterproof qualities, and outstanding results are obtained through its use on exterior surfaces where a varnish finish is desired. Pale in color, free flowing, dries dust free in 3 hours and hard in 6 to 8 hours. Can be used for all interior work on which a high gloss finish is desired.

**Specification**—Refer to Specification for KYANIZE Floor Finish, substituting KYANIZE Quick Drying Spar Finish for the varnish coating.

## Kyanize Aluminum Finish

An aluminum paint composed of pure aluminum metal in paste form and the highest grade of waterproof vehicle whose characteristics permit of maximum leafing of the metal and brightness of finish. Packed in double compartment cans to facilitate easy mixing on the job as all aluminum paint, if mixed for a long time before application, loses its brightness as well as some of its leafing properties.

*By ROYAL BARRY WILLS*

*Write Department 801 for Measured Drawings of Cape Cod Cottage Details*

# SAMUEL CABOT, INC.

Manufacturing Chemists

141 Milk Street, BOSTON, MASS.

NEW YORK, N. Y., 101 Park Avenue  PHILADELPHIA, PA., 1419 Real Estate Trust Building  CHICAGO, ILL., 5000 Bloomingdale Avenue

PRINCIPAL AGENCIES

ATLANTA, GA., Campbell Coal Company (Stains and Collopakes); DeJarnette Supply Co. (Quilt)
BALTIMORE, MD., Baltimore Southern Flooring Co.
CINCINNATI, OHIO, The Saeger-Winstel Co. (Stains and Collopakes); The Cincinnati Builders Supply Co. (Quilt)
CLEVELAND, OHIO, The Cleveland Paint & Color Co. (Stains and Collopakes); The Harvard Lumber Co. (Quilt and Stained Shingles)
COLUMBUS, OHIO, The Capital City Lumber Co.
DALLAS, TEX., Macatee, Inc.
DENVER, COLO., The Colorado Builders' Supply Co.
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SAN FRANCISCO, CAL., Gunn, Carle & Co.
SEATTLE, WASH., Building Specialties Co.
WASHINGTON, D. C., W. R. Winslow Co.

Creosote Shingle Stains.
Heavy Bodied Shingle Stains.
Creosote Bleaching Oil.
Interior Stains.
Stucco & Brick Stains.
Conservo Wood Preservative.
Flexiblac Protective Paint.
Collopake Size.
Casein Coating.

Samuel Cabot Inc

## Cabot's Stains and Collopakes

Gloss Collopakes.
Double-White.
Old Virginia White.
Interior Flat Collopakes.
Deck & Floor Collopakes.
Roofing Collopakes.
White Collopake Enamel.
Aluminum Coating.

For Waterproofings, Stained Shingles, and Insulating "Quilt," see File Index.

## CABOT'S CREOSOTE SHINGLE STAINS

*For roof and side shingles, clapboards, siding, rough or smooth boarding, fences, and all outside woodwork and dressed lumber.*

These celebrated stains, first made in 1882, revolutionized the art of exterior decoration. They have now been proved by over 50 years of continuous use in every climate. They are made with the strongest and purest mineral colors reduced to a microscopic fineness by the patented Cabot Collopaking Process.

The method employed breaks the colors up into much smaller particles than is possible with grinding alone. Colors are then colloidally dispersed in genuine especially refined creosote.

**Beautiful Artistic Effects**—These stains give soft, velvety colors to wood without hiding its texture. There is no gloss or shine and colors are guaranteed fast. As there are no two pieces of wood exactly alike, stains bring out the beautiful effects of grain and surface instead of masking them with a painty film.



**Residence of Arthur Fisher, Wellesley Hills, Mass.**
Royal Barry Wills, Architect
Clapboards stained and preserved with Cabot's Creosote Shingle and Wood Stains

**Preserve the Wood**—"Creosote is the best wood preservative known"—*Trautwein.* The 60% of especially refined, genuine creosote used in Cabot's Stains, usually doubles the life of the wood, protecting it from decay and ravages of insects.

**Wholesome and Sanitary**—Creosote has marked antiseptic and sanitary qualities. Cabot's Stains used inside and outside of stables and poultry houses, sheds, etc., will preserve the wood, destroy insects, parasites and disease germs, and make the premises sanitary and wholesome.

**Specifications**—Roof [wall shingles] [siding] [trim] shall be stained two [three] coats with Cabot's Creosote Shingle and Wood Stains, color to be selected by the architect. Woodwork shall be dry and clean before application. Stir stains thoroughly and keep well stirred while using. If more than one package is required, mix all together in one large container. Do not thin out. Apply with a broad, flat brush, like paint (or with a spray machine). (Shingles shall be dipped before laying.) Allow 24 hours between coats.

**Covering Capacity**—On *new work, shingles, or rough wood:* One brush coat, 1 gal. to 150 sq. ft. of surface. Two brush coats, 1 gal. to 100 sq. ft. of surface. Hand dipping and one brush coat 3 to 4 gal. per 1000 of 16-in. shingles. Larger sizes take proportionately more.

*On smooth wood:* 1 gal. covers from 200 to 250 sq. ft., two coats.

**Stains Over Paint**—Any of the darker, heavier colors go well over old paint but the "stain effect" is not possible over new solid coats of paint.

**Paint Over Stain**—Paint can be applied over Cabot's Creosote Stains, which make splendid priming coats because of their preservative action and prevention of mildew.

*Please write us for Color Cards and Samples*

### Cabot's Heavy Bodied Shingle Stains

These stains differ from Cabot's Creosote Shingle Stains in that they produce more solid color effects. They are especially suitable for use on weathered and porous surfaces because of their great hiding power. They are made of pure pigments reduced to sub-microscopic fineness and colloidally dissolved in fixative oils (not creosote). The colors dry flat and do not have the "painty" look of ordinary oil stains.

### Cabot's Creosote Bleaching Oil

*For exterior shingles, siding and trim this produces exactly the same result as nature and gives shingles and woodwork the beautiful silver gray tone which results from many years of exposure to salt air at the seashore.*

It produces this effect in from six to twelve months. A small amount of gray pigment gives a delicate gray tone from the first and as this wears off it is followed by the bleaching of the wood itself. It does this either on the coast or inland. The effect grows constantly better with age and no further treatment is necessary. The creosote preserves the wood from decay and also prevents mildew and blackening. Similar effects are obtained by using the Weathering Gray shades of Cabot's Creosote Stains.

**Specifications and Covering Capacity**—(same as for Creosote Stains.)

### Cabot's Interior Stains

*For interior woodwork* Cabot's Interior Stains are a new type of non-creosote colloidal interior wood stains with a color penetration, making possible for the first time grays and other light shades that preserve the character and grain of the wood. Transparent and non-fading. Free from objectionable odor.

**Specifications**—Interior woodwork shall be stained with Cabot's Interior Stains, color to be selected by the architect. All woodwork shall be dry, clean and smooth before application. All nailholes and other marks shall be filled. Apply with large brush. Allow at least 24 hours between first and second coat. Finish with varnish [shellac] [wax].

*Note:* Handsome effects may be secured if left unfinished with or without rubbing down.

**Covering Capacity**—One gallon covers 300 sq. ft. on smooth wood and about one-half as much on rough wood.

## CABOT'S COLLOPAKES—HOW THEY DIFFER FROM OTHER PAINTS

Cabot's Collopakes are made under Cabot's Process Patent No. 1662999 and Product Patent No. 1791119. This process gives them their special advantages over common ground paints of the usual type.

Collopakes are made of the same basic materials as first quality paints; they contain the same high grade pigments, and use for binders linseed and other fixative oils of the grades accepted as standard in the paint trade. They contain no water or other adulterants frequently found in cheap paints.

*The Patented Cabot "Collopaking" Process* begins by taking the best mineral and earth pigments and disintegrating them, by special treatment, into particles of colloidal size, 100 to 1000 times finer than the pigment particles in ordinary paints. This finely divided pigment is then kneaded into a stiff paste with a specially prepared fixative oil. This gives a very thorough and permanent dispersion. The paste is then blended with the proper proportions of fixatives and solvents.

The resulting Collopakes are not a *mixture,* in the ordinary sense, but a *colloidal solution*—as practically all the pigment is colloidally dispersed in the vehicle. Each pigment particle is surrounded by a strongly adhesive film of specially processed oil which is intimately amalgamated to its surface. As a result, each particle remains in suspension, so pigment and oil cannot separate.

*Cabot's Collopakes, because they are truly colloidal and are not mixtures, have the following advantages:*

(1) They do not settle hard in the can, and so require little stirring.

(2) They are more adhesive when properly applied to a dry surface. The pigment is pulled into the surface pores with the vehicle, amalgamating closely with the surface. This gives greater durability and resistance to wear.

(3) Collopakes are more waterproof because the minute pigment particles tend to plug the surface pores and keep them plugged.

(4) Because the particle size is so small, Collopakes have greatly increased hiding power, especially in the darker colors.

(5) Because of their colloidal nature, Collopakes have so much body that fillers to add body are entirely unnecessary. Paints using fillers are always subject to fading. The filler, though white when dry, is invisible when wet with oil. But as the oil dries out the filler inevitably shows up white again, causing graying and fading. Collopakes being free from filler do not tend to fade.

(6) The high surface tension automatically smooths off and levels out brush marks.

(7) Collopakes for outside use are made to dry hard less rapidly than most paints (and therefore do not disintegrate as rapidly). This avoids the bad effects of rapid drying and gives Collopakes a tough, flexible film, increasing their durability.

## CABOT'S GLOSS COLLOPAKES

### For Painting All Surfaces, Including Wood, Stucco, Brick, Cement and Metal

Cabot's Gloss Collopakes are made in all colors, and produce a rich and durable gloss finish. They are made by the patented Cabot Collopaking Process. The tough and long-wearing paint film formed by Gloss Collopakes penetrates every irregularity, keying and bonding itself more firmly to the surface. The film is flexible, yet dense, and is more resistant to oxidation.

Because Cabot's Green and Brown Gloss Collopakes have not the tendency to fade that is usual in greens and browns, they have attained wide use and popularity.

### Cabot's Green Gloss Collopakes

*For blinds, shutters, trim, sash and other exterior finish.*

Cabot's Green Gloss Collopakes contain no fillers. Only the purest and strongest metallic pigments are employed. These greens stand up and retain their fresh and lively color. They have these further advantages:

(1) Great hiding and covering power with resultant economy.
(2) Tough and durable finish. Surface has long life.
(3) They remain clean and glossy under prolonged exposure.
(4) Their hiding power is so great that two coats of Cabot's Green Gloss Collopakes are usually equal to three of ordinary paint.

Cabot's Green Gloss Collopakes are especially suitable for use at the seashore and other places where the exposure is severe.

### Old New England Colors

Our Gloss Collopakes are now offered in authentic shades of New England's oldest houses, matched on the spot by our Color Research Division.

The colors include Salem Gray, Old Lyme Yellow, Wayside Inn Pink, Harwichport Blue, and two old Connecticut Barn Reds. Please write us for samples of Old New England Colors.

### Specifications

Exterior walls and [trim] [sash] [blinds] shall be painted with Cabot's Gloss Collopakes, two [three] coats, colors to be selected by architect. Apply only to clean, dry surfaces.

No special primer needed. Thin first coat with not over 1 qt. of a 50/50 mixture of linseed oil with turpentine or mineral naphtha. Thin finish coats with the same mixture only if necessary for proper brushing consistency.

*Note:* For cement walks and floors, please specify Cabot's Deck & Floor Collopakes.

*Note:* The Greens, Blues, Signal Red and bright Yellows must not be applied directly to fresh plaster, magnesite, or cement because of the free lime present.

**Covering Power**—On smooth surfaces, about 350 sq. ft. per gallon, two coats.

*Please write us for Color Cards and Samples*



**Residence in Beaumont, Tex.**
BEN E. IRBY AND HARRY R. WOODSIDE, Architects
Painted with Cabot's DOUBLE-WHITE, blinds with Cabot's Green Gloss Collopakes

## Cabot's Old Virginia White

*A soft, brilliant white for shingles, siding and other wood work; and for brick, stone and stucco.*

It produces the "whitewash white" effect—as bright and clean and cool as new whitewash, as lasting as paint.

Old Virginia White is a Collopake which reproduces faithfully the desirable qualities of whitewash, but it is finer in tone and texture, easy to apply and clean to handle. It has a soft, brilliant tone, is without gloss, weathers well and is easily renewed. It is more transparent than paint; not hiding texture and character of the surface with an opaque coating, as paint does, but covering it like a heavy coat of whitewash.

**Durability**—From the first, Old Virginia White has had the most enthusiastic approval of architects. Many years' experience has proved not only that it is fully as durable as the best paint, but also that it retains its brilliant white tone with age.

**Specifications**—Exterior stucco [Brick] [Cement] [Stone] [Plaster] [Wood] [Shingles] shall be painted with Cabot's Old Virginia White, two [three] coats. Stir before using; do not thin. Apply only to clean, dry surfaces. Cement or plaster should be allowed to dry out thoroughly before being painted. Apply with a 4-in. flat brush, using a full brush and a flowing coat.

Shingles are to be dipped in Cabot's No. 1166 White Primer, and brush coated one [two] [three] coats with Cabot's Old Virginia White after laying.

*Note:* On sawed shingles use two coats. If dark woods are used, three coats may be necessary.

**Covering Capacity**—One gallon covers about 200 to 250 sq. ft., two coats, on smooth, dense concrete or brick; about 150 sq. ft. on good cement plaster, and 100 sq. ft. on very rough or porous plaster or shingles.

## Cabot's Stucco and Brick Stains

*For tinting and rainproofing stucco, cement, stone, plaster, brick, prepared roofing, and rough wood; and for renovating and restoring these materials when old and stained.*

They do not mask the surface with a "painty" film but preserve the beauty of the original texture. They are made by the patented Cabot Collopaking Process, by which the pigments are reduced to sub-microscopic fineness, and colloidally dissolved in the vehicle. They thus have deeper and richer color values, finer texture and greater durability. They cost only about one-half as much as ordinary paints, flow on the surface more easily, are more quickly applied, and thus greatly reduce the over-all cost of painting. They will not crack, peel or scale, but weather softly and are easily renewed.

**Specifications and Covering Capacity**—Same as for Old Virginia White.

## Cabot's DOUBLE-WHITE

*For exterior use on wood, brick, stucco, cement or metal,* DOUBLE-WHITE *is a brilliant, velvety, non-gloss white; combining maximum whiteness with great hiding power and wearing qualities.*

It is made by the patented Cabot Collopaking Process.

As compared to white lead and oil, DOUBLE-WHITE is much whiter, and has about 50% more hiding power.

It has a beautiful velvety texture and finish. It bonds with the surface *and does not crack or peel.* It retains its whiteness with age and is not affected by gases or light. Because of the way it is made, DOUBLE-WHITE lasts longer and requires painting less often.

**Specifications**—Exterior walls and [trim] [brick chimneys] shall be painted with Cabot's DOUBLE-WHITE, two [three] coats. Apply only to clean dry surfaces. Although DOUBLE-WHITE settles but slightly and the pigment never becomes hard, it is well to stir before using, in order to insure complete solution. For the first coat, thin with not over a quart of linseed oil per gallon of DOUBLE-WHITE. For the second coat, thin with linseed oil only if necessary for proper brushing consistency.

**Covering Power**—One gallon covers about 500 sq. ft., one coat; or about 300 sq. ft., two coats on dressed lumber.



**House in Columbus, Ohio**
PETTIT & OMAN, Architects
Exterior brick and clapboard walls painted with Cabot's Old Virginia White

## Cabot's Interior Flat Collopakes

*For wood, plaster, stone, stucco, or metal of any kind, especially metal ceilings.*

Our Interior Flat Collopakes are manufactured by the patented Collopaking Process, described on the previous page, and so have many advantages not found in other flat paints.

**Advantages**—Show no brush marks. Collect less dirt. Have greater hiding power. Do not settle hard on bottom of can. Have better priming and sizing properties and show less suction. Reflect more light. Are *washable* and *waterproof.*

Our Interior Flat Collopakes make a very fine undercoat for enamel because of their freedom from brush marks, which makes very little sanding or rubbing down necessary.

**Specifications**—Interior walls and [ceilings] [woodwork] [ironwork] shall be painted with Cabot's Interior Flat Collopakes, colors to be selected by the architect. Apply only to clean dry surfaces. *Do not thin* unless trial with a full brush after stirring vigorously shows thinning is necessary. Then thin slowly and cautiously with turpentine or mineral naphtha. Porous surfaces and new plaster should first be treated with a mixture of 1 qt. Cabot's Collopake Size per gallon of Interior Flat Collopakes.

**Covering Capacity**—About 500 sq. ft. per gallon, dependent on the character of the surface.

## Cabot's Collopake Size

This material is a liquid, transparent, waterproof size, with remarkable sealing and spreading power. Used by itself, it forms an ideal foundation for any paint. Mixed with Cabot's Interior Flat Collopakes, or with other flat paints, it gives easier brushing and a smoother surface. It can be used inside or outside; it can be mixed with white lead instead of linseed oil to produce a better hiding, smoother first coat. This Size also makes an excellent waterproofing for canvas and other closely-woven fabrics.

*Please write us for Color Cards and Samples*



**Residence in Great Neck, L. I., N. Y.**
EVANS, MOORE & WOODBRIDGE, Architects
Painted with Cabot's DOUBLE-WHITE, blinds with Cabot's Green Gloss Collopakes

## Cabot's Deck and Floor Collopakes

*For wood or concrete floors, for decks, porches, piazzas and piazza furniture, and for any surface subject to hard wear.*

For these, no better paints can be found than Cabot's Deck and Floor Collopakes. They provide a hard, glossy, elastic enamel finish, which dries in 6 to 10 hours. They are manufactured by the patented Collopaking process, which makes them more durable, prevents fading, and gives them unique self-leveling properties, eliminating brush marks.

Those familiar with our Gloss Collopakes know that these outside paints are remarkable for their fresh, lively, non-fading colors. The same applies to our Deck and Floor Collopakes; despite hard usage, they keep their color, their gloss, and their lively, cheerful appearance. By proper combination of the necessary ingredients, they have been made very resistant to abrasive action and to the weather. They stand up well under harsh treatment.

**Specifications**—All floors, porches, steps, and stairways shall be painted with Cabot's Deck and Floor Collopakes, two [three] coats, colors to be selected by the architect. Be sure the surface is clean and dry before painting. Thin first coat about 10% to 20% with turpentine or mineral naphtha. Thin second coat only if necessary for proper brushing consistency. Allow 6 to 10 hours for drying (let the Collopakes dry overnight, if possible).

**Covering Capacity**—About 350 sq. ft. per gallon. two coats, on smooth wood.

## Cabot's Casein Coating

*A washable flat paint for use on all interior surfaces, including wood, plaster, stucco, brick, concrete, and metal. This paint has great hiding and covering power, dries rapidly, and gives a clean, bright finish.*

**Specifications**—Interior plaster [wood] [metal] [brick] [concrete] [stucco] shall be painted with Cabot's Casein Coating, one [two] coats, colors to be selected by the architect. Mix one part of water with two parts of the paste in a rust-proof container, adding the water gradually while stirring thoroughly until proper brushing consistency is obtained. Do not use a wooden container, and in cold weather use warm water for best results. Be sure surface is clean and firm, and wash off old kalsomine and water-soluble substances. Use gasoline for removing oil or grease. Apply with a wide brush or spray-gun.

**Covering Capacity**—On smooth, dense surfaces, about 600 sq. ft. per gal., one coat; on rough, porous surfaces, about 250 sq. ft. per gallon.

## Cabot's Roofing Collopakes

*Our Roofing Collopakes are paints for every type of roof. They are especially adapted for asphalt shingles, asbestos shingles, slate, tile, and all kinds of prepared roofing.*

As far as we know, they are the only paints that will stand up on these materials. Their basic ingredients are Cabot's Gloss Collopakes, the famous non-fading house paints. These are combined with a powerful and adhesive binder, which forms a tough, elastic coating on the surface and prevents bleeding through.

By binding firmly the little stone or slate particles which form the surface of prepared roofings, our Roofing Collopakes increase the life of these materials greatly. With untreated roofing, small particles are continually being scraped off by snow or ice, or breaking loose of their own accord. The firm grip of Roofing Collopakes prevents this, and therefore Collopake-treated roofs wear better.

Roofing Collopakes can also be used on wooden shingles, and they make excellent paints for metal. They require no expensive, troublesome primer, but can be put on right out of the can. They are especially effective on galvanized iron roofs, protecting the roofs against rust and giving them a refreshing touch of color.

Roofing Collopakes are offered in five attractive colors: Light Green, Dark Green, Tile Red, Dark Red, and Smoke Gray.

**Specifications**—All roofs and parts thereof (no matter what material they are made of), shall be painted with Cabot's Roofing Collopakes, two [three] coats, colors to be selected by the architect. Apply like paint, with a brush or spray gun. Do not thin the Collopakes. They have been carefully prepared to stand up on asphalt- or tar-treated materials, and thinning will weaken them.

**Covering Capacity**—About 125 to 175 sq. ft. per gallon, two coats, on the usual surfaced roofing; 400 sq. ft. per gallon on metal.



**Skating Rink at Whalom Park, Fitchburg, Mass.**
Roof painted with Cabot's Tile Red Roofing Collopakes

# CABOT'S PRESERVATIVES

## Cabot's "Conservo" Wood Preservative

*Conservo is a penetrating wood preservative.*

It goes deeply into the wood. It sterilizes the bacteria that produce decay and repels ants, borers, termites and all other wood-destroying insects and worms.

**Use Conservo On**—Roof rafters and sheathing; plank walks and flooring; fence posts, piles and poles; bridge and wharf timbers; conduits, culverts and silos; sluiceways and dams; ship and boat planking; sills, stringers and sleepers, and all heavy lumber exposed to rot.

**Specifications**—All woodwork (on the above list) shall be treated with Cabot's Conservo Wood Preservative, with brush [mop] [dipping]. Heat the Conservo for greater penetration.

**Covering Capacity**—One gallon covers 100 to 250 sq. ft. of surface, two coats, depending on character of wood and method of application.

## Cabot's Flexiblac Protective Paint

*An elastic gloss black protective paint for all kinds of iron and steel and other metal work exposed to rust and corrosion.*

It forms a flexible non-scaling film which is proof against electrolysis and the action of nearly all acids and gases.

**Specifications**—All exposed iron and steel shall be painted with Cabot's Flexiblac, two [three] coats. Have surface dry and clean. Remove rust scales with scratch brush or scraper. Apply Flexiblac without heating or thinning.

*Please write us for Color Cards and Samples*

# CORNISH PAINT AND SALES CORPORATION

## High Quality Varnishes, Enamels, Paints and Cement Coatings

7726 South Shore Drive, CHICAGO, ILLINOIS

### Satisfaction in Quality Finishes

The phenomenal success attained by Ar-Ki-Teck Finishes and their enthusiastic acceptance and approval by the architect, contractor and builder is due to the singular combination of extremely quick drying qualities, great durability and the fact that we manufacture *"one grade only of each product—the best possible to produce."*

AR-KI-TECK FINISHES

*The Highest Quality Possible to Produce Regardless of Cost of Production*

### Ar-Ki-Teck Exterior White Enamel Gloss

A combination of the most durable white pigments, heat treated linseed oil and synthetic resins. Gives remarkably lasting qualities. May be tinted to any shade with Ar-Ki-teck Q. D. Tinting Colors. Dries dust free in 6 hours, hard in 48 hours. Covers approximately 600 sq. ft. per gal.

**Specifications**—(1) Prepare surface. Apply Ar-Ki-Teck Primer and Sealer as it comes from the container. (2) Putty all nailholes. Sand lightly with 00 sandpaper and apply Ar-Ki-Teck White Enamel Undercoater tinted a pale shade of final color. (3) Sand lightly with 00 sandpaper and apply Ar-Ki-Teck White Enamel Gloss for Exterior. (May be "water-rubbed" in 60 hours if desired.)

### Ar-Ki-Teck White Por-ce-lin Enamel Finishes

*(Gloss, Soft Gloss, Eggshell, Flat)*

An interior white enamel producing a porcelainlike finish. Made on the highest grade tung oil varnish base. May be tinted any shade. Covers 500 to 600 sq. ft. per gal.

**Specifications**—(1) Prepare surface. Apply Ar-Ki-Teck Primer and Sealer as it comes from the container. (2) Putty nailholes, sand lightly with 00 sandpaper and apply Ar-Ki-Teck Enamel Undercoater, as it comes from the container. (3) Sand lightly with 00 sandpaper and apply Ar-Ki-Teck Por-ce-lin Enamel as it comes from the container. (May be "water-rubbed" in 18 hours.)

### Ar-Ki-Teck White Enamel Undercoater

Prevents suction, seals porous surfaces and contributes a perfect foundation for enamel. Available in white only and may be tinted to suit. Dries over night. Covers 500 sq. ft. per gal.

**Specifications**—Apply one or two coats of Ar-Ki-Teck White Enamel Undercoater as it comes from the container. (For further details see Specifications on Ar-Ki-Teck White Enamel Gloss for Exterior and White Por-ce-lin Enamel Finishes.)

### Ar-Ki-Teck All-purpose Floor Enamel

Impervious to hot and cold water, alkali, alcohol and grease. Comes in twelve opaque colors, four transparent colors and black and white, the latter subject to tinting as desired. Dries dust free in 2 hours and thoroughly over night. Covers 500 to 600 sq. ft. per gal.

**Specifications**—(1) Wood, cement, etc., prime with Ar-Ki-Teck Seal-Rite as it comes from the container. Prime metal with a coat of Ar-Ki-Teck Metal Primer. (2) Putty nailholes, cracks, etc.; sand lightly with 00 sandpaper and apply Ar-Ki-Teck All-purpose Floor Enamel as it comes from the container. For extreme durability apply a second coat after sandpapering lightly.

### Ar-Ki-Teck Marine Spar Varnish

For interiors, or exteriors subject to moisture. Will withstand sunshine, sand and dust storms, fogs and salines. Dries dust free in 2 hours. Covers approximately 700 sq. ft. per gal.

**Specifications**—(1) Apply Seal-Rite Undercoater clear or colored as desired. (2) If filling open grain woods is desired use paste wood filler, same color as Seal-Rite Undercoater. (3) Apply a coat of Ar-Ki-Teck Marine Spar Varnish as it comes from the container. (4) Sand lightly with 00 sandpaper and apply a second coat of Ar-Ki-Teck Marine Spar Varnish. For extreme durability apply a third coat after light sandpapering.

### Pale Ar-Ki-Teck Spar

An exterior and interior varnish, quick drying and durable. Dries dust free in 2 hours and hard enough for walking on in 6 hours.

**Specifications**—(1) Apply a coat of Ar-Ki-Teck Seal-Rite Undercoater; color as desired. (2) If filling open grain woods is desired use paste wood filler. Color same as Seal-Rite Undercoater should be applied. (3) Apply a coat of Pale Ar-Ki-Teck Spar as it comes from the container. (4) Sand lightly with 00 sandpaper and apply a second coat of Pale Ar-Ki-Teck Spar.

### Ar-Ki-Teck Public Building Floor Finishes

Embodies all the requirements of highest grade floor finish for cement, wood, or composition floors. P. B. Floor Finish for regular line of work. P. B. Four Hour Floor Finish for speed in finishing. P. B. Dull Floor Finish for final coat when dull or rubbed effect is wanted. Covers approximately 700 sq. ft. per gal.

**Specifications**—(1) Apply a coat of Ar-Ki-Teck Seal-Rite Undercoater, color as desired. (2) If filling open grain wood is desired, apply paste wood filler the color of the Seal-Rite Undercoater. (3) Apply a coat of Ar-Ki-Teck Public Building Floor Finish as it comes from the container. (4) Sand lightly with 00 sandpaper and apply a second coat of Ar-Ki-Teck Public Building Floor Finish.

### Ar-Ki-Teck Public Building Cabinet Finishes

Equal to any high grade imported or American varnish with the advantage of better drying properties. Pale in color but heavy bodied and impervious to ordinary damaging materials. Dries dust free in 2 hours, hard over night. May be rubbed in 24 hours. Covers approximately 700 sq. ft. per gal.

**Specifications**—(1) Apply a coat of Ar-Ki-Teck Seal-Rite Undercoater, color as desired. (2) If filling of open grain woods is desired, apply paste wood filler the color of the Ar-Ki-Teck Seal-Rite Undercoater. (3) Apply a coat of Ar-Ki-Teck Public Building Cabinet Finish, regular or dull, as it comes from the container. (4) Sand lightly with 00 sandpaper and apply a second coat of Ar-Ki-Teck Public Building Cabinet Finish. For extreme durability apply a third coat after light sanding.

### Ar-Ki-Teck Super-Hiding Flat Wall Paint

A very washable, smooth flowing flat paint available in white only. May be tinted to any shade with Ar-Ki-Teck Q. D. Tinting Colors. Dries overnight. Covers approximately 500 sq. ft. per gal.

**Specifications**—*(Two-coat Work)* (1) Prepare surface and apply Ar-Ki-Teck Primer and Sealer as it comes from the container. (2) Putty nailholes, sand lightly with 00 sandpaper and apply Ar-Ki-Teck Super-Hiding Flat Wall Paint as it comes from the container.

For extreme durability apply a second coat of Ar-Ki-Teck Super-Hiding Flat Wall Paint as it comes from the container.

### Ar-Ki-Teck Super-Hiding Stipple Coat

*(Flat, Semi-gloss, Gloss)*

An easy brushing material which may be stippled immediately. Dries hard and withstands repeated washing. Coverage, 400 to 500 sq. ft. per gal.

**Specifications**—*(Two-coat Work)*—(1) Apply Ar-Ki-Teck White Enamel Undercoater as it comes from the container. (2) Apply Ar-Ki-Teck Super-Hiding Stipple Coat, flat, semi-gloss or gloss as it comes from the container.

*(Three-coat Work)*—(1) Apply Ar-Ki-Teck Primer and Sealer as it comes from the container. (2) Apply Ar-Ki-Teck White Enamel Undercoater as it comes from the container. (3) Apply Ar-Ki-Teck Super-Hiding Stipple Coat as it comes from the container.

### Ar-Ki-Teck Primer and Sealer

*(Damp Wall First Coater)*

This coater, available in white only, will seal any wall, either interior or exterior and is preferable to white lead and oil. Dries over night. Covers approximately 600 sq. ft. per gal.

**Specifications**—Apply one coat of Ar-Ki-Teck Primer and Sealer as it comes from the container.

Investigating Committee of
Architects and Engineers,
New York, New York

Louisville, Ky.
June 28, '37

Att: Mr. R. M. Hooker

Gentlemen:

We are pleased to write you regarding our experience with Ar-Ki-Teck Seal-Rite distributed by Cornish Paint and Sales Corporation—Chicago.

In beginning the manufacture of Parkay Flooring two years ago, we were confronted with the problem of a durable finish to be applied in the factory. After discarding all other types of finishes, due to one or more inherent objections to each, we adopted a procedure involving the use of penetrating oil sealers. We accordingly investigated a number of penetrating sealers, and, after due consideration, adopted Ar-Ki-Teck Seal-Rite in the pre-finishing of Parkay Flooring at our factory. This material is used as the first coat to penetrate and toughen the wood and to increase its durability. We have devised a special procedure for applying this product to get maximum penetration. After sealing the Parkay Flooring, it is filled and waxed in the factory so that it reaches the job completely pre-finished.

The resultant finish has the further advantage that it can be renewed when the floor is worn over limited areas by re-finishing these areas only.

Very truly yours,
WOOD-MOSAIC COMPANY.

Signed: J. J. EGAN,
Vice-President and General Manager.




## AR-KI-TECK SEAL-RITE FLOOR FINISH

**Ar-Ki-Teck Seal-Rite Floor Finish** is equally effective on wood, cork, terrazzo, battleship linoleum and composition floors. It yields a permanent satin or rubbed effect finish, which will not scratch, mar, crack or chip. Ar-Ki-Teck Seal-Rite Floor Finish is economical to apply, easy to maintain, simply and effectively repaired. The floor must be well sanded before applying Seal-Rite Floor Finish.

**Ar-Ki-Teck Seal-Rite Floor Finish No. 36**—For use on end grain woods, cement, cork and open grain woods (oak, walnut, chestnut, mahogany, etc.).

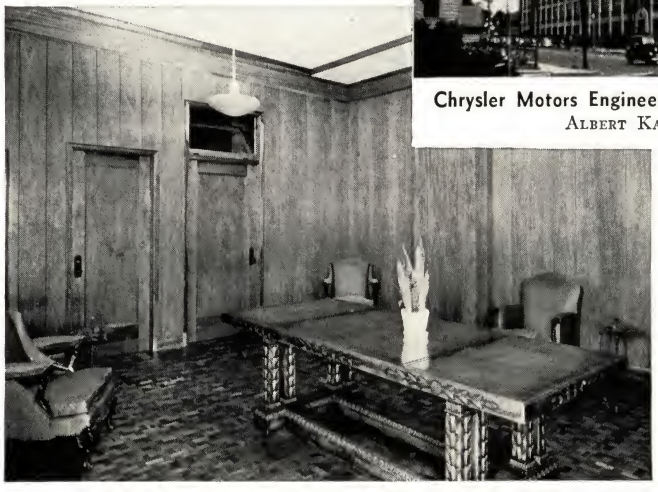
**Ar-Ki-Teck Seal-Rite Floor Finish No. 37**—For terrazzo, linoleum, filled floors and close grained woods (maple, beech, birch, etc.).

**Ar-Ki-Teck Seal-Rite Undercoater**—For use under both Ar-Ki-Teck Seal-Rite No. 36 and 37. Available in clear, black, dark walnut, dark mahogany and dark oak; and may be used as it comes from the container or if a lighter shade is desired add Clear Ar-Ki-Teck Seal-Rite Undercoater until desired color is obtained. A floor may be completely finished in one day's time. 800 sq. ft. per gal. on close grain woods—500 sq. ft. per gal. on open and end grain woods.

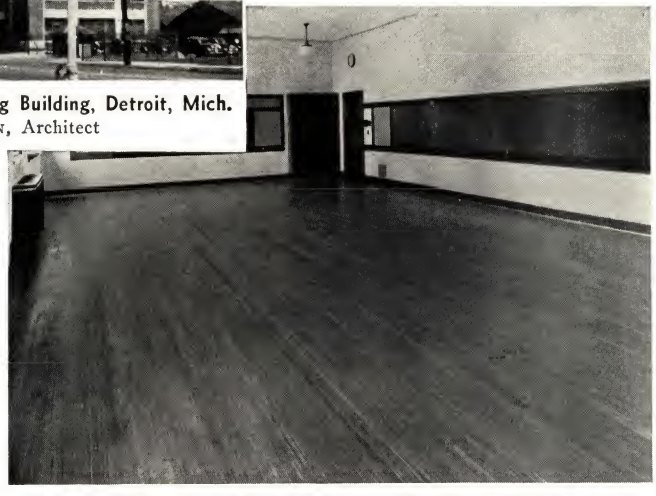
**Specifications for Two-coats**—(1) Apply a liberal coat of Ar-Ki-Teck Seal-Rite Undercoater, clear or colored as desired with mop, brush or cloth, working well into the surface. (2) Apply Seal-Rite Floor Finish No. 36 (open grain wood, etc.) or No. 37 (close grain wood, etc.) after an elapsed time of at least 3 hours. (3) Twenty minutes later wipe off surface thoroughly with clean dry cloths. (4) In 4 hours the floor may be burnished by machine using No. 3 steel wool, or if burnished by hand use No. 00 steel wool. (5) Wax, if desired, with Ar-Ki-Teck Wax. (For extreme durability apply a third coat of Ar-Ki-Teck Seal-Rite Floor Finish prior to waxing.)



**Chrysler Motors Engineering Building, Detroit, Mich.**
ALBERT KAHN, Architect



**Directors Room, Palmolive Building, Chicago, Ill.**
Parkay Prefinished Floor furnished by WOOD MOSAIC CO., Louisville, Ky.



**Classroom of Central School, Marcellus, N. Y.**
CARL W. CLARK, Architect
Seal-Rite used throughout class rooms

*For Complete Details Write for Specification Manual*

# JOSEPH DIXON CRUCIBLE COMPANY

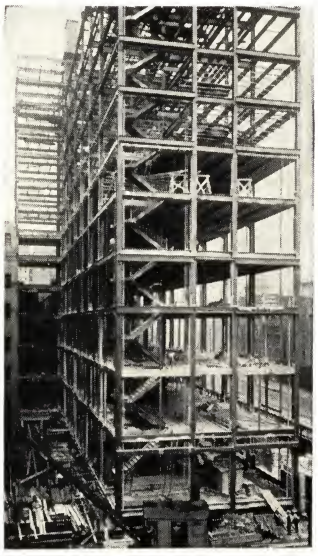
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ESTABLISHED 1827

JERSEY CITY, N. J.

DISTRICT SALES OFFICES

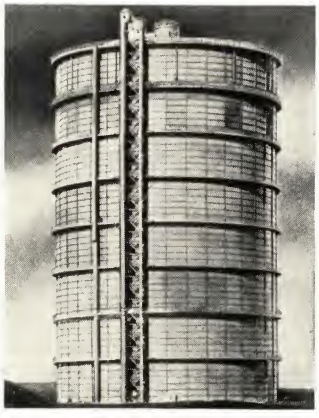
BOSTON, MASS., 80 Federal Street  CHICAGO, ILL., 111 West Washington Street (Room 1708)  SAN FRANCISCO, CAL., 444 Market Street



For Structural Steel



For Water Tank



For Gas Holder

## DIXON'S PAINTS

INDUSTRIAL PAINTS *(Flake Silica-Graphite)*—Red Lead Graphite Primer and colors.
ALUMINUM PAINTS—Bright Aluminum; Extra Brilliant Aluminum Bronze Powder; Heat-resisting Aluminum; Aluminum Sealer; Hi-Brilliant Aluminum Paste.
HEAT RESISTING PAINTS; MAINTENANCE FLOOR PAINTS; MACHINERY ENAMELS; SPECIAL COATINGS; DIXSPAR VARNISHES.
TECHNICAL and SPECIAL PAINT DEVELOPMENTS.

For over 100 years the business of the JOSEPH DIXON CRUCIBLE COMPANY has followed every ramification of graphite use with every known grade and form of graphite passing through its laboratories.

The company is, therefore, in position to select and use that kind of graphite best suited to any particular purpose. That this selection is made with the utmost care and with due regard to the purpose for which the graphite is intended is evidenced by the high character and quality of Dixon's products generally and the popularity of *Dixon's Paints* in widely diversified fields.

## DIXON'S INDUSTRIAL PAINTS
### (Flake Silica-Graphite)

### How Dixon Discovered the Value of Flake Graphite as a Paint Pigment

Over eighty years ago, alterations in the mining plant of the JOSEPH DIXON CRUCIBLE COMPANY at Ticonderoga, N. Y., resulted in the removal of a large amount of good machinery. As it was necessary to store it out of doors and protect it from rusting, the superintendent proceeded to paint it with a mixture of oxide of iron and linseed oil. The supply of oxide giving out, he thought to use some of the *flake silica-graphite* which was a product of the plant.

Three years after, examination of the surface showed that, though still intact, the oxide of iron paint had become exceedingly dry and brittle, while the *flake graphite* paint had, to a wonderful extent, retained its original toughness and elasticity. *On many pieces the paint remained in good condition for eighteen years.*

We use today basically the same material used in this trial so long ago, and never have we found any cause to change our views as to its absolute superiority as a protective coating on wood and metal surfaces.

### Flake Silica-Graphite Is Favored by the United States Department of Commerce

The United States Department of Commerce, Bureau of Mines, Information Circular No. 6123, May 1929, under caption "Pigments and Paints," commends the use of *flake silica-graphite* as a paint pigment because of its opacity and great resistance to deterioration. This statement literally substantiates the claims made by the JOSEPH DIXON CRUCIBLE COMPANY respecting wearing and protective qualities of Dixon's Industrial Paints in which the pigment used is *flake silica-graphite.*

### Properties of Flake Silica-Graphite

As a paint pigment, *flake graphite* is absolutely inert. It is not affected by the action of even the strongest acids or alkalis. It does not undergo any chemical change in use and will not affect the natural resiliency of the oil vehicle.

Natural *flake* graphite, however, needs something to give it "tooth" and brushing property and for that reason we call on the aid of *silica.* The peculiarity of Dixon's *Silica-Graphite* Paint is that the silica is mined with the graphite and is largely an integral part of the graphite itself.

Silica is sometimes used as a paint pigment but it has no covering power and is hard, rough and non-covering while graphite is soft, unctuous and opaque.

Combined, *silica* and *flake graphite* are two superlative paint pigments possessing in the greatest possible degree those most necessary characteristics—inertness and low specific gravity. But to be perfect, each needs just that amount of improvement which the presence of the other affords.



Newark Bay Bridge, Central R. R. of New Jersey

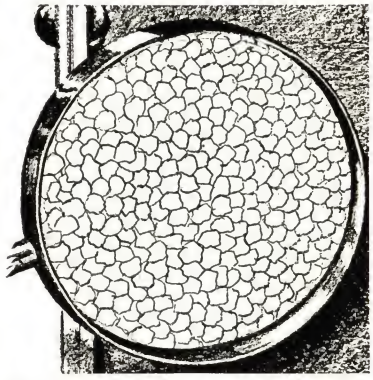
D X N TRADE MARK

### Why Dixon's Industrial Paints Provide Assurance of Lowest Cost Per Year of Service

These paints have a pigment of *flake silica graphite.* Of all paint pigments graphite, from the standpoint of conditions surrounding any paint job, is the most inert. It is entirely stable to all elements of chemical corrosion found in paint exposure. It is non-reactive to fumes, acids, cold, heat or the actinic rays of the sun. Plus this, *flake silica graphite* has the unique property of water repellency, due not alone to its unctuous character but to its flake structure as well. Cemented together by a tough elastic "skin" of pure boiled linseed oil, these flakes give to Dixon's Industrial Paints a striking resemblance to nature's own best protection against water—the scales of a fish.

The Dixon Company is the largest producer, importer and refiner of graphite. Graphite has a thousand and more uses, yet in every instance grade, fineness and properties of the graphite selected are determined by the needs and conditions to be met.

Aside from over 110 years of manufacturing experience, knowledge of graphite paint pigments accruing from extensive Dixon research projects plays an important part in the toughness and long life of Dixon's Industrial Paint. This experience and knowledge go into every gallon of paint processed by Dixon.



**Flat Flakes of Silica-Graphite Overlap Like the Scales of a Fish**

Cemented together by a tough elastic "skin" of pure boiled linseed oil, these flakes give to *Dixon's Industrial Paints* a striking resemblance to nature's own best protection against water—the scaled armor of a fish.

### Where the Use of Dixon's Industrial Paint Is Recommended

*For finishing outdoor metal and wood surfaces where unusual wear or climatic conditions present a disturbing maintenance problem.* These paints are waterproof in the rigid sense of the word. Changes in temperature do not affect them.*

**For Protecting—**

| | |
|---|---|
| Structural Steel | Coal Tipples |
| Water Conduits | Iron Fences |
| Grain Elevators | Lamp Posts |
| Roofs | *Smokestacks |
| Bridges | Marine Work |
| Boilers | Steel and Wood Barges |
| Gas Tanks | Condensers |
| Standpipes | Transformers |
| Oil Tanks | Excavating and Hauling Machinery |
| Tank Cars | |
| Water Tanks | Gas Holders |

**The high heat resistance of Dixon's Paints has been recognized for generations.*

### Covering Capacity

Dixon's Industrial Paints are strong in covering power and have a spreading capacity of 550 to 600 sq. ft. to the gallon.

For Color Chips, See Page 7

## DIXON'S RED LEAD GRAPHITE PRIMER No. 101

Composed of red lead, *flake silica-graphite,* a high grade oxide of iron and tested boiled linseed oil. This primer meets all requirements because of its great adhesion to metal, its moisture repellency and its long life.

The unctuous quality of the *flake graphite* prevents "dragging" and destruction of brushes. Because of the nature of its pigment and vehicle, this primer will not become hard and brittle with resultant chipping and scaling, but retains its elasticity.

Having a covering capacity of about 575 sq. ft. to the gallon, it is most economical either from the standpoint of cost per gallon or cost per square foot year of service.

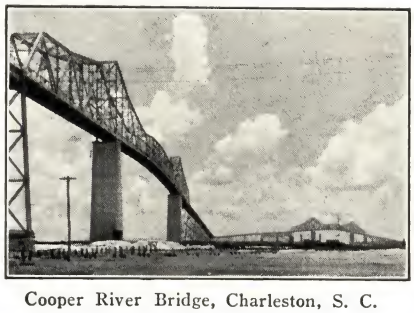
A metal surface finished with a coat of Dixon's Red Lead Graphite Primer No. 101, followed by two coats of Dixon's Industrial Paint *(flake silica-graphite)* will have the best of protection for an average period of 9 years, without renewal. It must be recognized, however, that this result in the individual case is subject to prevalent conditions.

Hundreds of testimonials submitted by engineers, chemists, contractors, etc., substantiate this claim.

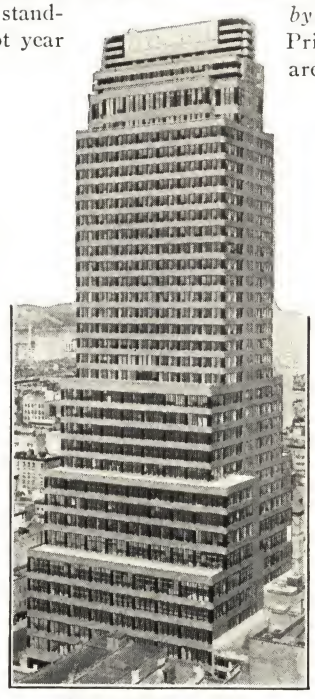
With many railroads whose paint selections are governed *by their own formulations,* Dixon's Red Lead Graphite Primer is the standard or the approved alternate, as are Dixon's Industrial Paints *(flake silica-graphite).*



Florianapolis Bridge, South America



Cooper River Bridge, Charleston, S. C.



McGraw-Hill Building, New York, N. Y.



Newark Bay Bridge, C. R. R. of N. J., Newark, N. J.



Suisun Bridge, San Francisco, Cal.

**Dixon's Industrial Paints Protect the Structures Illustrated Above**

# DIXON'S ALUMINUM PAINTS

Dixon's Aluminum Paints have won general acceptance because of their brilliancy, waterproofness, long life and covering capacity. In these paints a tough marine spar varnish is used which is unexcelled for resistance to wear. Having excellent durability these paints render exceptional service combined with attractive appearance on exposed work of all kinds.

## TYPES OF EQUIPMENT AND SURFACES FOR WHICH DIXON'S ALUMINUM PAINTS ARE RECOMMENDED

Gas Holders
Bridges
Hydrants
Grain Elevators
Iron Fences
Machinery
Mining Equipment
Trolley Poles
Smokestacks
Towers
Tank Cars
Oil and Gasoline Storage Tanks
Refrigerator Cars
Guide Frames
Lamp Posts
Generators
Silos
Purifiers
Pipe Lines
Derricks
Mail Boxes
Fire and Rolling Doors
Engine and Boiler Room Equipment
Steam Pipes
Laundries
Metal Sash
Structural Steel
Signs
Priming Coat on Wood
Marine Work
Grilles and Ornamental Iron
Interior Decoration
Window Frames
Roofs
Gutters
Leaders
Standpipes




### Dixon's Bright Aluminum No. 113

*(Ready Mixed)*

The vehicle used is a waterproof marine spar varnish having great resistance to the elements, insuring life and brightness to the *straight aluminum pigment.*

This paint will not dull or discolor with the readiness of ordinary aluminum paints nor will its pigment precipitate as rapidly. Mixes easily at all times.

### Dixon's Bright Aluminum No. 113-A

*(Duplex Container)*

This paint differs from Dixon's Bright Aluminum No. 113 only in the fact that the aluminum paste and the vehicle are furnished in separate compartments of duplex containers. Aluminum powder will be supplied in place of paste, if desired. Both pigment and vehicle meet all Federal and State specifications.

### Dixon's Aluminum-Graphite Paint

Prepared with the same care as our other *flake silica-graphite* paints, it has established a reputation for quality and durability.

The pigment is flake aluminum and *flake silica-graphite.* The similar structure of the flakes permits them to lap one over the other like fish scales, forming a film of great elasticity and durability. So closely do they overlap that it is impossible for moisture to penetrate to the undersurface. The vehicle is the same as that used in Dixon's Bright Aluminum Paint.

Gases, acids, smoke and other deteriorating influences have practically no effect on Dixon's Aluminum-Graphite Paint. It is also highly resistant to the elements. Its unusual durability is due to the *overlapping of the flakes in a bond of durable spar varnish.* Because of the *flake graphite* component, it brushes easily and covers solidly in one coat. Supplied in two shades—*Light No. 111,* and *Dark No. 109.*

### Dixon's Extra Brilliant Aluminum Bronze Powder No. 88

This product is guaranteed to be chemically pure and of the highest quality as an ingredient for paint and enamel. It meets the rigid specifications of Federal, State and Municipal departments and conforms in chemical analysis with A.S.T.M. standards (D-266-28T). Also Navy Department Specification 52-A1C, War Department Specification 3-44B and Federal Board TT-A-476.

We particularly recommend Dixspar Aluminum Vehicle as a mixing varnish with this powder. It is tough, elastic and waterproof and may be used on steel, wood, cement, and composition surfaces. Meets all Federal specifications, Further information concerning Dixspar Aluminum Vehicle will be found on page 8.

### Heat Resisting Aluminum Paint No. 226-A

For metal surfaces where heat exceeds 375°F., No. 226-A provides a permanent, brilliant and attractive finish that will withstand rigors of intense heat up to 850° F.

Furnished in duplex containers—all sizes. Also in drums with aluminum pigment separate.

### Dixon's Aluminum Sealer

A priming and sealing coat (clear) for plaster, brick, concrete, stucco and composition surfaces where an aluminum finish is desired.

Dixon's Aluminum Sealer stops suction and insures maximum satisfaction when used as an undercoat for Dixon's Bright Aluminum No. 113 or 113-A.

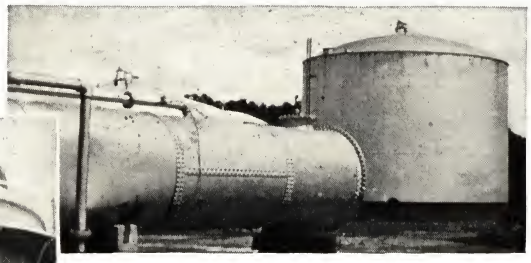
### Dixon's Hi-Brilliant Aluminum Paste No. 400

Of extremely fine texture, this paste, when mixed with Dixspar Aluminum Vehicle, produces an unusually brilliant and solid covering paint.

Hi-Brilliant Paste has distinct advantages over aluminum powder from the standpoint of brilliancy of finish, economy and sanitation.

### Dixon's Aluminum Paint in the Oil and Gas Industry

The use of Dixon's Aluminum Paints has become standard practice with many of the foremost companies in this field. The value of aluminum as a protective paint and its ability to lessen evaporation losses thru heat deflection is well established. This was conclusively demonstrated by the results (shown below) of a test recently conducted by a leading oil company of Texas.







| Medium | Rise in degrees, F. |
|---|---|
| Tin Plate | 19.8 |
| Aluminum Paint (Varnish Vehicle) | 20.5 |
| Aluminum Paint (One-half lead or zinc and one-half aluminum powder) | 20.8 |
| White Paint | 22.5 |
| Light Cream Paint | 23.0 |
| Light Pink Paint | 23.7 |
| Light Blue Paint | 24.3 |
| Light Gray Paint | 26.3 |
| Light Green Paint | 25.6 |
| Red Iron Oxide | 29.7 |
| Dark Prussian Blue | 39.9 |
| Black Paint | 54.0 |

*In addition to very important savings achieved through reduced evaporation, Dixon's Aluminum Paints provide an attractive appearance and insure long life to the equipment.*

# SPECIFICATIONS FOR USE OF DIXON'S INDUSTRIAL PAINTS
## (Flake Silica-Graphite and Aluminum Paints)

These specifications, based on our experience of over 80 years in the manufacture of metal paints, are placed before architect and engineer with assurance that in adopting them, they may feel confident of satisfactory results.

Dixon's Industrial Paints *(flake silica-graphite)* are recognized the world over for durability and in specifying them the architect or engineer insures for his client protection of the steel and iron work at minimum maintenance cost.

It is significant that the General Specification issued by the Treasury Department April 2nd, 1934, provides for use of *flake silica-graphite* paint for protection of structural steel; also, that of the War Department in Specification No. 3-49A, May 29, 1934, requiring use of *flake silica-graphite* paint for protection of structural steel and iron surfaces.

**SPECIFICATION INDEX**

Steel Bridges .....*No. 1*
Structural Steel .....*No. 2*
Bright Aluminum on Exposed Interior or Exterior Steel Surfaces.....*No. 3*
Miscellaneous Iron, Ornamental Iron, Steel Partitions, Steel Windows, Kalamein Work, etc.....*No. 4*
Bright Aluminum for Walls, etc.....*No. 5*
Water Tanks, Smokestacks, Gas Holders, Power Plant Equipment, etc.....*No. 6*
Wire Work .....*No. 7*
Maintenance Painting .....*No. 8*

*(For Color Chips, see page 7)*

### General Conditions

**Materials**—All paint materials shall be delivered to the building site in the original unbroken containers bearing the manufacturer's stamp or label thereon.

The top of the container shall be removed only on the site of the work, and the paint properly stirred before being used.

The use of adulterants at any stage of the work is strictly prohibited, nor shall materials be thinned or changed in any way other than specified.

**Workmanship**—All materials shall be applied by skilled mechanics. Paint shall be evenly spread and thoroughly brushed out. All workmanship shall be executed in accordance with the best practices.

All surfaces to be painted shall be dry and free from rust, dirt, cement, grease, oil, scale, and other foreign matter.

No paint shall be applied until the preceding coat is thoroughly dry.

---

*Specification No. 1*

### Steel Bridges

**Shop Coat**—All steel work, including iron and cast steel, shall be thoroughly cleaned of all scale, rust, dirt, grease and other foreign substances and shall be given a shop coat of Dixon's Red Lead Graphite Primer No. 101. Where surfaces of riveted work come in contact they shall be painted with the same material before being assembled.

**Field Coat**—After erection all damaged surfaces of shop coat, all shop marks, rivets, bolts, etc., shall be touched up with Dixon's Red Lead Graphite Primer No. 101. A first field coat of Dixon's Industrial Paint of [*approved color*] shall then be applied. After the first coat is thoroughly dry, a second field coat of Dixon's Industrial Paint shall be applied of [*approved color*], a different shade to be observed between coats to insure proper coverage.

*Specification No. 2*

### Structural Steel

**Shop Coat**—All structural steel work before leaving the shop shall be cleaned of all scale, rust, dirt, grease or other foreign substances and shall be given one shop coat of Dixon's Red Lead Graphite Primer No. 101. Where surfaces of riveted work come in contact they shall be painted with the same material before being assembled.

**Field Coat**—After erection all damaged surfaces of shop coat, all shop marks, rivets, bolts, etc., shall be touched up with Dixon's Red Lead Graphite Primer No. 101, and then all encased surfaces of the steel work shall be given a coat of Dixon's Black Paint *(Alkali Resisting)* No. 333.

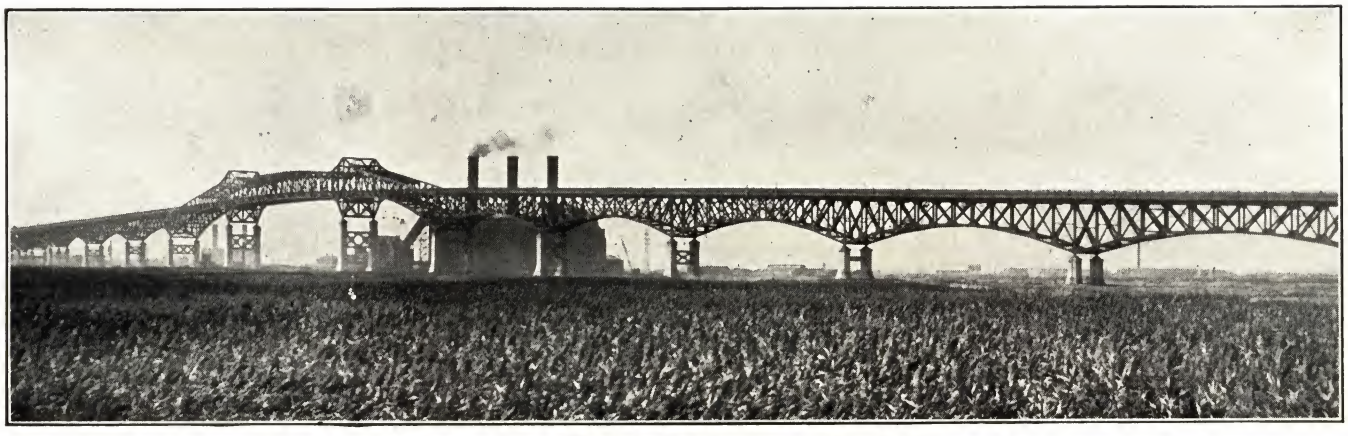
**Miscellaneous**—All grillage shall receive one coat of Dixon's Red Lead Graphite Primer No. 101, followed by one coat of Dixon's Black Paint *(Alkali Resisting)* No. 333 before setting.

*Specification No. 3*

### Bright Aluminum on Exposed Interior or Exterior Steel Surfaces

**Shop Coat**—All steel work before leaving the shop shall be cleaned of all scale, rust, dirt, grease or other foreign particles and shall be given one shop coat of Dixon's Red Lead Graphite Primer No. 101. Where surfaces of riveted work come in contact they shall be painted with the same material before being assembled.

**Field Coat**—After erection all damaged surfaces of shop coat, all shop marks, rivets, bolts, etc., shall be touched up with Dixon's Red Lead Graphite Primer No. 101, and then all surfaces of steel work shall be given two coats of Dixon's Bright Aluminum No. 113 *(ready mixed)* or Dixon's Bright Aluminum No. 113-A *(pigment and vehicle separate)*.



**Span of Route 25 Bridge Over Hackensack River, N. J.**
Primed and finished with Dixon's *Silica-Graphite* Paints

*Specification No. 4*

## Miscellaneous Iron, Ornamental Iron, Steel Partitions, Steel Windows, Kalamein Work, Etc.

**General**—Before shop coat is applied, all steel and iron work shall be thoroughly cleaned of all scale, rust, dirt, grease or other foreign particles. Before the field coat is applied all damaged surfaces of shop coat, all shop marks, rivets, bolts, etc., shall be retouched with the same material used for shop coat, which is to be Dixon's Red Lead Graphite Primer No. 101.

**Miscellaneous Iron**—All miscellaneous iron work, such as steel lintels, steel bucks, anchors, brackets, etc., shall receive one shop coat of Dixon's Red Lead Graphite Primer No. 101, and one field coat of Dixon's Industrial Paint of [*approved color*].

**Ornamental Iron**—All ornamental iron, such as railings, fencing, window grilles, flagpoles, etc., shall receive one shop coat of Dixon's Red Lead Graphite Primer No. 101, and one field coat of Dixon's Industrial Paint of [*approved color*].

**Steel Partitions**—Steel partitions, such as metal toilet partitions, etc., shall receive one shop coat of Dixon's Read Lead Graphite Primer No. 101, and two coats of Dixon's Olive Green No. 110.

**Steel Windows**—Steel windows shall receive one shop coat of Dixon's Red Lead Graphite Primer No. 101, and one field coat of Dixon's Industrial Paint of [*approved color*].

**Kalamein Work**—All kalamein work shall receive one shop coat of Dixon's Red Lead Graphite Primer No. 101 and one field coat of Dixon's Industrial Paint of [*approved color*].



**Painting the Menai Bridge with Dixon's Industrial Paint**

This old English suspension bridge carries the Holyhead road from Bangor over the Menai Straits in North Wales. Designed by T. Telford and completed in 1826, it serves to perpetuate the fame of this pioneer bridge builder, and it is significant that *Dixon's Industrial Paint* has again been chosen to protect it against the elements

*Specification No. 5*

## Dixon's Bright Aluminum for Walls, Etc.

*Note:* Dixon's Bright Aluminum No. 113 is highly recommended for the interiors of *workrooms* and *industrial buildings* because of its light reflecting qualities. It does not tarnish, is not affected by fumes, and can be washed with soap and water.

**Priming Coat**—All plaster (or concrete) surfaces of walls, columns and ceilings shall receive a coat of Dixon's Aluminum Wall Sealer.

All metal surfaces shall be primed with Dixon's Red Lead Graphite Primer No. 101.

**Aluminum Coats**—After the wall sealer has been allowed sufficient time in which to dry hard and tack-free all plastered (or concrete) surfaces of walls, columns and ceilings and all wood and metal trim and doors shall be painted with two coats of Dixon's Bright Aluminum No. 113.

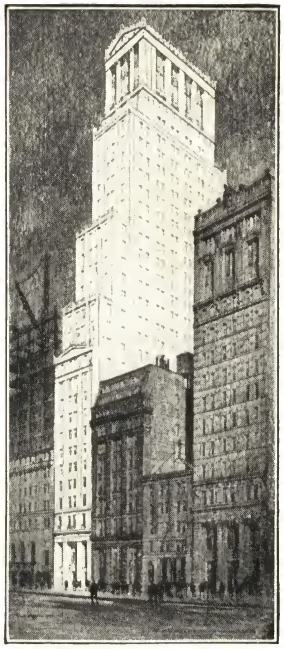
*Specification No. 6*

## Water Tanks (Exteriors)*, Standpipes, Smokestacks,* Gas Holders, Power Plant Equipment, Etc.

**Shop Coat**—All steel work, including cast iron and cast steel, shall be thoroughly cleaned of scale, rust, dirt, grease and other foreign substances and shall be given one shop coat of Dixon's Red Lead Graphite Primer No. 101.

Where surfaces of riveted work come in contact they shall be painted with the same material before being assembled.

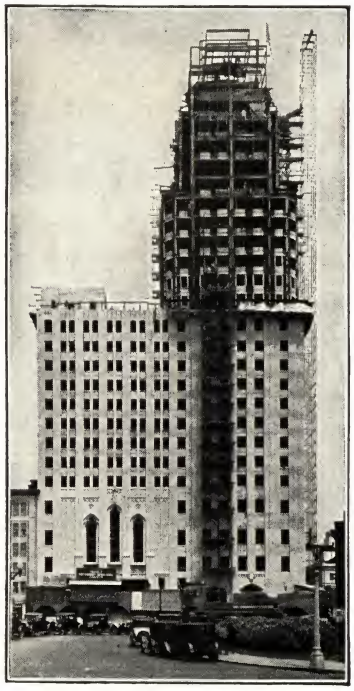
*See page 6 for Water Tank Interiors and note on Smokestacks.



**National City Company, New York, N. Y.**
McKim, Mead & White, Architects
Geo. A. Fuller Co., Contractors



**Equitable Trust Company, New York, N. Y.**
Trowbridge & Livingston, Architects
Thompson, Starrett Co., Contractors



**Hotel and Temple M. E. Church, San Francisco, Cal.**
Lewis P. Hobart, Architect
McClintic-Marshall Co., Contractors

*For Color Chips, see page 7*

**Field Coat**—After erection all damaged surfaces of shop coat, all shop marks, rivets, bolts, etc., shall be touched up with Dixon's Red Lead Graphite Primer No. 101. A first field coat of Dixon's Industrial Paint of [*approved color*] shall then be applied. After the first coat is thoroughly dry, a second field coat of Dixon's Industrial Paint shall be applied of [*approved color*], a difference in shade to be observed between coats to insure proper coverage.

*Water Tank Interiors:* The Dixon system of painting water tank interiors, devised 75 years ago, comprises a first (priming) coat of Dixon's Dark Red No. 103 followed by one coat of Dixon's Natural No. 107. These paints are non-toxic, tasteless, non-discoloring and waterproof, prerequisites if the tank is to contain potable water. (*Exteriors and Towers,* see Specification No. 1.)

*Note:* For smokestacks and other heated surfaces we recommend Dixon's Black No. 108, or Dixon's Natural No. 107. Both paints will effectively withstand heat. In repaint work two coats are required for best results, and on new work, three coats, including the priming coat (Dixon's Red Lead Graphite Primer No. 101). If the heat exceeds 350° F., Dixon's Heat Resisting Black-"Formula A" is recommended.

## *Specification No. 7*
### Wire Work

All uncoated wire work, including frames, fixtures, etc., shall receive one coat of Dixon's Red Lead Graphite Primer No. 101, and two coats of Dixon's Bright Aluminum No. 113.

All galvanized iron wire work shall receive one coat of Dixon's Red Lead Graphite Primer No. 101 and two coats of Dixon's Bright Aluminum No. 113.

## *Specification No. 8*
### Maintenance Painting

**Cleaning**—All broken or blistered paint, all rust, grease and dirt, must be removed by wire brushes, scrapers, blow-torch, or by sandblasting with fine sand. *(The method to be selected and made part of the contract.)*

**Repainting**—After this preparatory work, exposed parts of the surface to be primed or "spot-coated" (*as the condition may warrant*) with Dixon's Red Lead Graphite Primer No. 101. All surfaces shall then be given one coat of Dixon's Industrial Paint of [*approved color*]. The second coat to be applied when the first is thoroughly dry and to be different in color to insure proper coverage. Surfaces must be perfectly dry when painting is in process.

**Galvanized Iron or Tin Roofing**—Before Dixon's Industrial Paint is applied to a new galvanized iron roof, the surface should be thoroughly scoured with a solution of sal-soda. When dry, a first coat of Dixon's Red Lead Graphite Primer No. 101 should be applied, followed by a second and third coat of Dixon's Industrial Paint of [*approved color*].

*Note:* The same qualities which make Dixon's Industrial Paints so efficient for other exposed surfaces account for their great protection to roofs—a chemically inert pigment and a linseed oil vehicle. We recommend three coats for new metal roofs—the first coat to be Dixon's Red Lead Graphite Primer No. 101 followed by two coats of Dixon's Industrial Paint. On previously painted metal roofs, two coats of Dixon's Industrial Paint is sufficient. This paint is also suitable for canvas and shingle roofs. Where shingles are dry, they should receive a first coat of linseed oil, otherwise they will quickly absorb oil from the paint, leaving the pigment without sufficient binding material. Use Dixon's Light or Dark Green for beautifying effect or Dixon's Natural Color for slate effect.

## A FEW STRUCTURES ON WHICH DIXON'S INDUSTRIAL PAINTS WERE USED

Dixon's Industrial Paints have been successfully used in all climates. They have withstood the rapid temperature changes of the Atlantic States and the Middle West and have been used with equally good results in the dry areas of the South and Far West.

The following list of a few prominent buildings in various cities over a wide area, attests the confidence placed in Dixon products by leading American architects and engineers.

They are backed by a reputation gained through more than 80 years of paint making and are accorded recognition for their long-lasting qualities and for their low cost per year of service.

We have prepared an interesting booklet containing the names of hundreds of buildings—*commercial, industrial* and *governmental* structures—on which Dixon's Paints are used. A copy will gladly be furnished on request.

ALBANY, N. Y.
Ten Eyck Hotel and Addition

ALLENTOWN, PA.
Y. M. C. A. Bldg.

ATLANTA, GA.
Atlanta Terminal
Southern Bell Tel. & Tel. Co. Bldg.

BALTIMORE, MD.
Baltimore City Docks
Fidelity Title & Trust Co. Bldg.
First National Bank Bldg.
C. R. Ross & Co. Warehouse
Trinity Church

BAYONNE, N. J.
American Radiator Co. Plant
Babcock & Wilcox Co. Plant

BETHLEHEM, PA.
Bethlehem Steel Co. Bldgs.

BOSTON, MASS.
Boston Terminal Trainshed
Copley-Plaza Hotel
Shawmut National Bank Bldg.

BROOKLYN, N. Y.
Bush Terminal Bldg.
N. Y. Dock Co. Warehouse
St. George Hotel
Williamsburg Trust Co. Bldg.

BUFFALO, N. Y.
New York Telephone Bldg.
State Normal School Bldg.

CAMDEN, N. J.
Victor Co. Building No. 7
Y. M. C. A. Bldg.

CHARLESTON, S. C.
Union Station

CHICAGO, ILL.
Field Building
Fair Department Store
Marshall Field Co. Warehouse

CLEVELAND, OHIO
City Hall
Willys-Overland Co. Bldg.

GALVESTON, TEX.
Tyler High School

HACKENSACK, N. J.
Public Service Bldg.

JERSEY CITY, N. J.
Hudson County Court House
Colgate Bldg.
National Grocery Co. Warehouse

NEWARK, N. J.
American National Bank Bldg.
City Hall
Normal School Bldg.

NEW YORK, N. Y.
Over 150 prominent structures

PHILADELPHIA, PA.
N. W. Ayer & Son Bldg.
Link-Belt Co. Bldg.
Ritz-Carlton Hotel
West Philadelphia Armory

PITTSBURGH, PA.
Oliver Iron & Steel Co. Bldg.
Victoria Theatre
Wabash & Pittsburgh Train Shed and Terminal Bldgs.

SAN FRANCISCO, CAL.
State Capitol Bldg.
J. A. Roebling & Son's Bldg.
Wells Fargo Express Co. Bldg.

*(An additional list of 850 well known buildings protected with Dixon's Paints will be forwarded on request)*

## DIXON'S HIGH HEAT RESISTING PAINTS

Recommended for metal surfaces where heat exceeds 350° F. Dixon's Hi-Heat Resisting Paints are made in four service colors only—*Heat Resisting Black, Gray HR, Aluminum-Graphite HR and Aluminum No. 226-A.*

It is not possible to produce a wide color range in paints of this type all with equal durability and color permanence. Hence, the limited selection of three somber shades and one brilliant aluminum.

Should you be confronted by special or technical difficulties, it is suggested that you communicate with our Paint Sales Division, Engineering Dept., outlining your problem. Recommendation will gladly be made.

## DIXON'S MACHINERY ENAMELS

Made for rough "heavy duty" service. The pigments are ground in paste form in steel roller mills until perfect enamel fineness has been achieved. The vehicle is a full-bodied Bakelite varnish which, when mixed with the paste color pigment, produces a solid covering one-coat enamel of great toughness as well as smoothness.

These enamels are unaffected by water, oils, grease or the caustic soaps and compounds usually applied in cleaning.

They are resistant to fume and acid conditions.

Vibration does not reduce their long-wearing qualities.

Dixon's Machinery Enamels are recommended for machines and all types of operating equipment, as well as for pipe lines, fireboxes, hydrants, radiators, etc.

Made in 10 standard shades (color chart on request) which permits a broad selection for color schemes and identification markings. Special shades to order.

*Note:* For surfaces having a heat in excess of 350° F. Dixon's Hi-Heat Resisting Paints, described above, should be used.

## DIXON'S INDUSTRIAL PAINTS



Red Lead Graphite Primer—No. 101

Standard Oxide Red—No. 114

Dark Red—No. 103

Extra Light Gray—No. 102

Battleship Gray—No. 104

Medium Gray—No. 105

Light Gray—No. 106

Dark Gray (Natural)—No. 107

Black—No. 108

Extra Light Green—No. 115

Light Green—No. 110

Dark Green—No. 112

Aluminum-Graphite (Dark)
No. 109

Aluminum-Graphite (Light)
No. 111

Bright Aluminum
No. 113—Ready-mixed
No. 113A—Duplex Container

## DIXON'S MAINTENANCE FLOOR PAINTS



Dustproof

Mahogany Red

Tile Red

Light Gray

Rich Brown

Oak

Dark Gray

Special Tan

Standard Green

## DIXSPAR VARNISH



# DIXON'S MAINTENANCE FLOOR PAINTS

## All-purpose Floor Enamels

Dixon's Maintenance Floor Paints are all-purpose enamels for use on

| | |
|---|---|
| *Concrete* | *Linoleum* |
| *Composition* | *Wood* |

in factories, garages, hotels, public buildings, steamships, hospitals, laboratories, railway cars and every place where a protective durable floor coating is required.

They are designed for maximum durability, the special vehicle used being properly balanced to give this result.

These paints are solid covering and heavy bodied so that a satisfactory job can be had in a two-coat operation.




## Prevent "Dusting" of Cement Floors

Dixon's Maintenance Floor Paints withstand the disintegrating action of the alkali in cement and concrete and effectually prevent "dusting."

They are not affected by hot, cold, fresh, salt or soapy waters, oil, alkali or dirt, and give service over a long period despite severe conditions and extraordinary wear.

They dry in six to eight hours, thereby facilitating work which heretofore has been subject to irritating delays because of slow drying paint.

## Colors

| | | |
|---|---|---|
| Mahogany Red | Dustproof | Dark Red |
| Special Tan | Light Gray | Tile Red |
| Standard Green | Rich Brown | Oak |

*See Color Chips page 7*

## For Inside or Outside Use

Dixon's Maintenance Floor Paints may be used inside or outside and are particularly adapted to withstand the rigorous action of climatic changes, sleet, rain and salt water to a remarkable degree.

Because of their "all-purpose" characteristics Dixon's Maintenance Floor Paints have met the rigid standards of the marine trade which may be taken as an indication of their excellent quality.

They have also found unqualified acceptance in the industrial and railroad fields where service conditions are, as a rule, particularly severe.

## Specifications

[All cement floors, steps, platforms and wall bases] [All composition floors, steps, platforms and wall bases] [All wood floors] shall receive two coats of Dixon's Maintenance Floor Paint, of [*approved color*].

All surfaces to be painted shall be thoroughly cleaned before the paint is applied.

*Note:* To insure satisfactory performance, Dixon's Maintenance Floor Paint should not be applied to cement surfaces until at least three months after installation. A cement surface must be thoroughly dry for best results.

# DIXSPAR EXTERIOR AND FLOOR VARNISHES AND ALUMINUM VEHICLE

## Dixspar Bakelite Varnish

Drying in three to four hours, this varnish has durability, water-proofness and alkali resistance unequalled by any of the old time "oil" varnishes. Its toughness and immunity to abrasive action represents an advance beyond the highest standards known to the paint industry until very recently.

Its resistance to foot-traffic, brine, boiling oil and water gives rare testimony to its remarkable qualities as an all-purpose varnish.

This varnish may be used on boats, floors, table tops or on any other surface where durability is a factor. Used as an aluminum vehicle it assures maximum protection and attractiveness.

## Dixspar Exterior Varnish

A quality varnish unsurpassed for durability and waterproofness, Dixspar Exterior is extremely elastic and its use is especially recommended on outdoor surfaces that are subjected to rigorous climatic conditions or wear.

It will provide a tough protective film on boats, table tops, floors (where rapid drying is not essential), exposed signs, porch ceilings (wood), sporting equipment, etc.

**Directions for Use**—Dixspar Exterior flows out smoothly and freely requiring very little brushing, permitting the application of a heavy coat. It is sufficient to draw the brush over the surface two or three times in opposite directions; the final stroke being lengthwise with the panel or grain of the wood.

When used outdoors, Dixspar Exterior should not be applied over shellac. If the surface requires "filling" a good oil or varnish filler should be used, followed by two coats of Dixspar Exterior.

***New Woodwork***—Apply filler of desired color and follow with two full coats of Dixspar Exterior, allowing 12 to 15 hours between coats for thorough drying.

***Close Grained Woods (New)***—Fill with oil or varnish filler and follow with two full coats of Dixspar Exterior allowing 18 to 20 hours between coats for drying.

***For Stain Work***—Apply stain to the natural wood and after it is thoroughly dry, smooth down with fine steel wool and apply two coats of Dixspar Exterior.

***For Velvet or Eggshell Finish***—On all such work as previously described on which a velvet or eggshell finish is desired, allow the final coat of Dixspar Exterior 48 hours for drying, and rub down with pumicestone and water. If a polish is desired, use rottenstone and oil, but wait until several days have elapsed before this final operation—this permits the film of Dixspar to dry stone hard.

## Dixspar Floor Varnish

Dixspar Floor, in addition to being rapid drying, has excellent waterproof qualities and provides adequate protection even where the surface undergoes hard usage. It withstands heavy foot traffic and it is this characteristic that recommends Dixspar Floor for use on trim, furniture, linoleum, doors and natural wood surfaces throughout the building.

**Directions for Use**—Dixspar Floor should not be applied before the surface has been properly cleaned and all dust, dirt or foreign substances removed. A good clean brush with these precautions taken will insure satisfactory results.

***New Floors***—After filling with an oil or varnish filler of the desired color, apply two coats of Dixspar Floor allowing 4 to 6 hours for thorough drying between coats.

***Old Floors***—If in fair condition, the application of one coat of Dixspar Floor will renew the original finish and give desired results. If the surface is badly worn, the fragments of the old finish should be removed with a steel scraper and a filler used, followed by two coats of Dixspar Floor.

*Dixspar Floor requires no thinning.*

## Dixspar Aluminum Vehicle

Dixspar Aluminum Vehicle is sufficiently heavy in body to carry up to 2½ lbs. of aluminum powder per gallon and hold it in suspension. For best results, however, an admixture of 1¾ to 2 lbs. of aluminum powder or paste per gallon is recommended. An aluminum paint made with this tough varnish may be used on metal or wood surfaces and will give the most durable of results on exteriors of gas holders, oil and gasoline tanks, transformers, fire escapes, in plant maintenance and similar usages.

The high quality of Dixspar Aluminum Vehicle can be determined by the fact that it passes the standards of the Navy Department, the War Department (Panama Zone), the Aluminum Company of America, conforms to Specification TT-V-81 of the Federal Specification Board, and others of high authority.

# E. I. DU PONT DE NEMOURS & COMPANY, INC.

FINISHES DIVISION

A Du Pont Finish for Every Surface

WILMINGTON, DEL.

Du Pont is one of the world's largest chemical manufacturers. In du Pont laboratories, trained and practical research men of long experience develop—and discard—thousands of formulas before they are satisfied that the du Pont standards of quality have been met.

DU PONT
REG. U.S. PAT. OFF.

In addition to the careful testing of raw materials and control through every step of manufacture, du Pont maintains "Paint Farms" in every section of the country. Here Du Pont Finishes must pass their final practical test for resistance to the savage attacks of weather. Then, too, du Pont paints have been applied to hundreds of "test houses" in various sections. Here Du Pont Finishes are applied by master painters under average conditions found in the field. These houses are examined periodically by highly skilled paint men. This is the foundation of du Pont quality on which you as an architect or contractor, can stake your reputation.

The du Pont representative and the du Pont dealer in your territory are qualified to give helpful advice on any painting problems which may arise. Get in touch with them or write direct to the address given above. The local du Pont dealer will gladly furnish complete color cards and any other information you may desire.

## SPECIAL NOTES

In the specifications for the various surfaces on the following pages, we give our selection of highest quality recommendations first, followed by "alternates" which may be used where you might prefer another type of material (Paste vs. Ready-Mixed products; Enamels vs. Varnishes, etc.), or where initial cost of materials is a major factor.

### DU PONT LABELS SHOW COMPLETE APPLICATION DIRECTIONS

Since no one brief set of thinning and application directions would best apply for all jobs, we have incorporated comprehensive details on these essential points on all du Pont labels. By having your specifications read "Applied as per label directions" (see "General Painting Specifications") you safely assign these responsibilities to the manufacturer and to the contractor, and prevent complicating your specifications with uncertain details.

### SPECIFICATIONS GIVEN FOR NEW SURFACES ONLY

In the specifications following, detailed recommendations are given for new surfaces. In the case of refinish or repaint work where the previous coatings are in fit condition for repainting, the same finishing coat recommendations may be used, merely eliminating the first or priming coat. For the purpose of clarity, however, the following suggestions are offered in connection with repainting work:

### REPAINTING WORK

All surfaces should be clean, dry, and thoroughly sanded. Exterior surfaces should be wire brushed. This preparation of the surface assures good adhesion of the subsequent coats and is especially essential when repainting over previously applied glossy finishes, such as enamels, varnishes, hard drying exterior paints, etc.

All bare or badly worn sections should be "spotted in" with recommended primers or undercoats. In applying enamel over a previously enameled surface, it is general practice to use an enamel undercoat over the old surface. Generally speaking, prepared undercoats adhere to previous coatings better than enamel coats applied direct to old enamels.

Most Du Pont Paint Products come in a wide range of colors. Any of these colors may be specified with confidence. In addition, Du Pont Pre-Tested Finishes may be tinted with Du Pont-Harrison Brand Oil Colors. However, care should be exercised to see that the amount of oil color used is not in excess of that recommended on the label.

## GENERAL PAINTING SPECIFICATIONS

*To provide a clear understanding, the following "General Painting Specifications" should be inserted as a prelude and as part of all Du Pont Paint Specifications.*

All paint materials shall be thoroughly stirred or agitated until the various ingredients are completely intermixed.

No exterior painting shall be done in rainy, damp or frosty weather or until the surface is thoroughly dry.

No interior painting or finishing shall be done until the building has been thoroughly dried out by artificial heat.

(*Note to Architect*: It is important that new plaster, cement, concrete, etc., be allowed to age for from 60 to 90 days under good drying conditions. Fresh or green plaster, should be treated with a wash coat of zinc sulphate solution made by dissolving 3 pounds of zinc sulphate to the gallon of water.)

All oil, grease, dirt or other foreign materials should be removed from surfaces before painting.

Knots or sap streaks in lumber shall be given a coat of Du Pont Aluminum Paint, before application of first or Priming Coat.

Nail holes or similar imperfections shall be puttied smooth after the first or priming coat has become hard and dry.

No coat of paint, varnish or enamel shall be applied until preceding coats are thoroughly dry and hard. Varnish and enamel coats should be carefully sandpapered with fine sandpaper, and dusted before succeeding coats are applied.

For painting or enameling yellow pine or other very sappy woods, to each gallon of the first or priming coat there shall be added approximately one pint of some highly penetrative solvent such as toluol. Use only in first coat.

Metal arriving at the job with a shop prime coat applied shall be carefully sanded and all bare spots reprimed, using Du Pont DuKrome Metal Primer.

All unprimed galvanized metal shall be given a coat of Du Pont Galvanized Metal Primer before the application of finishing coats. When this Galvanized Metal Primer is used, it replaces the primer coat in the following specifications.

All trade brands herein specified shall be delivered on the job in sealed cans bearing manufacturer's label and trademark.

*All materials shall be applied in accordance with manufacturer's directions printed on the labels of the various products.*

# SPECIFICATIONS FOR EXTERIOR SURFACES

*(To be preceded by the foregoing "General Painting Specifications")*

## FOUNDATIONS

**Wood, Concrete, Metal, etc. (below grade)**

(1) Shall receive two heavy applications of Du Pont Asphalt Chromate Emulsion. Metal not already primed shall first receive one coat of Du Pont DuKrome Metal Primer followed by two heavy applications of Asphalt Chromate Emulsion.

**Wood, Concrete, etc. (above grade)**

(2) See specifications below for walls.

**Metal (above grade)**

(3) Shall receive one coat Du Pont Dulux Kromate Primer, followed by two coats of Du Pont Dulux Metal Protective Finish.....(color).

(3a) *Alternate No. 1*—One coat Du Pont DuKrome Metal Primer, plus two coats of Du Pont Antoxide..... (color).

## STRUCTURAL STEEL

(4) Shall receive one coat Du Pont Dulux Kromate Primer and two coats Du Pont Dulux Metal Protective Finish .....(color).

(4a) *Alternate No. 1*—One coat Du Pont DuKrome Metal Primer and two coats Du Pont Antoxide..... (color).

## WALLS

**Concrete, Cement or Stucco**

(5) Shall receive three coats of Du Pont Cement & Stucco Coating.....(color).

**Wood or Brick (including Wood Siding, Window Frames, Sash, etc.)**

(6) Shall receive three coats Du Pont Prepared Paint..... (color).

(6a) *Alternate No. 1*—Three coats Du Pont Fifty-Fifty Semi-Paste White.

(6b) *Alternate No. 2*—Three coats Du Pont Master Painter's Base Paint.....(color).

## TRIM AND SHUTTERS

**Wood**

(7) (Where Green, Brown, and Black colors are desired) Shall receive three coats of Du Pont Trim & Trellis Finish.....(color).

(7a) (Where colors other than those mentioned above are desired) — Follow specifications given above for "Walls."

## METAL (INCLUDING FIRE ESCAPES AND OTHER LIGHT IRON)

(8) All unprimed galvanized metal should be given a coat of Du Pont Galvanized Metal Primer before the application of finishing coats. When this Galvanized Metal Primer is used it replaces the primer coat in the specifications below.

(8a) One coat Du Pont Dulux Kromate Primer, followed by two coats Du Pont Dulux Metal Protective Finish .....(color).

(8b) *Alternate No. 1*—One coat of Du Pont DuKrome Metal Primer followed by two coats Du Pont Antoxide..... (color).

(8c) *Alternate No. 2*—One coat of Du Pont DuKrome Primer followed by two coats Du Pont Prepared Paint..... (color).

## ROOFS (INCLUDING SKYLIGHTS, DRAIN-SPOUTS, VENTILATORS, TANKS, ETC.)

**Metal**

(9) All unprimed galvanized metal should be given a coat of Du Pont Galvanized Metal Primer before the application of finishing coats. When this Galvanized Metal Primer is used it replaces the primer coat in the specifications below.

(9a) One coat Du Pont Dulux Kromate Primer, followed by two coats Du Pont Dulux Metal Protective Finish .....(color).

(9b) *Alternate No. 1*—Du Pont DuKrome Metal Primer, followed by two coats Du Pont Antoxide..... (color).

**Wood Shingle**

(10) Shall receive two coats Du Pont Shingle Stain..... (color). First coat shall be dip coat, dipping shingles two-thirds of their length. Second coat brushed on after shingles are laid.

(10a) *Alternate No. 1*—Shall receive two coats Du Pont Shingle Stain brushed on after shingles are laid.

**Felt — Asphaltum — Gravel**

(11) Felt as specified, followed by one coat Du Pont Seal-M-Tite and Gravel.

# SPECIFICATIONS FOR INTERIOR SURFACES

*(To be preceded by the foregoing "General Painting Specifications")*

## WALLS AND CEILINGS

**Plaster (Smooth and Sand Finish, Cement, Brick, etc.)**

(12) All new plaster surfaces should be thoroughly "aged." Where fresh or "green," they should be given a wash coat of zinc sulphate solution to neutralize lime.

(13) **Flat Wall Paint Finish**—One coat Du Pont Primer-Sealer, followed by two coats Du Pont Flat Wall Finish .....(color).

(13a) *Alternate No. 1*—Two coats Du Pont Casein-Lithopone Flat Wall Finish.....(color). No prime coat necessary.

(14) **Stipple or Texture Finish**—One coat Du Pont Primer-Sealer, followed by one coat Du Pont Flat Wall Finish and one coat Du Pont Stippling Flat, stippled or textured as per architect's directions.

(15) **Enamel Finishes**—One coat Du Pont Primer-Sealer followed by one coat Du Pont Dulux Super-White Enamel Undercoat and one coat Du Pont Dulux Super-White Enamel (Gloss or Eggshell Finish).

E. I. DU PONT DE NEMOURS & COMPANY, INC.

## SPECIFICATIONS FOR INTERIOR SURFACES—(CONT'D.)

(15a) *Alternate No. 1*—One coat Du Pont Primer-Sealer followed by one coat Du Pont Ovalite Enamel Undercoat and one coat Du Pont Interior Gloss (or Semi-Gloss) .....(color).

(16) **Enamel Finishes —** (*For Industrial buildings*) — Mill White Enamel Finish — One coat Du Pont Primer-Sealer followed by one coat Du Pont Dulux Super-White Enamel Undercoat and one coat Du Pont Dulux Super-White Enamel (Gloss or Eggshell Finish).

(16a) *Alternate No. 1* — (*For Industrial buildings*) — Mill White Enamel Finish — One coat Du Pont Primer-Sealer followed by one coat Du Pont Dulite Undercoat and one coat Du Pont Dulite Enamel (Gloss or Eggshell Finish).

(16b) *Alternate No. 2* — (*For Industrial buildings*) — Fume-Resisting Enamel Finish — One coat Du Pont Primer-Sealer followed by one coat Du Pont Fume Resisting Undercoat and one coat Du Pont Fume Resisting Enamel (Eggshell only).

### DOORS, TRIM, WINDOW SASH, ETC.

#### Metal

(17) All unprimed galvanized metal should be given a coat of Du Pont Galvanized Metal Primer before the application of finishing coats. When this Galvanized Metal Primer is used it replaces the primer coat in the specifications below.

(18) One coat Du Pont Dulux Kromate Primer followed by one coat Du Pont Dulux Super-White Enamel Undercoat and one coat Du Pont Dulux Super-White Enamel (Gloss or Eggshell Finish).

(18a) *Alternate No. 1*—One coat Du Pont DuKrome Metal Primer followed by one coat Du Pont Ovalite Enamel Undercoat and one coat Du Pont Interior Gloss Enamel (or Interior Semi-Gloss).....(color).

#### Wood (All Interior Wood Except Floors)

(19) All open grained woods should be filled with Du Pont Wheeler's Paste Wood Filler (color selected) after the stain, if any, and before the varnish or wax.

(20) **Natural Finish**—Du Pont Wheeler's Paste Wood Filler Natural *(for open-grained woods only)* followed by two coats Du Pont Shipoleum Gloss Varnish (or one coat Du Pont Shipoleum Gloss Varnish plus one coat of Du Pont No. 76 Dull Varnish where a dull or rubbed finish effect is desired).

(20a) *Alternate No. 1*—Du Pont Wheeler's Paste Wood Filler Natural *(for open-grained woods only)* followed by two coats Du Pont General Utility Gloss Varnish (or one coat Du Pont General Utility Gloss Varnish plus one coat of Du Pont No. 76 Dull Varnish where a dull or rubbed finish effect is desired).

(21) **Stain and Varnish Finish** (*Over close-grained wood*)—Du Pont Penetrating Stain.....(color), followed by one coat Du Pont Penetrating Stain Sealer and finished with two coats Du Pont Shipoleum Gloss Varnish (for dull or rubbed finish effect, specify one coat Du Pont Shipoleum Gloss Varnish plus one coat of Du Pont No. 76 Dull Varnish.)

(21a) *Alternate No. 1* (*over close-grained woods*) — Du Pont Penetrating Stain.....(color), followed by one coat Du Pont Penetrating Stain Sealer, and finished with two coats Du Pont General Utility Gloss Varnish (for dull or rubbed finish effect, specify one coat of Du Pont General Utility Gloss Varnish plus one coat of Du Pont No. 76 Dull Varnish).

(22) **Stain and Varnish Finish** (*Over Open-grained Woods*) —Du Pont Oil Stain.....(color), followed by one coat Du Pont Wheeler's Filler.....(color), and finished with two coats Du Pont Shipoleum Gloss Varnish (for dull or rubbed finish effect, specify one coat Du Pont Shipoleum Gloss Varnish plus one coat of Du Du Pont No. 76 Dull Varnish).

(22a) *Alternate No. 1* (*Over Open-grained Woods*)—Du Pont Oil Stain.....(color), followed by one coat Du Pont Wheeler's Filler.....(color), if necessary, and finished with two coats Du Pont General Utility Gloss Varnish (for dull or rubbed finish effect, specify one coat of Du Pont General Utility Gloss Varnish plus one coat of Du Pont No. 76 Dull Varnish).

(23) **Enamel Finishes**—Two coats Du Pont Dulux Super-White Undercoat followed by two coats Du Pont Dulux Super-White Enamel (Gloss or Eggshell Finish).

(23a) *Alternate No. 1*—Two coats Du Pont Ovalite Enamel Undercoat followed by two coats Du Pont Interior Gloss (or Interior Semi-Gloss).....(color).

### FLOORS

#### Cement, Concrete, Brick, etc.

(24) Shall receive three coats Du Pont Floor & Deck Enamel .....(color).

#### Wood

(25) All open grained woods should be filled with Du Pont Wheeler's Paste Wood Filler (color selected) after the stain and before the varnish or wax. (Omit filler for close-grained woods.)

(26) **Natural Finish**—Du Pont Wheeler's Paste Wood Filler Natural, if necessary, followed by three coats Du Pont Supremis Floor Varnish.

(26a) *Alternate No. 1*—Du Pont Wheeler's Paste Wood Filler Natural, if necessary, followed by three coats Du Pont Quick-Drying Floor Varnish.

(27) **Stain and Varnish Finish**—One coat Du Pont Oil Stain .....(color), Du Pont Wheeler's Paste Wood Filler.....(color), if necessary, and three coats Du Pont Supremis Floor Varnish.

(27a) *Alternate No. 1*—One Coat Du Pont Oil Stain..... (color), Du Pont Wheeler's Paste Wood Filler..... (color) if necessary, and three coats Du Pont Quick-Drying Floor Varnish.

(Any of the above Varnish finishes may be further finished with Du Pont Wax, where desired.)

(28) **Enamel Finish**—Three coats Du Pont Floor and Deck Enamel.....(color).

## SPECIFICATIONS FOR INTERIOR SURFACES—(CONT'D.)

### Linoleum

(29) Shall receive two or more coats Du Pont Duco Linoleum Finish.

(29a) *Alternate No. 1*—Two or more coats Du Pont Linkota.

### EXPOSED PIPING, VENTILATORS, RADIATORS, ETC.

#### Metal

(30) All galvanized metal should be given a coat of Du Pont Galvanized Metal Primer before the application of finishing coats. When this Galvanized Metal Primer is used it replaces the primer coat in the specifications below.

(31) Shall receive one coat Du Pont Dulux Kromate Primer and two coats Du Pont Dulux Machinery Finish .....(color).

(31a) *Alternate No. 1*—One coat Du Pont DuKrome Metal Primer followed by two coats of same material as used on adjacent surfaces.

## SPECIFICATIONS FOR MACHINERY AND EQUIPMENT

*(To be preceded by the foregoing "General Painting Specifications")*

### STACKS

#### Steel

(32) Two coats Du Pont Stack Black.

(32a) *Alternate No. 1*—One coat Du Pont Heat-Resisting Aluminum Paint.

### BOILER FRONTS AND CONNECTIONS

#### Steel

(33) Two coats Du Pont Dulux Machinery Finish Black.

(33a) *Alternate No. 1*—One coat Du Pont Heat-Resisting Aluminum Paint.

(33b) *Alternate No. 2*—Two coats Du Pont No. 20 Black.

### CRANES AND RUNWAYS

#### Steel

(34) One coat Du Pont Dulux Kromate Primer, followed by two coats Du Pont Dulux Metal Protective Finish .....(color).

(34a) *Alternate No. 1*—One coat Du Pont Dulux Kromate Primer, followed by two coats Du Pont Dulux Aluminum Paint.

(34b) *Alternate No. 2*—One coat Du Pont DuKrome Metal Primer, followed by two coats Du Pont Antoxide .....(color).

(34c) *Alternate No. 3*—One coat Du Pont DuKrome Metal Primer, followed by two coats Du Pont Ready-to-Mix Aluminum Paint.

### CONDUITS, SWITCH BOXES, ELECTRICAL FIXTURES, ETC.

#### Steel

(35) One coat Du Pont Dulux Machinery Primer, followed by two coats Du Pont Dulux Machinery Finish..... (color).

### FIRE BUCKETS, SAND PAILS AND FIRE EXTINGUISHERS

#### Steel

(36) One or two coats Du Pont Dulux Machinery Finish Fire Equipment Red.

### MACHINERY, MACHINERY GUARDS, MOTORS, ENGINES, TRUCKS, PUMPS, TURBINES, ETC.

#### Steel

(37) One coat Du Pont Dulux Machinery Primer, followed by two coats Du Pont Dulux Machinery Finish .....(color).

(37a) *Alternate No. 1*—One coat Du Pont Dulux Machinery Primer, followed by two coats Du Pont Dulux Aluminum Finish.

#### Wood Parts

(38) One coat Du Pont Dulux Machinery Finish Undercoater, followed by two coats Du Pont Dulux Machinery Finish.....(color).

(38a) *Alternate No. 1*—Three coats Du Pont Dulux Aluminum Finish.

(38b) *Alternate No. 2*—Three coats Du Pont Floor & Deck Enamel.....(color).

### RACKS AND BINS, ETC.

#### Wood

(39) Three coats Du Pont Floor & Deck Enamel..... (color).

#### Steel

(40) One coat Du Pont Dulux Machinery Primer followed by two coats Du Pont Dulux Machinery Finish .....(color).

(40a) *Alternate No. 1*—One coat Du Pont DuKrome Metal Primer followed by two coats Du Pont Floor & Deck Enamel.....(color).

### RADIATORS

#### Steel

(41) One coat Du Pont Dulux Machinery Primer followed by two coats Du Pont Dulux Machinery Finish .....(color).

(41a) *Alternate No. 1*—One coat Du Pont Dulux Kromate Metal Primer followed by two coats Du Pont Dulux Aluminum Paint.

(41b) *Alternate No. 2*—One coat Du Pont DuKrome Metal Primer, followed by two coats Du Pont Floor & Deck Enamel.....(color).

FOUNDED 1754

# DEVOE & RAYNOLDS CO., INC.

## Interior and Exterior Paints, Enamels, Stains, Varnishes, Lacquers
## Special Finishes for Industrial and Maintenance Purposes

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## DEVOE 2-COAT SYSTEM FOR EXTERIOR PAINTING*




### First Coat

Devoe House Paint Undercoat provides *Controlled Penetration* in the first or priming coat. Available in three shades: White to go under white; Buff to go under creams, yellows, browns, reds; Gray to go under grays, blues, greens.

*Spread*—New or old work—450 sq. ft. per gal.

### Finishing Coat

Devoe House Paint Finishing Coat contains specially processed oil for greater film toughness and selected pigments of unusually high hiding power to protect the vehicle from the ultra-violet rays of the sun.

*Spread*—Over undercoat—700 sq. ft. per gal.



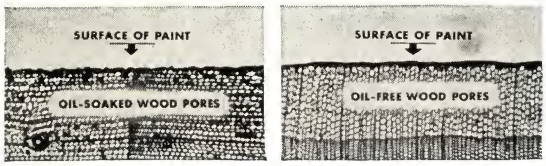

### Specifications—New Work

| | *Thinning Per Gallon* | |
|---|---|---|
| *Undercoat:* | *Cool Weather* | *Warm Weather* |
| Soft wood. | ¾ pint turpentine. | ½ pint turpentine. |
| Hard wood. | 1 pint turpentine. | ¾ pint turpentine. |
| *Finish Coat:* | ¾ pint turpentine. | ½ pint raw linseed oil. |

### Specifications—Old Work

| | *Thinning Per Gallon* | |
|---|---|---|
| *Undercoat:* | *Cool Weather* | *Warm Weather* |
| Surfaces in poor condition. | ¾ pint turpentine and ½ pint raw linseed oil. | ½ pint turpentine and ½ pint raw linseed oil. |
| Surfaces in good condition. | 1 pint turpentine and ½ pint raw linseed oil. | ¾ pint turpentine and ½ pint raw linseed oil. |
| *Finish Coat:* | ¾ pint turpentine. | ½ pint raw linseed oil. |

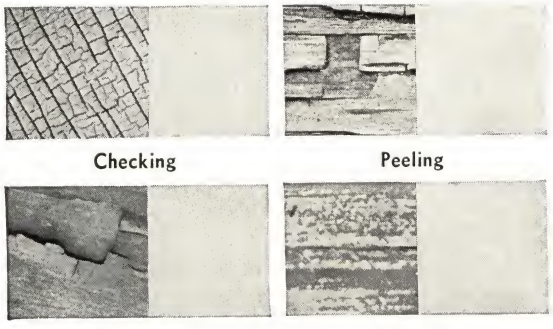
**Controlled Penetration**




Conventional paint loses an excessive amount of oil into the pores of the wood

Penetration of new Devoe Undercoat is limited to approximately three wood cells in depth

Wood pores act like sponges robbing conventional paint of its oil and causing dry, brittle films. The development of *Controlled Penetration* keeps the oil in the film where it belongs with sufficient penetration for maximum adhesion only.



Checking · Peeling · Cracking · Fading

Loss of oil causes most typical paint failures. *Controlled Penetration* guards against these common evils

*Specifications calling for Devoe 2-Coat System for exterior painting instead of former 3-coat procedure saves material for one coat and labor of applying same.*

### Cement and Stucco Coating*




Bay State Brick and Cement Coating has been specified for many years by architects all over the country. An outstanding product for all masonry, brick, stucco and concrete surfaces. Covers from 130 to 200 sq. ft. per gal., one coat, depending on porosity of surface.

See label for application directions.

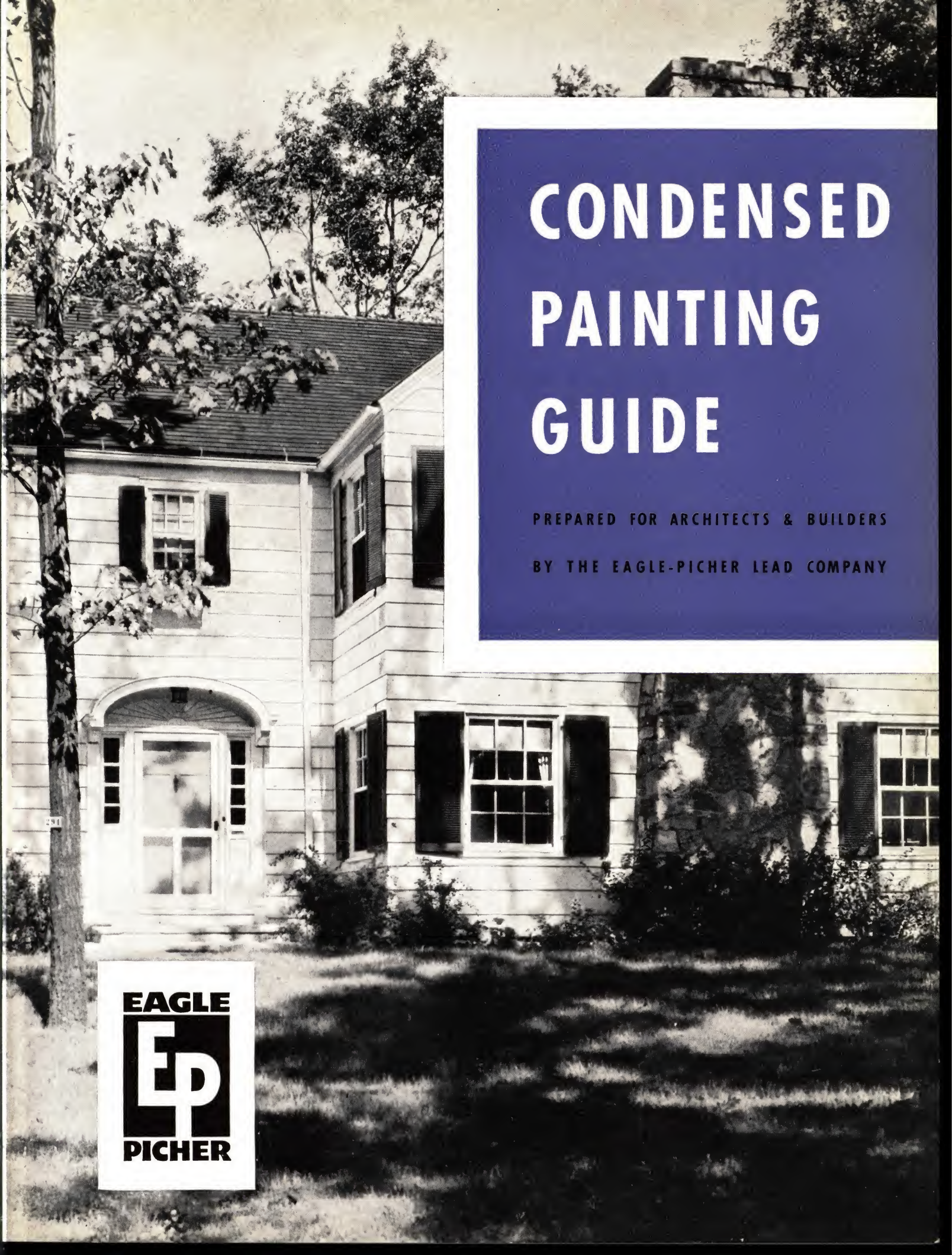
*Bay State Brick and Cement Coating is especially recommended for swimming pools.*

### Floor Varnish

Devoe Marble Floor Finish Varnish dries to a high degree of hardness. Produces an extremely tough and durable film. Dries under normal conditions in approximately four hours. Will not spot white under hot or cold water.




**Products for 2-Coat System of Exterior Painting, as well as Bay State Brick and Cement Coating are manufactured and distributed by associated companies:* WADSWORTH, HOWLAND & COMPANY, INC., *Boston, Mass., and* PEASLEE-GAULBERT PAINT AND VARNISH COMPANY, INCORPORATED *(Pee Gee Paints), Louisville, Ky.*



# CONDENSED PAINTING GUIDE

PREPARED FOR ARCHITECTS & BUILDERS

BY THE EAGLE-PICHER LEAD COMPANY

EAGLE EP PICHER

# EAGLE-PICHER PAINTING PRODUCTS




**DISTRIBUTED BY: THE EAGLE-PICHER SALES COMPANY**

**General Offices: Temple Bar Building, Cincinnati, Ohio**
**(for list of Branch Offices, see back cover)**

## Selecting the proper Paint





Cost, exposure, required durability, frequency of cleaning and of repainting—all these factors influence the selection of the proper paint.

The principal problem in selecting paints is the adjustment between initial cost and desired durability. When properly applied, pure lead-in-oil paints are as durable as any combination of pigments, and far more durable than most.

Lead-in-oil paints can usually be prepared on the job for less cost than many paints of not even approximately equal qualities. The materials cost less, and mixing and tinting take little more time than stirring and retinting ready-mixed paints.

The labor cost for a paint job is usually two or three times the cost of the materials. Thus, if repainting will be required within one or two years, the use of a minimum-cost short-lived paint may be justified. But if repainting will be done only when the life of the original paint is over, the high cost of labor makes it considerably more economical to use the most durable paint there is, even though its initial cost may be a little higher than a short-lived cheaper paint.

It is important to remember that the service of any paint depends upon the skill of the painter. Reputable manufacturers can only guarantee the composition of the paints they sell. They cannot guarantee results.

## HOW TO USE THIS GUIDE

• Reliable data on the selection of durable paints for every major type of painting job are given on the following pages. Formulas are tabulated for various lead-in-oil paints according to the type and condition of the surface to be painted. Complete specifications can be written for any job by adapting these data to conditions prevailing on the project. When master painters are employed, these formulas may serve as a guide to materials and proportions. When less skilled workmen are employed, they may be made mandatory.

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Eagle White Lead is packaged in two forms—*Heavy Paste* and *All-Purpose Soft Paste*. Both are pure white lead carbonate ground in pure linseed oil.

**All-Purpose Soft Paste** contains a small amount of pure turpentine added at the factory in an extra grinding process. This makes *All-Purpose* easier to mix on the job.

# Eagle pure White Lead in Oil

## for all types of Painting

The first recorded use of white lead as a paint pigment dates back to the Romans almost 2000 years ago. Its popularity has grown ever since, until it has become the standard of comparison for desirable paint pigments.

Searches to find cheaper substitutes for white lead have produced many other paint pigments, but unbiased authorities still agree that white lead remains the most universally reliable painting material.

**Wins in National Survey** The acceptance of pure white lead as a paint pigment was recently emphasized in a national survey conducted by the Lumber Products—Better Paint Campaign. The replies from architects showed that 68% of them specify pure white lead. Eighty-five per cent of painting and decorating contractors stated their preference for pure white lead for their own homes.

**Federal Projects** On all Federal projects the U. S. Government requires 100% white lead-in-oil, or a minimum of 70% white lead in prepared white paint and a minimum of 60% white lead in tinted paint.

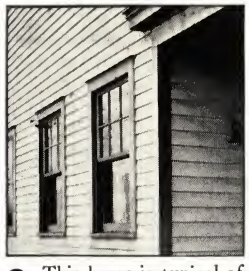
## Eagle White Lead Proves Superior Durability in Dramatic Test . . .



**1** This is the midwestern community where the paint test was made. One hundred and twenty-four homes were divided into three groups and a different kind of paint used on each group. The service results were carefully checked. (All work was done by the same painters.)



**2** The one perfect paint job in the whole community! Eagle White Lead was the only paint ever used on this house. Note the smooth, even surface—no sign of failure after several years of weathering.



**3** This home is typical of the group painted with paint containing no white lead. Photograph taken after 18 months' exposure. Note discoloration.



**4** This photograph shows the results of 18 months' wear on paint with only 50% white lead. All houses in this group showed similar signs of failure.



**5** Same house as left, six months later. Note how rapidly the disintegration of the paint film progresses once it has begun to fail.

**6** Two close-ups of homes in the Eagle White Lead group after the same weather exposure as homes above. Paint film still in good condition. No cracking or scaling. Perfect surface for repainting.





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## North Dakota Paint Fence Confirms Economy of

# Pure WHITE LEAD

North Dakota's Agricultural College has been testing paints for over 30 years to protect the citizens of the state against paint frauds and to inform the public how to judge the durability of different kinds of paint. In one outstanding test, 120 typical exterior paints, applied to fences built of four kinds of wood, were exposed to five years' weathering—and service compared.

The results are conclusive. They showed that the higher the white lead content, the greater the durability of the paint. Pure white lead had a better record by far than paints with other pigments added. The greater the percentage of other pigments, the poorer the rating was of the paint.

The results of this test are summarized in the accompanying table.

**Performance Report on 120 Typical Paints after 5 years' exposure**

| PERCENT LEAD PIGMENTS | 10 or less | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Good | | | | | | | | // | // | 𝍸 / 𝍸 | 15 |
| Fair | | | | | // | // | //// | 𝍸 // | | / | 16 |
| Poor | | | | 𝍸 //// | 𝍸 𝍸 𝍸 𝍸 𝍸 /// | 𝍸 // | 𝍸 // | 𝍸 𝍸 //// | / | | 66 |
| Bad | //// | /// | // | //// | // | / | / | 𝍸 | / | | 23 |
| Total | 4 | 3 | 2 | 13 | 32 | 10 | 12 | 28 | 4 | 12 | 120 |

**EXPLANATION.** The test was undertaken to determine the quality of the various paints being shipped into North Dakota. Note that as the lead content is increased, the durability rating of the paints improved.

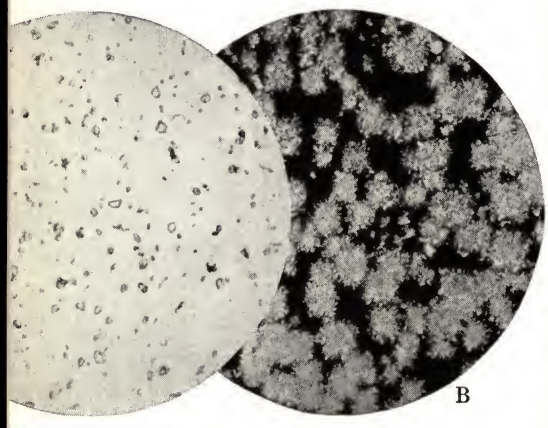
**CONCLUSION.** "The higher the lead content, the greater the durability of the paint."

# Outstanding Characteristics of Eagle White Lead-in-Oil

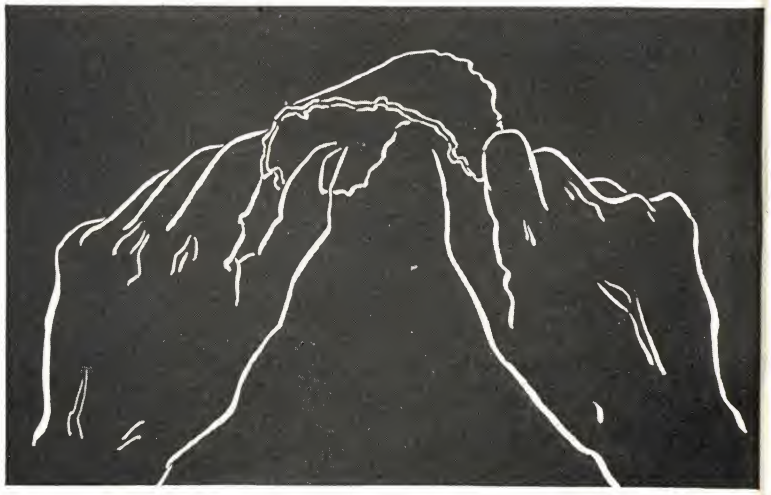
## A "Chemically Active" Pigment

Paint pigments are divided into two classes—active and inactive. An active pigment reacts with oil in the vehicle and becomes a *chemical* as well as *physical* part of the paint. Pigment and oil are firmly bound together. An inactive pigment does not unite with the oil, but is merely suspended in it.

As a group, inactive pigments are generally used as fillers and extenders. They have comparatively little hiding power and are used to give bulk or body in the paint mixture and to lower the cost.




White lead is an active pigment. These two photomicrographs illustrate chemical action that takes place when it is mixed with linseed oil. "A" shows how pigment particles look before oil is added. "B" shows how lead particles "blossom" out in linseed oil. Note that no sharp lines divide pigment and vehicle.






## No Cracking... No Scaling

Eagle White Lead unites chemically with linseed oil and forms a soft elastic paint film. It never hardens or becomes brittle. When the surface to which it has been applied expands and contracts with temperature changes, this elastic film expands and contracts with it. When the paint film is brittle, contraction and expansion are definitely limited. Hence a brittle film usually cracks and scales.




## Perfect Repainting Surface

Good paint wears by slow, even chalking. An Eagle White Lead film wears in this way—*not by cracking and scaling.* It leaves a perfect surface for repainting—no burning or scraping is necessary to prepare the surface.




## Flows Freely... Good Coverage

Surface for surface, pure white lead paint will hold its own in coverage with most paints—and excel many of them. Furthermore, it brushes easier—enabling a painter to paint more surface each hour he works.

An Eagle White Lead paint film goes on evenly and smoothly. There are no "ridges" and "thin spots."



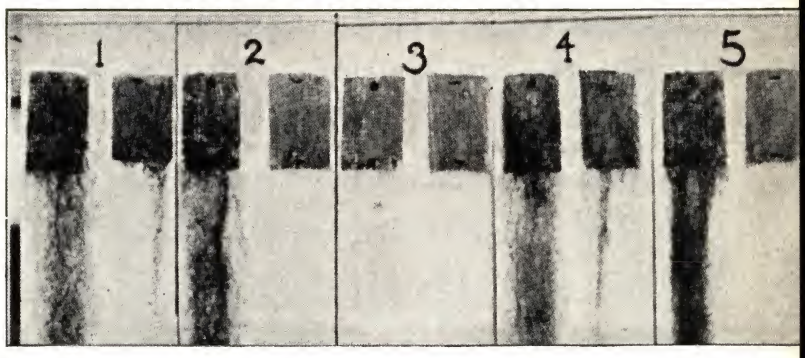

## Great Hiding Power

Pigment particles in an Eagle White Lead paint form a solid mass of pigment that completely covers the surface. Its "refractive index" is high—giving it great opacity.




## Easy to Mix on the Job

Oil is added to Eagle White Lead at the factory so that it is in an easy-mixing consistency when the painter receives it. He merely has to thin it into paint of the type best suited to meet surface conditions—a matter of only a few minutes for 100 lbs., which when mixed according to finish coat formula produces more than six gallons of paint.







## Does Not Retain Rust Stains

Eagle White Lead is a chemically active pigment. When mixed with linseed oil the resulting compounds are not soluble in water. Hence ferrous metal stains do not penetrate the surface. Such stains as may dry on the surface are easily removed by washing. Other paints do not have this quality. Note (above) the ugly stains that are caused when rust penetrates a paint film.




## Easily Tinted

Painters can easily tint Eagle White Lead to any desired color (except extremely dark shades). Exact values are obtained by adding colors in oil. Color pigments are tightly held which minimizes fading.




## Write for this Comprehensive Painting Manual • *Edited by the technical staff of American Architect in collaboration with Research Laboratories of The Eagle-Picher Lead Company.*

A much more complete discussion of painting problems and painting specifications than there is room for in this Condensed Painting Guide. Praised highly by Architects and Builders. For free copy, write The Eagle-Picher Sales Company, Dept. SC, Temple Bar Building, Cincinnati, Ohio.

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# FORMULAS FOR EXTERIOR WOODWORK



**Specification Data:** Painting should be done in dry weather and when the temperature is above 40° F.

Painting done at lower temperatures, especially when nights are likely to bring frost and moisture with sudden drops in temperature, will not be as satisfactory as painting done under ideal conditions. Flatting, loss of gloss, spotting and premature chalking may result.

Moisture in wood will be drawn out by the sun and form blisters under a paint film which will eventually result in peeling. Green lumber should be primed as soon as possible and allowed to stand several days before application of succeeding coats. Defer all painting two to three days after a driving rain.

In new and re-painting work, fill nail holes, cracks and crevices with putty after priming or first coat has dried, to form a smooth surface and to prevent water from entering behind the paint.

Three coats of paint on new work and two coats on repainting work are generally sufficient.

| | COAT | PREPARATION | PAINT FORMULA | APPLICATION |
|---|---|---|---|---|
| **NEW WORK** | PRIMING | Dust and scrape off lime, dirt and adherent matter | FORMULA NO. 1<br>100 lb. All-Purpose White Lead<br>4 gal. Raw Linseed Oil<br>1¼ gal. Eagle Flatting Oil or Pure Turpentine<br>1 pt. Best Japan Drier | Brush in carefully and lay off in an even film as this is foundation of all subsequent painting. Its importance cannot be over-emphasized |
| | SECOND | Apply 3-7 days after priming coat. Coat knots and sapwood with shellac before applying | FORMULA NO. 2<br>100 lb. All-Purpose White Lead<br>1¾ gal. Raw Linseed Oil<br>1¼ gal. Eagle Flatting Oil or Pure Turpentine<br>1 pt. Best Japan Drier | Brush in carefully to an even film of uniform thickness |
| | THIRD (Semi-gloss finish) | Apply 3-7 days after second coat | FORMULA NO. 3<br>100 lb. All-Purpose White Lead<br>3 gal. Raw Linseed Oil<br>1 pt. Best Japan Drier | Brush in carefully to an even film of uniform thickness |
| | THIRD (Flat finish) | Apply 3-7 days after second coat | FORMULA NO. 4<br>100 lb. All-Purpose White Lead<br>2¼ gal. Eagle Flatting Oil or Pure Turpentine | Brush in carefully to an even film of uniform thickness |
| **REPAINTING** | PRIMING (Not required unless bare wood is exposed) | If in good condition dust off only. Loose scaly paint scraped off. If in bad condition burn off all paint and treat as new wood | Same as for new wood if required | Same as for new wood if required |
| | FIRST | Apply 3-7 days after spot priming if required | FORMULA NO. 5<br>100 lb. All-Purpose White Lead<br>2¼ gal. Raw Linseed Oil<br>1¼ gal. Eagle Flatting Oil or Pure Turpentine<br>1 pt. Best Japan Drier | Brush in carefully to smooth film of even thickness |
| | SECOND (Semi-gloss finish) | Apply 3-7 days after first coat | FORMULA NO. 3<br>100 lb. All-Purpose White Lead<br>3 gal. Raw Linseed Oil<br>1 pt. Best Japan Drier | Brush in carefully to smooth film of even thickness |
| | SECOND (Flat finish) | Apply 3-7 days after first coat | FORMULA NO. 4<br>100 lb. All-Purpose White Lead<br>2¼ gal. Eagle Flatting Oil or Pure Turpentine | Brush in carefully to smooth film of even thickness |

**Notes:** Eagle Flatting Oil is recommended in preference to turpentine for its smoother brushing and greater wearing qualities and because it will produce a better and more lasting finish. If thinner brushing is desired, do not add more linseed oil to these formulas, but reduce them to the desired consistency with Eagle Flatting Oil or turpentine. When Eagle Heavy Paste White Lead is used, add 1 pint more turpentine or flatting oil to formula No. 3, one quart more to all other formulas.



# FORMULAS FOR INTERIOR WOODWORK

**Specification Data:** The room temperature should not be less than 70° F. Paints should be kept at this temperature before being used.

White lead, however, brushes easier than varnishes and enamels and may, therefore, be applied at lower temperatures.

All dust and dirt should be swept from the room before any paint is applied.

Three coats are usually sufficient in new work, and two coats in repainting.

In certain cases where a specially durable job is required, additional coats may be added, each coat being extremely thin.

It is advisable in specifications to require adherence to formulas only when work is *not* in the hands of qualified contractors or decorators. The following formulas will produce paint that will give satisfactory service in a majority of cases.

| | COAT | PREPARATION | PAINT FORMULA | APPLICATION |
|---|---|---|---|---|
| **NEW WORK** | PRIMING | Clean, sandpaper, dust off and sweep room | FORMULA NO. 6<br>100 lb. All-Purpose White Lead<br>3 gal. Raw Linseed Oil<br>2¼ gal. Eagle Flatting Oil or Pure Turpentine<br>1 pt. Best Japan Drier<br>ALTERNATE: Formula No. 14 (See p. 9) | Brush in thoroughly and lay off smoothly with the grain |
| | SECOND | Putty holes, cracks, etc. Sandpaper lightly and sweep room | FORMULA NO. 7<br>100 lb. All-Purpose White Lead<br>1½ gal. Raw Linseed Oil<br>1¼ gal. Eagle Flatting Oil or Pure Turpentine<br>1 pt. Best Japan Drier<br>ALTERNATE: Formula No. 15 (See p. 9) | Apply freely and brush out well with the grain |
| | THIRD (Semi-gloss finish) | Sandpaper lightly and sweep room | FORMULA NO. 8<br>100 lb. All-Purpose White Lead<br>3-3½ gal. Raw Linseed Oil<br>1 pt. Best Japan Drier<br>ALTERNATE: Formula No. 16 (See p. 9) | Brush out carefully, laying off in an even film without brush marks |
| | THIRD (Flat finish) | Sandpaper lightly and sweep room | FORMULA NO. 4<br>100 lb. All-Purpose White Lead<br>2¼ gal. Eagle Flatting Oil or Pure Turpentine<br>(If Turpentine is used add 1 pt. Pale or White Enamel Varnish)<br>ALTERNATE: Formula No. 15 (See p. 9) | Brush out carefully, laying off in an even film without brush marks |
| **REPAINTING** | PRIMING (Not required unless bare wood is exposed) | Wash with paint cleaner to cut gloss. Rinse with clear water. Remove cracked or scaling paint. Putty nails, cracks, etc. Sandpaper if needed | Treat as new wood if required | Same as for new wood if required |
| | FIRST | Apply after spot priming is dry | FORMULA NO. 9<br>100 lb. All-Purpose White Lead<br>1 gal. Raw Linseed Oil<br>2¼ gal. Eagle Flatting Oil or Pure Turpentine<br>1 pt. Best Japan Drier<br>ALTERNATE: Formula No. 15 (See p. 9) | Brush out carefully to a smooth even film |
| | SECOND (Semi-gloss finish) | Sandpaper slightly and sweep room | FORMULA NO. 8<br>100 lb. All-Purpose White Lead<br>3-3½ gal. Raw Linseed Oil<br>1 pt. Best Japan Drier<br>ALTERNATE: Formula No. 16 (See p. 9) | Brush out carefully, laying off in an even film without brush marks |
| | SECOND (Flat finish) | Sandpaper slightly and sweep room | FORMULA NO. 4<br>100 lb. All-Purpose White Lead<br>2¼ gal. Eagle Flatting Oil or Pure Turpentine<br>(If Turpentine is used add 1 pt. Pale or White Enamel Varnish)<br>ALTERNATE: Formula No. 15 (See p. 9) | Brush out carefully, laying off in an even film without brush marks |

**Notes:** Eagle Flatting Oil is recommended in preference to turpentine for its smoother brushing and greater wearing qualities, and because it produces a better and more lasting finish. If thinner brushing consistency is desired, thin down with small amounts of Eagle Flatting Oil or pure turpentine. *Do not add linseed oil.* When Eagle Heavy Paste White Lead is used, add one pint more turpentine or flatting oil to formula No. 8, one quart more to all others.

# FORMULAS FOR PLASTER AND WALLBOARD



**Specification Data:** When enamels and varnishes are used, the temperature should not be less than 70° F. In cold weather, paints should be kept at this temperature over night before being used.

White lead, because of its superior brushing qualities, may be applied at lower temperatures.

All dust and dirt should be wiped from the surface and swept from the room before paint is applied.

Formulas given below are recommended for average conditions. They may be modified by an experienced painting contractor to meet special conditions.

When joints between wallboards are to be hidden under paint, they must be filled with putty and sanded down if necessary. (Putty made from white lead is ideal for this purpose.)

| | COAT | PREPARATION | PAINT FORMULA | APPLICATION |
|---|---|---|---|---|
| **NEW PLASTER OR WALL BOARD** | PRIMING | Patch cracks in plaster. Conceal joints in wallboards if required. Wipe surface clean. Glue size required on soft wallboards, when sealer or lead reducing oil is not in primer. Allow plaster to dry for 6 months | FORMULA NO. 10<br>100 lb. All-Purpose White Lead<br>3 gal. Boiled Linseed Oil<br>1¼ gal. Eagle Flatting Oil or Pure Turpentine<br>2 gal. Floor Varnish<br>ALTERNATE: Formula No. 14 (See p. 9) | Brush with short semi-circular criss-cross strokes, allowing paint to flow and obliterate brush marks |
| | SECOND | No preparation required. Allow 2-3 days for drying of priming coat | FORMULA NO. 11<br>100 lb. All-Purpose White Lead<br>1¼ gal. Eagle Flatting Oil or Pure Turpentine<br>¾ gal. Floor Varnish<br>½ pt. Best Japan Drier<br>ALTERNATE: Formula No. 15 (See p. 9) | Brush with short semi-circular criss-cross strokes, allowing paint to flow and obliterate brush marks |
| | THIRD COAT (Semi-gloss finish) | No preparation required. Allow 2-3 days for drying of second coat | FORMULA NO. 12<br>100 lb. All-Purpose White Lead<br>¾ gal. Eagle Flatting Oil or Pure Turpentine<br>1¼ gal. Floor Varnish<br>½ pt. Best Japan Drier<br>ALTERNATE: Formula No. 16 (See p. 9) | Brush with short semi-circular criss-cross strokes, allowing paint to flow and obliterate brush marks |
| | THIRD (Flat finish) | No preparation required. Allow 2-3 days for drying of second coat | FORMULA NO. 13<br>100 lb. All-Purpose White Lead<br>1¾ gal. Eagle Flatting Oil or Pure Turpentine<br>1 pt. Floor Varnish<br>½ pt. Best Japan Drier<br>ALTERNATE: Formula No. 15 (See p. 9) | Brush with short semi-circular criss-cross strokes, allowing paint to flow and obliterate brush marks |
| **REPAINTING** | PRIMING (Not required unless bare surface is exposed) | Old paint or enamel: Wash with sal soda solution to remove grease and cut gloss. Rinse with clear water. Patch cracks and coat with shellac. Scrape off cracked or scaly paint<br>Calcimine: Remove calcimine with warm water | Treat as new plaster or wallboard if required | Same as priming coat on new work if required |
| | FIRST | No special preparation. Allow 2-3 days for drying of priming coat if required | FORMULA NO. 11<br>100 lb. All-Purpose White Lead<br>1¼ gal. Eagle Flatting Oil or Pure Turpentine<br>¾ gal. Floor Varnish<br>½ pt. Best Japan Drier<br>ALTERNATE: Formula No. 15 (See p. 9) | Brush with short semi-circular criss-cross strokes, allowing paint to flow and obliterate brush marks |
| | SECOND (Semi-gloss finish) | Allow 2-3 days for drying of first coat | Same as the third semi-gloss coat for new work | Same as the third semi-gloss coat for new work |
| | SECOND (Flat finish) | Allow 2-3 days for drying of first coat | Same as the third flat coat for new work | Same as the third flat coat for new work |

**Notes:** When painting over old varnish or enamel, a little floor varnish or enamel should be added to first coat. Eagle Flatting Oil is recommended in preference to turpentine for its smoother brushing and greater wearing qualities. It produces a better and more lasting finish. When Eagle Heavy Paste White Lead is used, add one quart more flatting oil or turpentine to all formulas except alternates.



# FORMULAS FOR MASONRY AND STUCCO

**Specification Data:** Surface must be thoroughly dry and chemically stable. Moisture should not reach the surface under the paint through faulty flashings, condensation or improper drainage. (If unsatisfactory conditions cannot be corrected, use special cement paints.)

Surface should be tested for free lime and other salts which are harmful to oil. The following solution is a simple test for free lime: Mix 1 dram phenolphthalein, and 4 oz. grain alcohol in 1 qt. of water. Dip a glass rod into this solution and touch the surface in several places. Free lime will cause a bright red spot to appear.

To correct an alkaline condition, apply a solution of 4 lbs. zinc sulphate to 1 gal. of water. Use large brush and rub in well. When dry, brush off surface before painting.

Painting should be done only in dry weather and when the temperature is not under 40° F. Allow ample time for thorough drying.

| | COAT | PREPARATION | PAINT FORMULA | APPLICATION |
|---|---|---|---|---|
| **NEW WORK** | PRIMING | Allow to age for at least 6 months. Test for free lime and use neutralizing solution if needed. Brush clean before painting. Surface must be dry | FORMULA NO. 14<br>100 lb. Heavy Paste or All-Purpose White Lead<br>4-5 gal. Eagle Lead Reducing Oil | Brush in thoroughly and lay off in a smooth even coat |
| | SECOND AND THIRD (Flat finish) | Allow 3-7 days for drying. Dust clean before painting | FORMULA NO. 15<br>100 lb. Heavy Paste or All-Purpose White Lead<br>3-4 gal. Eagle Lead Reducing Oil | Brush to a smooth even coat |
| | THIRD (Gloss finish) | Allow 3-7 days for drying. Dust clean before painting | FORMULA NO. 16<br>100 lb. All-Purpose White Lead<br>3 gal. Raw Linseed Oil<br>1 pt. Liquid Drier | Brush to a smooth even coat |
| **REPAINTING** | PRIMING (Not required if paint is smooth and even) | Dust clean before painting. Paint in bad condition must be removed and those areas treated as new work | The formulas and application used for repainting are identical with those used for new work, omitting the priming coat when not required | |
| **ALTERNATE FORMULAS (NEW WORK AND REPAINTING)** | PRIMING | Allow 3-7 days for drying. Dust clean before painting | FORMULA NO. 14-A<br>100 lb. All-Purpose White Lead<br>3 gal. Boiled Linseed Oil<br>2 gal. Spar Varnish<br>1¼ gal. Pure Turpentine | Brush to a smooth even coat |
| | SECOND | Allow 3-7 days for drying. Dust clean before painting | FORMULA NO. 15-A<br>100 lb. All-Purpose White Lead<br>2 gal. Raw Linseed Oil<br>1¼ gal. Pure Turpentine<br>1 pt. Liquid Drier | Brush to a smooth even coat |
| | THIRD (Flat finish) | Allow 3-7 days for drying. Dust clean before painting | FORMULA NO. 15-B<br>100 lb. All-Purpose White Lead<br>3 qt. Spar Varnish<br>1¼ gal. Pure Turpentine<br>½ pt. Liquid Drier | Brush to a smooth even coat |

**Note:** Use smaller quantity of Eagle Lead Reducing Oil when greatest opacity is desired. If Eagle Heavy Paste White Lead is used, add one quart more turpentine or flatting oil to formulas 16, 14-A, 15-A.

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11

# FORMULAS FOR IRON AND STEEL



**Specification Data:** Painting should be done only in dry weather when the temperature is not under 40° F., particularly if nights are likely to bring frost and moisture.

Painting on exposed iron and steel should preferably be brushed to assure intimate contact of the paint with all parts of the metal work.

Sublimed Blue Lead may be used for both priming and finish coats. Each coat may be tinted characteristically to permit proper supervision.

Red Lead is often used as a second coat, as well as for priming. The second coat may be tinted by adding carbon black.

If light colors are desired with Sublimed Blue Lead or Red Lead, second and subsequent coats may be White Lead-in-Oil, plain or tinted.

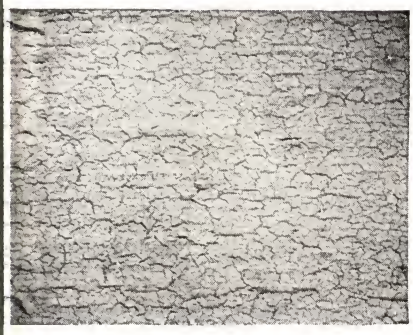
| | COAT | PREPARATION | PAINT FORMULA | APPLICATION |
|---|---|---|---|---|
| **NEW WORK** | PRIMING OR SHOP | Remove rust, mill scale and dirt to bright metal. Clean off grease and oil with benzine | FORMULA NO. 17<br>(Using Eagle Sublimed Blue Lead)<br>100 lb. Sublimed Blue Lead-in-oil<br>2⅔ gal. Raw Linseed Oil<br>1½ pt. Pure Turpentine or Paint and Varnish Manufacturers' 48° to 50° Naphtha<br>1 qt. Rosin-free Drier<br><br>FORMULA NO. 18<br>(Using Eagle Red Lead)<br>100 lb. Eagle Red Lead-in-oil<br>2½ gal. Raw Linseed Oil<br>1½ pt. Pure Turpentine or Paint and Varnish Manufacturers' 48° to 50° Naphtha<br>1½ pt. Rosin-free Drier | Brush on hard, carefully and thoroughly, using round brush to get into all corners and around rivets<br>Where two coats of Blue Lead are to be applied, about a quart more thinner may be used advantageously to give flatter finish |
| | SECOND OR FIRST FIELD | Dust off carefully | FORMULA NO. 17<br>(Using Eagle Sublimed Blue Lead)<br>See above<br><br>FORMULA NO. 2<br>(Using Eagle White Lead)<br>100 lb. All-Purpose White Lead<br>1¾ gal. Raw Linseed Oil<br>1¼ gal. Eagle Flatting Oil or Pure Turpentine<br>1 pt. Best Japan Drier | Brush on hard, carefully and thoroughly, using round brush to get into all corners and around rivets |
| | THIRD OR SECOND FIELD | Dust off carefully | FORMULA NO. 17<br>(Using Eagle Sublimed Blue Lead)<br>See above | Brush on carefully and evenly |
| | THIRD OR SECOND FIELD (Semi-gloss finish) | Dust off carefully | FORMULA NO. 3<br>100 lb. All-Purpose White Lead<br>3 gal. Raw Linseed Oil<br>1 pt. Best Japan Drier | Brush on carefully and evenly |
| | THIRD SECOND FIELD (Flat finish) | Dust off carefully | FORMULA NO. 4<br>(Using Eagle White Lead)<br>100 lb. All-Purpose White Lead<br>2¼ gal. Eagle Flatting Oil or Pure Turpentine | Brush on carefully and evenly |
| **REPAINTING** | PRIMING (Not required unless bare metal is exposed) | Remove any loose paint, scale, rust and dirt to bright metal | FORMULA NO. 17<br>(Using Eagle Sublimed Blue Lead)<br>100 lb. Sublimed Blue Lead-in-oil<br>2⅔ gal. Raw Linseed Oil<br>1½ pt. Pure Turpentine or Paint and Varnish Manufacturers' 48° to 50° Naphtha<br>1 qt. Rosin-free Drier<br><br>FORMULA NO. 18<br>(Using Eagle Red Lead) See above | Brush on hard, carefully and thoroughly, using round brush to get into all corners and around rivets |
| | FIRST AND SECOND | Brush off dust and dirt, and scrape off loose paint | The formulas and application used for repainting are identical with the first field coat and the finish coat on new work | |

# TROUBLE-SHOOTING DEFECTIVE PAINT

Defective performance of a paint film is shown by cracking, peeling, premature excessive chalking, etc. Such defects unfortunately do not appear until some time after the paint has been applied.

Failure of paint film is traceable to three causes, one or all of which may be operative in any instance: improper paint or paint formulation; improper workmanship—faulty surface preparation, faulty application, or disregard of weather conditions; faulty construction or faulty building materials.

The appearance, cause and remedy for the more common types of paint film failures are given on this page.

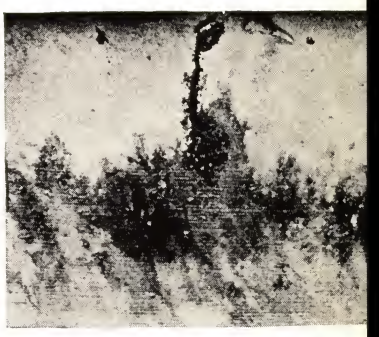


**ALLIGATORING** Caused by application of relatively hard, fast-drying surface coat over undercoats which are soft or slow-drying. Improper oil, too much oil or insufficient drying time may be the cause. Each coat should be formulated to be successively softer than the priming coat. Alligator cracks usually do not penetrate the entire paint coat. When not severe, the cracked layer can be wire-brushed off before painting. Otherwise the entire paint coat must be removed.



**CRACKING AND SCALING** This common defect results from the use of a hard drying inelastic paint which does not contract and expand with the under surface. Satisfactory painting of such a surface is possible only after old paint is removed, usually by burning.

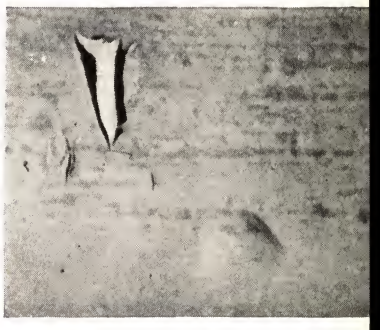
Remedied by using properly formulated lead-in-oil paint. (Do not confuse with peeling.)



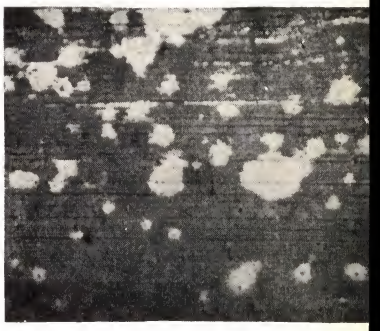
**MILDEW STAINS** Caused when an air-borne fungus attaches itself to wet paint in shaded areas and feeds on oil in the paint film. Mildew stains must be removed before repainting by a wash of 1 lb. tri-sodium phosphate or sodium carbonate to 1 gal. of water. Addition of ½ oz. mercuric chloride per gallon of paint, or the use of less oil and more turpentine, is desirable in sections of the country where mildew is common.



**WRINKLING** Usually caused by one of three things: (1) sudden drops in temperature; (2) application of too thick a paint; (3) using an excess of drier. To remedy, sand the surface and use a properly formulated paint applied in the correct way.



**BLISTERING AND PEELING** This failure is caused by moisture under the unbroken paint film. First evidence is a blister which later breaks and causes peeling of the paint film over affected area. All blistered paint must be scraped off, the source of moisture found and corrected, and the surface thoroughly dried before repainting.



**SPOT FADING** Evidenced by color changes and loss of gloss in irregular patches. Caused by spots in the surface which absorb oil from the paint unevenly. It appears only when insufficient paint has been used. Application of *three* coats of properly formulated paint will avoid it.

**NOTE:** More information on Trouble-Shooting of Defective Paint is given in the Eagle-Picher Painting Manual. See page 5.

# THE EAGLE-PICHER LEAD COMPANY

**General Offices: Temple Bar Building**
**Cincinnati, Ohio**

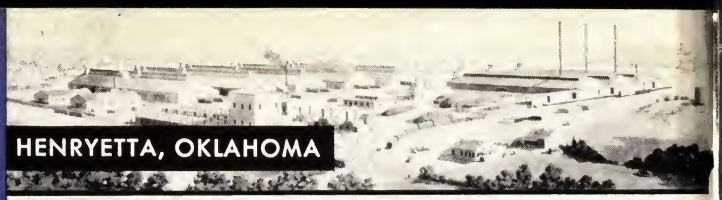
## BRANCH SALES OFFICES

### THE EAGLE-PICHER SALES COMPANY

Baltimore, Md.—359 Guilford Avenue
Boston, Mass.—11 Wharf Street
Chicago, Ill.—1 North La Salle Street
Cincinnati, Ohio—1030 Broadway
Cleveland, Ohio—Broadway and East 9th Street
Dallas, Texas—2215 Laws Street
Detroit, Mich.—1627 W. Fort Street (Room 406)
Joplin, Mo.—C and Porter Streets
Kansas City, Kans.—S. W. Blvd. and State Line
Minneapolis, Minn.—437 Harding Street, N.E.
New Orleans, La.—411 South Peters Street
New York, N. Y.—420 Lexington Avenue
Philadelphia, Pa.—Delaware Ave. and Lombard St.
Pittsburgh, Pa.—1713 Liverpool Street, N.S.
St. Louis, Mo.—3834 Market Street
Tulsa, Okla.—Thompson Building (Room 312)

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The Eagle-Picher Lead Company has been engaged in the manufacture of materials for use in construction and in industry since 1843. Founded primarily to make available the wide adaptability of lead in various forms and alloys, constant research and development have dictated expansions along allied lines, until today Eagle Products, backed by Eagle-Picher's more than ninety years of dependable service, contribute a large share towards increasing the comfort of buildings and to their preservation, decoration and low cost maintenance.


HENRYETTA, OKLAHOMA

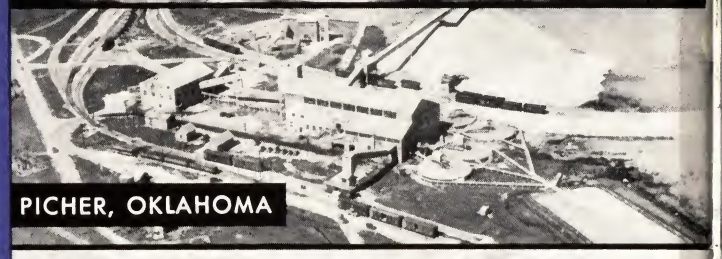

HILLSBORO, ILLINOIS

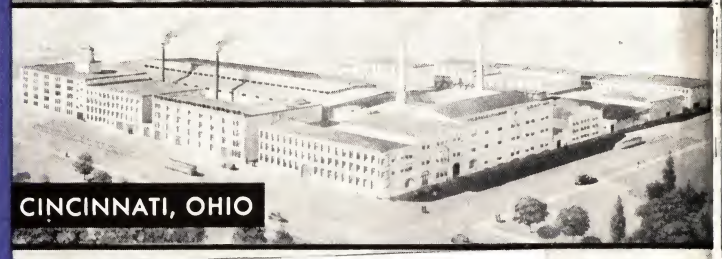

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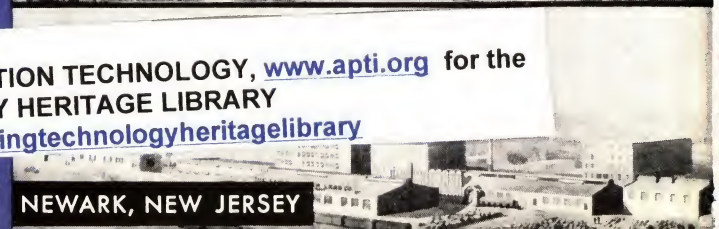

JOPLIN, MISSOURI


EAST ST. LOUIS, ILLINOIS

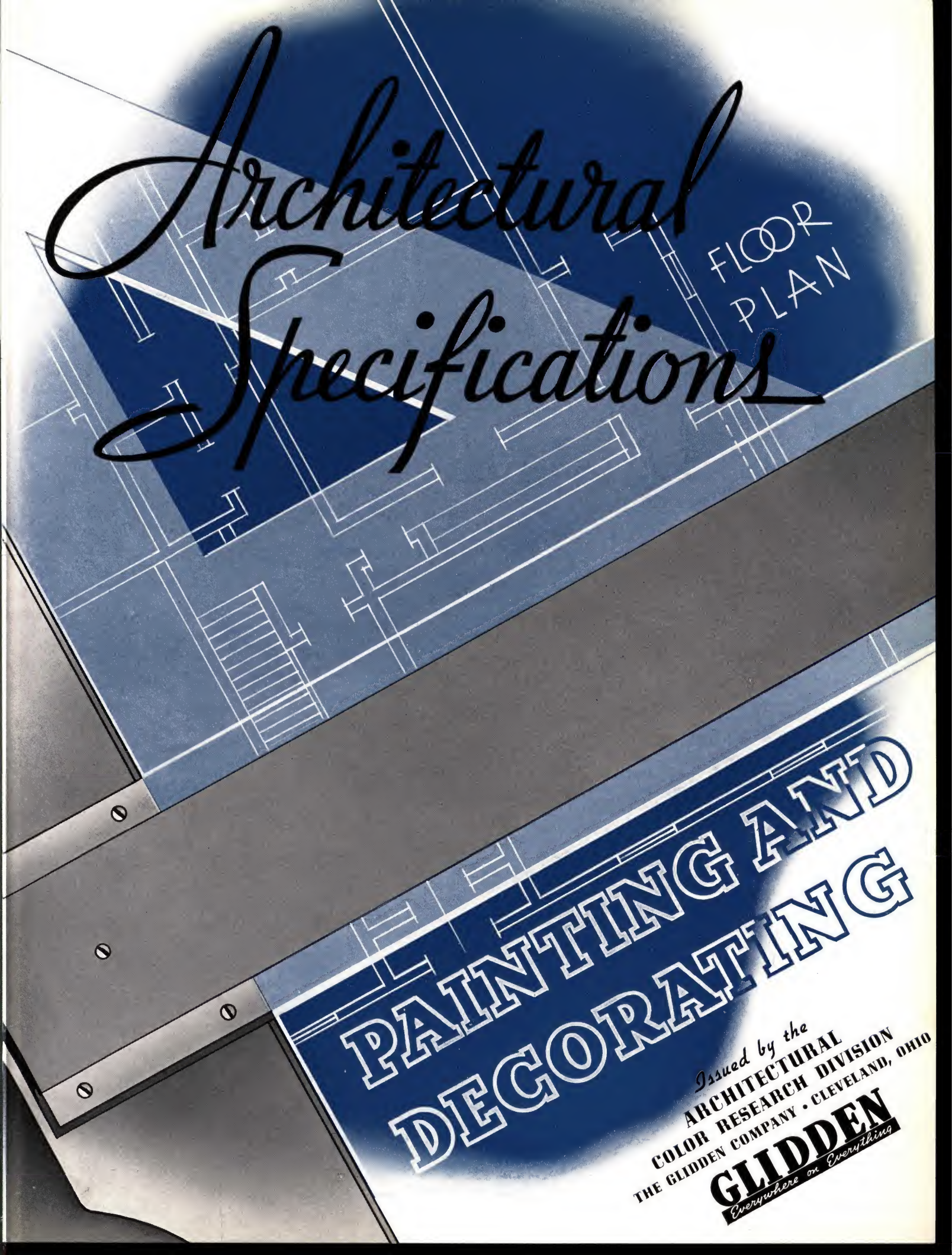

GALENA, KANSAS


PICHER, OKLAHOMA


CINCINNATI, OHIO


NEWARK, NEW JERSEY

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Architectural
Specifications
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THE GLIDDEN COMPANY • CLEVELAND, OHIO
GLIDDEN
Everywhere on Everything

# THE GLIDDEN COMPANY

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MANUFACTURERS OF ARCHITECTURAL FINISHES
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*Everywhere on Everything*

**LABORATORIES . . .** A corps of chemists and trained men are constantly at work devising and perfecting new products, and checking production all along the line to insure uniformity of standards and results. The Glidden laboratories are large and fully equipped with all the scientific instruments for formulating paints to the standards of Time-Tested Laboratories.

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# RECOMMENDED GENERAL INSTRUCTIONS

*Suggestions to aid the architect in preparing complete painting specifications. If written into the specifications, they will help to insure that the painting work is done correctly.*

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**1. GENERAL PAINTING CLAUSE . . .** Be it understood that the Instructions to Bidders and the General Conditions applying on the General Contract apply also on the painting contract.

**2. WORK TO BE DONE . . .** The work required under a painting contract includes the furnishing of all materials, labor and equipment of every nature which may be required for the proper painting and finishing of the building, all as hereinafter specified, shown on the plans, or implied in either plans, or specifications; that the work be complete in every respect unless definitely excepted by the architect.

**3. WORK NOT INCLUDED IN THE PAINTING CONTRACT. N. B. . . .** At this point it is well to make a bill of exceptions showing exactly the surfaces which do not come under the painting contract; for example, the back of interior wood trim, which has been shop primed by others.

**4. PREPARATORY WORK . . .** All surfaces to be painted shall be in proper condition before the work is begun; that is, the surface shall be perfectly dry, clean and smooth. In case any work is defective, or unsuitable for finishing, the painting contractor shall notify the architect of the fact in writing. If the architect is not so notified, the painting contractor will be held solely responsible for the finished condition of the work.

**5. SAMPLES. N. B. . . .** In case it will be necessary for the proper completion of the work to match certain samples, the architect should at this point fill in his requirements as to samples which will serve as standards to be matched in finish, color, etc.

**6. WORKMANSHIP . . .** All work under this contract shall be executed only by concerns of standing approved by the architect. All work shall be made perfect in material, workmanship and finish. All work shall be done by skilled mechanics. No work shall be done under conditions of weather, or temperature, unsuited to good work.

**7. MATERIALS . . .** All materials coming under the painting contract shall be delivered to the building in unbroken packages, bearing the Glidden name and label. Such materials should be used without any adulteration, and only with such thinning as called for in the manufacturer's directions. In case of sealed packages, the seal should not be broken until the contents are to be used. Materials requiring mixing shall be mixed on the premises. All materials must at all times be subject to the inspection and approval of the architect.

**8. PROTECTION AGAINST DAMAGE . . .** The painting contractor shall be responsible for the condition of the building in his charge. Due care shall be taken while painting is in process to protect all portions of the building and also all materials belonging to, or installed by, other contractors.

**9. PATCHING . . .** Carefully patch and finish all work injured, or marred from whatsoever cause, to the satisfaction of the architect. Upon completion the entire job should be in perfect condition and free from defacements of any nature.

**10. FIRE PREVENTION . . .** *Keep all oily rags or waste in covered metal receptacles.*

**11. CLEANING . . .** At the completion of work, remove all surplus materials, staging, rubbish, etc.; clean off all paint, varnish, stains, etc., from floors, glass, walls, hardware, etc., and leave the premises in perfect condition, acceptable to the architect.

**SUMMARY . . .** No paint, varnish, or other finish should ever be applied to a surface containing moisture or bearing scale, rust, dirt, grease—or to any surface not clean and ready to paint.

Any possible alkalinity in plaster, cement, or concrete surfaces must be neutralized.

Neutralize the alkali by giving the wall a wash coat with a solution of two to three pounds of zinc sulphate to a gallon of water.

All nail holes, cracks, etc., must be properly filled with linseed oil putty.

# INDEX TO SPECIFICATIONS

*Architectural Specifications Section*


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# EXTERIOR FINISHES

## WOOD SIDING . . .

**GLIDDEN ENDURANCE PAINT *(Prepared)*** is as nearly perfect a paint as it is possible to manufacture. It is a ready mixed, ready to use House Paint, which combines the long wearing qualities of lead with the film hardening qualities of zinc.

Glidden Endurance Paint (Prepared) works easily, covers well, resists wear and weather, has extreme durability, leaves a good uniform surface for repainting and costs less than other house paints when measured by years of service.

*Glidden Endurance Paint covers approximately 400 to 425 square feet per gallon, 2 coats.*

*Base-Coat*—New wood should be primed with Glidden Base-Coat. The use of this specially prepared first coater eliminates blistering and peeling, and insures longer wearing and better finished results on any kind of wood, particularly the porous, resinous and sappy types.

*Base-Coat covers approximately 300 square feet per gallon, 2 coats.*

### New Work, *Specification 1*

*1st Coat*—Glidden Base-Coat applied as it comes in the container. (Under no condition should this material be reduced.) Allow 72 hours to dry.

NOTE: After the priming coat has dried thoroughly, putty all nail holes, cracks, etc. with a first quality linseed oil putty.

*2nd Coat*—Brush on coat of Glidden Endurance Paint (Prepared) thinned with a pint of turpentine to each gallon. Allow this coat to dry 72 hours or more.

*3rd Coat*—A well brushed out coat of Glidden Endurance Paint (Prepared) as it comes in the container.

### Old Work

The surface to be repainted shall be dusted free from all foreign matter, loose paint removed by wire brushing and scraping, and rust removed from all eaves, downspouts, or flashings. Loose boards or siding shall be renailed and repairs made to siding over drip caps and window and door headers. The open spaces around door casings, windows and corner boards shall be puttied.

### *Specification 2*

*1st Coat*—Apply Base-Coat over the entire surface, working it well into all spots that have become bare. (Alternate:—If Base-Coat is not available reduce Glidden Endurance Paint (Prepared) with one quart of linseed oil and one pint of turpentine to each gallon for application to the south and west sides of the house and with one quart of turpentine and one pint of linseed oil for the east and north sides.)

*2nd Coat*—This final finishing coat shall be Glidden Endurance Paint (Prepared) as it comes in the container.

**TITAN-O-ZINC** is made with titanated pigments which give great hiding quality and a brilliant whiteness. It is offered as an alternate to Glidden Endurance Paint (Prepared) for those who prefer a paint with Titanium base instead of Lead. It is recommended in smoky districts where fumes are prevalent. It is regularly supplied only in white but may be colored as desired by adding Glidden Pure Colors in Oil.

*Titan-O-Zinc covers approximately 400 to 425 square feet per gallon, 2 coats.*

### *Specification 3*

Same as Specification 1 substituting Glidden Titan-O-Zinc in place of Glidden Endurance Paint (Prepared) in second and third coats.

**RIPOLIN ENAMEL. . .(See Ripolin Section—*Specification 13*)**

**EUSTON WHITE LEAD** is a lead of unusual whiteness. It produces a smooth and enamel-like film. Euston White Lead is pure carbonate of lead made by a secret patented process that controls its whiteness and fineness, which in turn governs its unusual spreading capacity and ability to produce more paint per hundred pounds. Furnished in three forms: Heavy Paste; Soft Paste; and All-Purpose. (Specifications furnished on request.)

## WOOD SHINGLE SIDING AND ROOFS

**ENDURANCE SHINGLE STAINS** are high grade creosote stains used to prevent warping, curling, splitting and general decay of the wood as well as supply permanent and decorative color.

*Brushing: — Endurance Shingle Stains cover approximately 150 square feet per gallon, 1st coat; 100 square feet per gallon, 2nd coat.*

*Dipping:—Two-thirds dip on 1000 shingles will require approximately 3 gallons of Stain.*

### New Work, *Specification 4*

*1st Coat*—Dip two-thirds of the length of the shingle into Endurance Shingle Stain of consistency supplied by Glidden. Stack loosely to allow proper penetration and drying.
*2nd Coat*—After shingles are laid apply one full brushing coat of Endurance Shingle Stain as it comes in the container.

### Old Work

On old work Endurance Shingle Stains can be applied by either brushing or spraying although the brushing application is recommended. Particular care shall be exercised to see that all portions, particularly the edges of the shingles, are well coated.

Two coats are recommended and in such instances the first coat shall be reduced 25% with raw linseed oil.

## COMPOSITION ROOFS . . .

**ENDURANCE ROOF COATING** is a pure asphalt suitable for reconditioning and waterproofing all types of composition roofs. Insures protection against water, weather, alkali, common acids, gases, fumes, etc. Applied with regular roof brushes.

●

## EXTERIOR WOOD SURFACES (Varnished)

**Including Porch Ceilings, Doors, Trim, Etc.**

**GLIDDEN OIL STAINS** are permanent, non-fading pigmented stains that require but little wiping and are recommended for all exterior work.

*Glidden Oil Stains cover approximately 800 square feet per gallon, 1 coat.*

**GLIDDENSPAR** is recommended as the finest varnish available today for either interior or exterior use. It is made from bakelite and synthetic type resins which are the latest developments in varnish research and manufacture.

# EXTERIOR FINISHES (Cont'd)

Giddenspar is pale in color, will not turn white from water, and is impervious to alcohol.

***Specification 5***

*1st Coat*—After sanding wood to a smooth surface, brush on a coat of Glidden Oil Stain. Wipe off excess stain with a soft cloth. Allow 24 hours to dry.

*2nd Coat*—(Open grained wood only) Sand and fill with Glidden Paste Wood Filler reduced as needed with turpentine or naphtha. Wipe before Filler becomes hard, rubbing across grain and hard enough to force the Filler into the pores and remove excess.

*3rd Coat*—Brush on one coat of Gliddenspar Varnish in the consistency as supplied by the manufacturer and allow to dry.

*4th Coat*—(Same as 3rd Coat.)

NOTE: Don't use Shellac anywhere in a schedule embracing Synthetic Varnishes.

## WOOD PORCH FLOORS . . .

**PORCH AND DECK PAINT** is a wear-resisting, protective and decorative coating for exterior porch floors.

*Porch and Deck Paint covers 600 to 700 square feet per gallon, 1 coat.*

***Specification 6***

*1st Coat*—One brush coat of Glidden Porch and Deck Paint thinned with one quart of pure linseed oil and one pint of pure turpentine to the gallon.

*2nd Coat*—After 72 hours, apply a full flowing coat of Glidden Porch and Deck Paint thinned with one pint of pure turpentine to the gallon.

*3rd Coat*—Allow 48 hours for drying and apply a full coat of Glidden Porch and Deck Paint as it comes in the container.

## CONCRETE, STUCCO and BRICK . . .

**LIQUID CEMENT COATING** is for damp-proofing and rendering uniform exterior surfaces of concrete, stucco, etc. It is composed of carefully selected pigments and specially prepared oils which produce an extremely durable and water-resisting semi-gloss finish.

*Liquid Cement Coating covers 300 to 500 square feet per gallon depending on the porosity and texture of the surface.*

**New Work,** ***Specification 7***

*1st Coat*—To each gallon of Glidden Liquid Cement Coating add one pint of Glidden Liquid Cement Mixing Liquid and brush well into the surface. Allow 36 to 48 hours to dry.

*2nd Coat*—Brush on a coat of Liquid Cement Coating as it comes in the container. Allow 72 hours for drying.

*3rd Coat*—One additional coat brushed on evenly (as supplied by the manufacturer.)

**OLD WORK**

Remove all loose paint from old surfaces. Touch up bare spots with Glidden's Liquid Cement Coating that has been thinned 25% with Liquid Cement Mixing Liquid.

***Specification 7A***

*1st Coat*—Apply one coat of Liquid Cement Coating, of color selected, to the entire surface after having reduced it in the ratio of three to one with Liquid Cement Mixing Liquid.

*2nd Coat*—The second coat shall be Liquid Cement Coating applied full body and brushed well on to and into the surface.

## STRUCTURAL STEEL AND METAL ORNAMENTS . . .

**LIQUID RED LEAD** is recommended wherever a shop coat of red lead is specified. It comes ready to apply, is extremely elastic, and is an excellent rust preventative.

**NEV-A-RUST** embodies every requirement of a high grade metal protective paint. It is the result of years of research and observation of the product in actual use.

*Nev-A-Rust covers 600 to 700 square feet per gallon, 1 coat.*

The combination of these two materials, if applied as hereafter specified, will adequately protect all the coated metal of any structure from the destructive elements.

NOTE: It is impossible to overestimate the need of an absolutely clean and rust-free steel which must be obtained by thorough sand blasting or wire brushing.

***Specification 8***

*Shop Coat*—A priming coat of Glidden Liquid Red Lead as it comes in the container to be applied at the mill.

*1st Field Coat*—A brush coat of Glidden Nev-A-Rust, black or red, as it comes in the container.

*2nd Field Coat*—(Same as 1st Field Coat.)

NOTE: By alternating the colors of the material used in the Field Coats, the architect secures a color contrast between the coats which insures thorough workmanship on inspection.

**GRAPHITE LIQUID PAINT** is recommended for use on any metal surface. It is offered as an alternate to Nev-A-Rust for those who prefer a graphite base paint for this use. Its heat resisting qualities make it especially good for painting chimneys, boilers, etc.

***Specification 9***

Same as Specification 8 substituting Glidden Graphite Liquid Paint for Glidden Nev-A-Rust.

**METALLITE** (Aluminum Paint) is a product of unusual covering and hiding ability excellent for all exterior surfaces both hot and cold. It may be used as a priming coat to be covered with Glidden Endurance Paint (Prepared) or other exterior paint or it may be used as a finish coat over Glidden Nev-A-Rust or Base Coat where an Aluminum finish is desired.

## GALVANIZED IRON . . . *Specification 10*

The galvanizing process leaves on the surface of the iron a film to which most paint will not adhere. It is therefore, necessary to prepare galvanized iron in a special way, no matter what the final coats may be.

The most satisfactory method of preparing the iron is to apply a brush coat of the following solution: dissolve 1 ounce each of Chloride of Copper, Sal Ammoniac and Nitrate of Copper in ½ gallon of water in an earthenware vessel. When dissolved, add 1 ounce of Hydrochloric Acid. Allow 24 hours to dry and then use a stiff brush to remove the powder which has formed.

Best results are obtained by immediately following with one coat of Glidtite Galvanized Iron Primer.

***Follow with Glidden Endurance Paint (Prepared) Nev-A-Rust or other exterior paint.***

# EXTERIOR FINISHES (Cont'd)

## SMOKE STACKS, PIPES and OTHER HOT SURFACES . . .

**SMOKE STACK BLACK** is so formulated that it will bake hard to the metal, practically becoming a part of it and forming an excellent protective film.

*Specification 11*

*One Coat*—Remove all grease spots and foreign matter from the surface and brush on one heavy coat of Glidden Smoke Stack Black of a consistency as supplied by the manufacturer.

## METAL ROOFS . . .

**TINNER'S RED** is a popular sheet metal paint, permanent in color and absolutely waterproof. It is quick-drying and elastic; withstands rigid metal bending tests.

*Covers approximately 700 square feet per gallon, 1 coat.*

*Specification 12*

*One Coat*—Remove all rust, scale, grease, dirt, etc. from the surface. Apply one coat of Tinner's Red as it comes in the container.

**NEV-A-RUST . . .** *(See Specification 8)*

## GUTTERS, DRAINS and FLASHINGS . . .

*(See Specification 8)*

# RIPOLIN ARCHITECTURAL ENAMELS

***For Fine Exterior and Interior Enamel Finish***

**RIPOLIN** is internationally known as a fine, durable enamel. The secret process by which it is manufactured, together with the aging of the essential oils, makes BLT Ripolin Enamel a super-product.

It actually improves with age; there are numerous public buildings and fine homes in the United States where 15 years of continuous service have not dimmed the lustre and beauty of Ripolin.

The ever increasing demand for a quicker-drying product resulted in Q.D. Ripolin which was developed after years of careful research. Q.D. Ripolin dries in a much shorter length of time than BLT Ripolin but still retains all of its outstanding qualities.

Q.D. Ripolin is manufactured in 18 washable, modern colors, carefully selected by authorities on architure, and color harmony. This enamel smoothes away to a glossy, tile-like finish, free from brush marks and will give lasting beauty to all surfaces where a high grade enamel finish is desired. Ripolin is furnished in High Gloss, Semi-Gloss (Egg-shell) and Dead Flat White. Any finish desired between the High Gloss and Dead Flat can be obtained by intermixing in varying proportions. To obtain any of the lighter shades, White Ripolin may be tinted by the use of pure color ground in Japan, thinning down the color with a small quantity of turpentine and adding slowly to the enamel until the desired color is obtained. The addition of a large amount of coloring matter to obtain any of the darker shades is not recommended. We will supply darker shades on order.

Where Ripolin is to be used in colors, Ripolin Undercoat tinted the same shade as the finishing coat should be used.

Ripolin of itself will show a perfectly smooth, even surface without brush-marks, but will not cover irregularities in the under-coating. For this reason great care should be exercised to keep the working pots, brushes and surface to be worked on free from dust, grit, or other foreign matter. For extremely fine work, where there are two coats of enamel to be applied, the first coat of enamel should be rubbed with pumice rather than with sandpaper or steel wool.

Do not thin the finishing coat of Ripolin.

## NEW EXTERIOR WORK . . .

Exterior finishes on Ripolin-enameled homes are extremely durable with permanency of lustre and depth of beauty. A Ripolin surface because of its enamel-like finish does not hold the soot and grime. It cleans easily and always maintains extreme whiteness.

*Ripolin First Coat covers approximately 300 square feet per gallon, 2 coats. Exterior Ripolin covers approximately 360 square feet, 2 coats.*

*Specification 13*

*1st Coat*—A priming coat of Glidden Base-Coat applied without reduction as it comes from the container. Allow 72 hours for drying.

*2nd Coat*—A full coat of Exterior Ripolin First Coat. Allow 72 to 96 hours for drying.

*3rd Coat*—Exterior Ripolin First Coat reinforced with 1 quart Exterior Gloss Ripolin to the gallon. Allow 96 hours for drying.

*4th Coat*—A good full coat of Exterior Gloss Ripolin as it comes from the container.

NOTE: Third coat may be eliminated where cost is a vital factor.

## NEW INTERIOR SOFT WOOD . . .

*Specification 14*

*1st Coat*—A priming coat of Ripolin Enamel Undercoat, thinned with 1 quart of raw linseed oil and ½ pint of pure turpentine to the gallon. Allow 48 to 72 hours for drying.

*2nd Coat*—Full coat of Ripolin Enamel Undercoat. Allow overnight to dry.

*3rd Coat*—Full coat of Ripolin Enamel Undercoat. Sandpaper this coat to a smooth surface.

*4th Coat*—Ripolin Enamel Undercoat reinforced with ½ gallon Gloss Ripolin added to the gallon. Sandpaper lightly after drying.

*5th Coat*—A good flowing coat of Ripolin Enamel. This coat may be thinned with ½ pint of pure turpentine to the gallon. Allow 96 hours for drying; rub smooth with pumice and water.

## RIPOLIN ARCHITECTURAL ENAMELS (Cont'd)

*6th Coat*—A good flowing coat of Ripolin Enamel as it comes in the container. DO NOT THIN FINISHING COAT OF RIPOLIN.

NOTE: If expense is of prime importance, 2nd or 5th coats may be omitted, or, if desired, both.

### NEW INTERIOR SAPPY WOODS . . .

***Specification 15***

*1st Coat*—A priming coat of Ripolin Enamel Undercoat, thinned with 1½ pints of raw linseed oil and 1½ pints pure turpentine to the gallon. Allow 48 to 72 hours for proper drying.

NOTE: After applying first coat, all woodwork should be thoroughly rubbed down with fine sandpaper or steel wool. Give the whole surface a wash coat of thin white shellac which has been strained through cheese-cloth. Follow Specification 14 from this point.

### NEW INTERIOR OPEN-GRAINED WOODS

***Specification 16***

*1st Coat*—A coat of Glidden Paste Wood Filler should be rubbed well into the surface. After this is dry and hard sandpaper the work thoroughly.

*2nd Coat*—A priming coat of Ripolin Enamel Undercoat, thinned with 1 pint of raw linseed oil and 1 pint of pure spirits of turpentine to the gallon; sandpaper to a smooth surface after thorough drying. Follow Specification 14 from this point.

# INTERIOR WALL FINISHES

### PLASTER WALLS (ROUGH and SMOOTH) and WALL BOARD . . . *General Instructions*

All wall surfaces should be carefully checked for "hot" spots caused by excessive lime in the body coat. A litmus paper or phenolphthalein applied to those spots that indicate an alkaline condition should be used to prove whether such a condition exists. All plaster on which "hot" spots appear should be washed previous to the painting with a neutralizing solution made of at least 3 pounds of zinc sulphate dissolved in a gallon of water. Allow this application to dry thoroughly and brush all zinc crystals from the surface.

New walls should be carefully pointed up before priming, cracks should be widened to at least ¼", and filled flush to the surface with a mixture made of ¼ part of plaster of Paris to ¾ parts of whiting by weight. This is mixed to an easy working consistency by the addition of a good grade of varnish. Quick setting of the mixture indicates too much plaster of Paris and the addition of more whiting and varnish will ease working conditions.

### FLAT WALL FINISHES . . .

**SPEED-WALL FLAT** is manufactured in 14 modern pastel shades. It dries to a soft finish with a slight sheen that indicates its washability.

*Speed-Wall Flat covers approximately 400 square feet per gallon on smooth plaster, 1st coat. 450 to 600 square feet per gallon on smooth plaster, 2nd coat.*

#### New Work, *Specification 17*

*1st Coat*—Speed-Wall Mixing Size to which has been added an equal amount of Speed-Wall Flat in the color selected for finishing coats. Allow overnight to dry.

*2nd Coat*—Speed-Wall Flat as it comes in the container.

Allow overnight to dry.

*3rd Coat*—(Same as 2nd Coat.)

### CASEIN PAINT . . .

**REFLECT-O-LITE** is a paint furnished in semi-paste form that differs from other types of water paints in that casein is used in making the vehicle and has the faculty of producing unusual adhesion. Its pigment is lithopone commonly used in practically all types of wall finishes.

*Reflect-O-Lite covers solidly with one coat and has no lingering or strong penetrating odors. The instances where size is necessary are few. Reflect-O-Lite is quick drying. It is economical because it can be thinned with water but in this respect it is different from Kalsomine because it is washable.*

#### New Work, *Specification 18*

*Surface Preparation*—Only in those instances where there are indications of uneven suction or porosity of the surface is a primer necessary. When priming is recommended use Speed-Wall Interior Base-Coat. After primer has dried apply one coat of Reflect-O-Lite after reducing each gallon of this material with one-half gallon of water.

*2nd Coat*—In extreme cases a second coat may be advisable.

#### Old Work

*Surface Preparation*—The surface to be painted shall be cleaned free from dirt and grease while loose paint, Kalsomine, and other foreign matter shall be entirely removed. Fill all cracks, nail holes and damaged spots with Patching Plaster. Prime all patches.

Add one part of water to two parts of Reflect-O-Lite slowly and stir continually until evenly mixed. Apply by brushing, flowing out evenly to avoid brush marks.

### SEMI-GLOSS WALL FINISHES . . .

**SPEED-WALL SEMI-GLOSS** is a quick-drying, low-lustre finish, highly recommended for use in hospitals, hotels, public buildings, schools, apartment houses, offices and homes. It can be washed repeatedly and easily without harming the finish.

*Speed-Wall Semi-Gloss covers approximately 400 square feet per gallon on smooth plaster, 1st coat. 500 to 525 square feet per gallon on smooth plaster, 2nd coat.*

#### New Work, *Specification 19*

*1st Coat*—Apply Speed-Wall Interior Base-Coat reduced in the proportion of one quart of naphtha to the gallon. Four hours drying time is sufficient with good drying conditions.

*2nd Coat*—Speed-Wall Semi-Gloss as it comes in the container.

Allow overnight to dry.

*3rd Coat*—(Same as 2nd Coat.)

### GLOSS WALL FINISHES . . .

**SPEED-WALL GLOSS** is a high grade wall finish with easy working properties and is very well

# INTERIOR WALL FINISHES (Cont'd)

adapted to kitchen and bathroom walls and other surfaces that must be washed or cleaned frequently.

*Speed-Wall Gloss covers approximately 400 square feet per gallon on smooth plaster, 1st coat. 500 to 550 square feet per gallon on smooth plaster, 2nd coat.*

### New Work, *Specification 20*

*1st Coat*—Apply Speed-Wall Interior Base-Coat, reduced in the proportion of one quart of naphtha to the gallon.

*2nd Coat*—Speed-Wall Gloss as it comes in the container. Allow overnight to dry.

*3rd Coat*—(Same as 2nd Coat.)

### Old Work, Flat, Semi-Gloss or Gloss

All old surfaces shall be carefully cleaned free from grease, smoke and other foreign matter.

*Surface Preparation.*—Large cracks shall be filled with plaster of Paris and then sized with either Speed-Wall Interior Base-Coat or Shellac.

### *Specification 21*

*1st Coat*—Reduce Speed-Wall Interior Base-Coat 25% with naphtha for a primer sealer coat.

*2nd Coat*—Apply Speed-Wall, Flat Semi-Gloss or Gloss, in the consistency found in the package.

*3rd Coat*—If a third coat is necessary this too shall be Speed-Wall in the sheen selected, applied full body.

## RIPOLIN ENAMEL . . . (See Ripolin Section—*Specification 14*

## CANVAS COVERED WALLS . . .

Follow same specifications as for New Plaster No. 17.

## WOOD PANEL WALLS . . .

**ENDURANCE WOOD STAINS** are penetrating stains which greatly enhance the natural beauty of all woods. They require no wiping.

*Endurance Wood Stains cover approximately 1000 square feet per gallon, 1 coat.*

### *Specification 22*

*1st Coat*—A full coat of Endurance Wood Stain of the color selected.

NOTE: On open-grained woods apply a wash coat of shellac after stain is dry. Fill with Glidden Paste Wood Filler reduced, as needed, with turpentine. Wipe, rubbing across grain, as filler sets. Sandpaper to a smooth surface.

*Succeeding Coats*—Two or more coats of Wearette Varnish, of a consistency as supplied by Glidden, until desired finish is obtained.

NOTE: Flat Finish . . . LIK-A-RUB dries with a rubbed or egg-shell effect without the expense of the very costly rubbing operation. Apply as a final finish coat after application of Wearette Varnish.

*Lik-A-Rub covers approximately 400 square feet per gallon, 2 coats.*

### Metal Surfaces

Metal surfaces require no priming. Use one or two coats of Speed-Wall in the desired sheen just as it comes from the can.

## FACTORY INTERIOR WALLS . . .

**SPRAY-DAY-LITE** — An unusual mill white which will cover any surface no matter how smoky or black, in one coat; be free from sags, runs, chipping or peeling of solid surfaces; wash like tile; give three to eight years service. Suitable for use on wood, concrete or steel.

Spray-Day-Lite is made in three forms: (1) Regular for all surfaces under ordinary conditions; (2) Fume-proof for use where chemical or other fumes which tend to discolor the painted surfaces are present; (3) Fungi-proof for use where dampness or other conditions create mold, etc.

ADDITIONAL INFORMATION ON REQUEST

### *Specification 23*

*One Coat*—Spray or brush will cover any surface and will give a high percentage of light reflection.

—Where fumes prevail specify Pli-enamel.

NOTE: For dado trim Florenamel is ideal. It has excellent coverage and adhesion to the surface and will stand constant washing. One full brush coat is sufficient on a properly sized and sealed surface.

**INSULITE WHITE**—a sanitary, water-proof, pure-white paint for industrial interiors.

**PLI-NAMEL** . . . *(See Specification 30)*

# INTERIOR FLOOR FINISHES

## OPEN-GRAINED WOOD . . .

**FLOORETTE VARNISH** is the highest grade of floor varnish manufactured: heavy body; extreme fullness; high gloss; waterproof; scuffproof, and extremely elastic. Formulated with latest types of synthetic resins.

*Floorette Varnish covers approximately 400 square feet per gallon, 2 coats.*

### New Work, *Specification 24*

*1st Coat*—A full coat of Endurance Wood Stain of color selected.

*2nd Coat*—(Open grained woods only) A brush coat of Glidden Endurance Paste Wood Filler, thinned with turpentine or naphtha to the proper consistency. Remove all excess filler by rubbing across the grain.

*3rd Coat*—Floorette Varnish 10% reduction with turpentine.

*Succeeding Coats*—To be Floorette Varnish, applying necessary number to get desired results. Allow 24 hours between each coat.

*Waxing*—Apply a thin coat of Jap-A-Lac Wax with a soft cloth. Allow 20 minutes to dry and polish.

### Old Work

The surface shall be cleaned free from dust, dirt, wax and all other foreign matter, as well as being perfectly dry. Portions of floor surfaces that have become worn, such as at door entrances, shall be carefully washed and bleached to remove stains.

*Surface Preparation*—Make as many applications of diluted stain as may be necessary to match the color of the floor surface. Open grained woods shall be filled. All stained and filled spots shall receive an application of Glidden's Floorette reduced 10% with turpentine.

# INTERIOR FLOOR FINISHES (Cont'd)

*Specification 25*

*1st Coat*—The entire floor surface shall receive one coat of Glidden's Floorette reduced 10% with turpentine.

*2nd Coat*—After the first coat has dried 24 hours apply one full flowing coat of Glidden Floorette without reduction.

**RAPID-COTE** is a quick-drying All-Purpose Varnish that can be substituted for Floorette in any of the floor finishing specifications.

## SOFT WOOD (Stain) . . .

**(Same as Specification 24 omitting the 2nd Coat of Paste Wood Filler)**

## NATURAL WOOD FINISH . . .

*Specification 26*

*1st Coat*—Brush on full coat of Glidden Paste Wood Filler reduced as desired with turpentine or naphtha. (Omit Wood Filler coat on close-grained woods.) Allow to set 15 to 20 minutes and rub off excess Filler remaining on surface, wiping across the grain.

*2nd Coat*—After Filler is dry, apply a coat of Floorette Varnish reduced 10% with turpentine.

*Succeeding Coats*—Full coats of Floorette Varnish until desired effect is obtained. Allow 24 hours drying time between coats.

## PAINTED WOOD FLOORS . . .

**FLORENAMEL** is a sanitary, extremely tough coating for interior floors; will withstand hard wear and repeated washings; made in a wide range of popular colors.

*Florenamel covers approximately 500 square feet per gallon, 1 coat.*

### New Work, *Specification 27*

*1st Coat*—Glidden Florenamel, of color selected by the architect, reduced with one pint of turpentine to the gallon. Allow overnight to dry.

*2nd Coat*—Glidden Florenamel as it comes in the container. If additional coats are desirable, allow overnight to dry between coats.

## INTERIOR PAINTED FLOORS . . .

### Old Work

*Specification 28*

The surface shall be cleaned free from dust, dirt, wax and all other foreign matter, as well as being perfectly dry. Portions of floor surface that have become worn shall receive a coat of Florenamel in the color selected, which has been reduced 10% with turpentine.

*Finishing Coat*—The entire floor surface shall receive one coat of Florenamel applied in the consistency found in the can.

## GYMNASIUM FLOORS . . .

### New Work, *Specification 29*

*1st Coat*—Apply Glidden Gym Floor Varnish liberally to impregnate entire surface.

*2nd Coat*—After first coat has dried for 24 hours apply a second coat.

### Old Work

*Surface Preparation.*—Clean floor of all stains, rubber burns and foreign matter.

—Apply one coat of Glidden Gym Floor Varnish.

**FLORENAMEL OR CONCRETE FLOOR DRESSING** may be used on concrete floors where cost is a vital factor. Use Specification No. 27.

## CONCRETE FLOORS . . .

**PLI-NAMEL** has Pliolite as its basic ingredient. It is recognized as a long wearing finishing material for cement floors, for resistance to moisture, alkali and acid. It is very tough and will withstand hard wear.

Before applying Pli-namel, floors should be etched with a 10% dilute muriatic acid. This should be removed from the surface with water after 15 minutes.

*Specification 30*

*1st Coat*—Pli-namel requires no primer. Brush on one coat of Pli-namel, reduced 25% with mineral spirits, into the surface and allow to dry from 24 to 48 hours.

*2nd Coat*—Brush on a coat of Pli-namel, as supplied by the manufacturer.

NOTE: Two coats complete the average job; however, an additional coat, same as 2nd coat, may be added if required, after 24 hours of drying.

**MASTICRETE** is an excellent, economical product for patching or resurfacing floors, and is particularly good for repairing concrete floors in factories, warehouses and basements, and on sidewalks, loading platforms, runways, etc. It can be applied in any thickness—works down to a feather edge—and will bond securely to any clean, firm surface.

ADDITIONAL INFORMATION ON REQUEST

# INTERIOR WOOD TRIM FINISHES

## WOODWORK AND TRIM

## HARDWOOD (Stain) . . .

**WEARETTE VARNISH** is a high grade varnish for the finest interior use. It is light in color, extremely elastic, and durable.

*Wearette Varnish covers approximately 400 square feet per gallon, 2 coats.*

### New Work, *Specification 31*

*1st Coat*—One coat of Endurance Wood Stain, of color selected.

*2nd Coat*—After Stain is thoroughly dry, apply a coat of pure Shellac, that has been thinned 50% with alcohol.

*3rd Coat*—(Open grained wood only) Brush a coat of Glidden Endurance Paste Wood Filler thinned with turpentine or naphtha to the proper consistency. Rub off excess Filler, wiping across the grain. Allow 18 to 24 hours for drying, and then sandpaper thoroughly to a smooth surface.

*Succeeding Coats*—To be Wearette Varnish. Apply two or more coats to get desired results allowing 24 to 36 hours drying time between coats.

NOTE: Wearette Varnish may be rubbed down to a dull finish after drying 72 hours.

# INTERIOR WOOD TRIM FINISHES (Cont'd)

NOTE: Flat Finish . . . Lik-A-Rub dries with a rubbed or egg-shell effect without the expense of the very costly rubbing operation. Apply as a final finish coat after application of Wearette Varnish.

Lik-A-Rub covers approximately 400 square feet per gallon, 2 coats.

**GLIDDENSPAR** is recommended for interior work exposed to severe conditions, such as window sills, bars and furnishings of hotels, clubs, restaurants, etc. and wherever a long oil varnish which will not turn white from water is required.

**Use Specification 5—page 6.**

**RAPID-COTE VARNISH** is a new synthetic, four hour varnish that dries rapidly, staying wet just long enough to permit free brushing, and that does not show brush marks or laps. It is absolutely water-proof, pale in color, elastic and very durable. It was primarily developed for floors and is capable of resisting the wear and abuse to which floors are subjected, consequently, it qualifies as a fine finsh for any interior work where a quick-drying varnish is required.

### Old Work, *Specification 32*

After thoroughly cleaning the surface and allowing it to dry, all chipped, scratched, stained or bare spots shall be touched up with a stain matching the color of the original finish. After such patches have been dried they shall receive a coat of shellac.

*Finishing Coat*—The entire surface shall receive two coats of Gliddenspar or Wearette, allowing 24 hours between coats for thorough drying.

*Flat Effects*—If a flat or rubbed finish is desired, the first coat shall be Glidden's Wearette followed with a final or finishing coat of Lik-A-Rub.

## SOFT WOOD (Close-Grained) (STAIN)

***Specification 33***

**(Same as Specification 31 Omitting 3rd Coat of Paste Wood Filler)**

## HARDWOOD (Open-Grained) Natural Wood . . .

***Specification 34***

*1st Coat*—Brush on full coat of Glidden Paste Wood Filler reduced as needed with turpentine or naphtha. Remove all excess filler by rubbing across the grain. Allow overnight to dry.

*2nd Coat*—Apply a wash coat of shellac.

*3rd Coat*—Sand with fine sandpaper and apply a full coat of Wearette Varnish reduced 10% with turpentine. Allow 24 to 36 hours for drying.

*Succeeding Coats*—Full coats of Wearette Varnish until desired effect is obtained, allowing 24 to 36 hours between coats for proper drying.

# MISCELLANEOUS FINISHES

## RADIATORS . . .

**METALLITE** dries with a film that closely resembles aluminum metal. It is heat-resisting and specially adaptable to radiators. Covers in one coat and dries to a smooth surface and will not collect dust or dirt.

**CHROMATIZED PRIMER,** as a radiator primer, has good adhesion for the metal and unusual rust-inhibiting qualities.

***Specification 35***

*1st Coat*—Brush on a coat of Chromatized Primer in the consistency supplied by Glidden. Allow overnight to dry.
*2nd Coat*—One coat of Metallite.

NOTE: Metallite is supplied in a compartment can and it is important that the powder be well dispersed in the vehicle before application of the material.

**JAP-A-LAC GOLD AND ALUMINUM** give a metallic finish and are suitable for use on hot surfaces.

**SPEED-WALL FLAT** is so formulated that it retains its color even after being subjected to a high temperature for a long period of time. Speed-Wall Flat is made in 14 attractive colors.

**SWIMMING POOLS . . .** Past experiences in the finishing of swimming pools have demonstrated the necessity of treating each pool as an individual case. If the architect will supply all the facts that the painter has to consider, the Glidden Company Architectural Service will recommend a specification that will cover the finishing of any type of swimming pool.

## BARNS AND FARM BUILDINGS . . .

(*See Specification 1*)

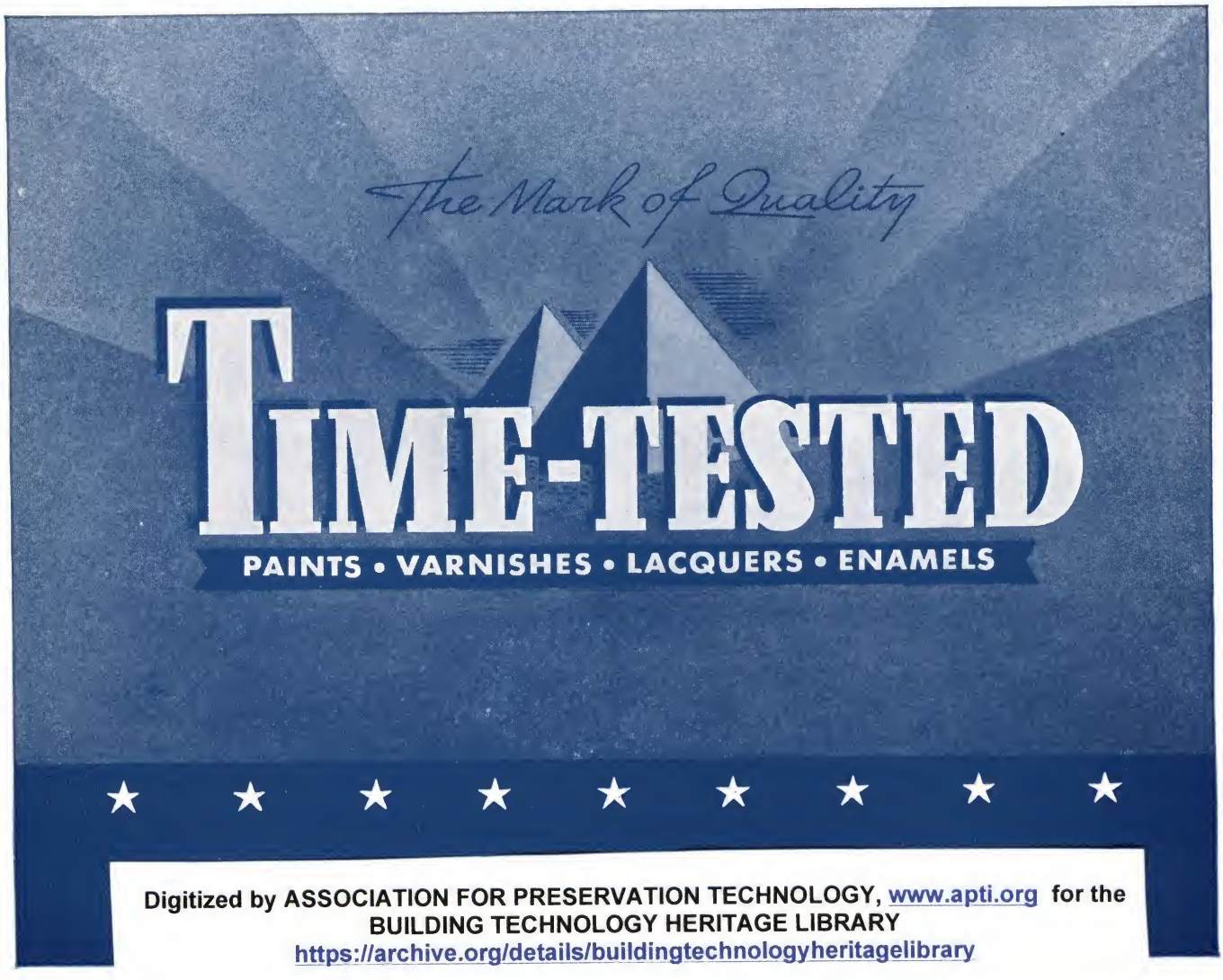
## ADDITIONAL ARCHITECTURAL FINISHES

Ad-El-Ite Hygienic Kalsomine
Ad-El-Ite Paint and Varnish Remover
Architectural Enamels
Bar and Table-Top Varnish
Barn and Roof Paint
Euston Liquid White Lead
Endurance White—Semi-Paste
Flat Brick Red
Flatting Oil
Gloss Interior Enamel
Jap-A-Lac Enamel
Japan and Liquid Driers
Liquid Roof Cement
Metal Protective Paint
Paste and Semi-Paste Paints
Polishes and Waxes
Pure Colors in Oil
Reflect-O-Lite Washable Cold Water Paint
Ren-O-Wax
Shellac
Speedoleum Varnish
Titan-O-Zinc Enamel
Titan-O-Zinc White Paste Paint
Wallpaper Elixir
Zinc-O-Lith Enamel
Zinc-O-Lith House Paint
Zone Marking Paint—Romark

**FOR FURTHER INFORMATION WRITE THE GLIDDEN COMPANY, CLEVELAND, O.**

# GLIDDEN QUALITY

Since 1870, GLIDDEN Paints, Varnishes, Lacquers and Enamels have been known for their fine quality. NOW—that quality is doubly assured to paint buyers by the fact that all outstanding GLIDDEN Products carry the famous "TIME-TESTED" trademark, which is recognized everywhere as absolute proof of dependable quality in Paints.




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## THE GLIDDEN COMPANY

National Headquarters

CLEVELAND, OHIO

Factories and Branches in Principal Cities Throughout America

# HOCKADAY, INC.

Paints, Varnishes, Enamels, Hockaday Body and Reducer
Consulting Paint Specialists

166 West Jackson Boulevard
CHICAGO, ILL.

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## WASHABLE WALL FINISHES

### The Company—Its Reliability

Hockaday products are highly specialized materials which should not be confused either in price or quality when compared with ordinary lines of paints and varnishes.

There is a suitable Hockaday product for every known surface-protecting and beautifying need. Each one of these products is made to fill a specific and exacting requirement.

All Hockaday materials, when properly used under good conditions and in accordance with directions, are certain to serve well the purpose for which they are made.

The policy of HOCKADAY, INC. is to manufacture materials of exceptional quality and greatest possible serviceability.

Scientific experiments and exhaustive practical tests have established the reliability of the Hockaday line, with the result that products of HOCKADAY, INC. are greatly favored and freely specified by architects.

Hockaday has been recognized for over thirty years as America's *premier wall finish.* It has been used in leading hotels, hospitals, schools, and public buildings and is a standard for beauty and durability.

Walls coated with Hockaday will wash after severe treatment for years.

### 7 Washable Wall Finishes

170—Hockaday Body and Reducer
7363—Sealing Undercoater
7001—Stippling Semi-gloss
7002—Holland Enamel
7000—Stippling Flat
7005—Stippling Paste
7009—Heavy Bodied Flowing Flat

A finish for every wall—white or colors. Ask for descriptive catalog.

### 7 Superior Specialties

7048—Glazing Liquid
7050—4-hour Spar Varnish
7052—Rubbed Effect Varnish
7015—Concrete Floor Enamel
7145—Stucco Paint
7014—Enamel Undercoater
7187—Metalex (metal paint)

Each outstanding in its particular line. Ask for literature.

### Advantages of Hockaday

Blocks lime burns.
Has greater hiding power.
Prevents air checks.
Requires no sizing.
Spreads one-third farther.
Is really washable.



**Hockaday Meets Severest Tests**

112JT

# HASTINGS & COMPANY

Manufacturers of Gold Leaf for Architectural Application Since 1820

817-821 Filbert Street
PHILADELPHIA, PA.
BRANCH OFFICE: CHICAGO, ILL.

## GOLD LEAF—HISTORY—ROMANCE—MANUFACTURE

### History

Gold is one of the most ancient decorative mediums known to architecture. Its beauty is an important factor but its richness and durability constitute its primary value to the architect.

Thinly hammered gold leaves were first used by the Egyptians five thousand years ago. Throughout the centuries new processes have been developed, more delicate instruments have been used and more subtle effects have been obtained, the results of which may be found in the product of HASTINGS & COMPANY, the oldest manufacturers of gold leaf in America.

### Manufacture

The manufacture of gold leaf is of importance to the architect, as the processes used have an important bearing on the final results.

The first step in the manufacture of gold leaf is the formation of a gold ribbon 675 ft. long and 1/1000 in. thick which is obtained by passing a gold bar through cold steel rollers 65 times. This ribbon is cut in 1¼-in. squares, 290 of which are interleaved with special parchment paper. A packet thus formed is called a "cutch." The cutch is beaten until the gold is thinned and extended to the edges.



*The Reredos in the Church of St. Vincent de Paul at Los Angeles is extensively embellished with gold leaf.*
Reredos designed by CRAM & FERGUSON, Architects

The gold is then removed from the cutch and each piece is quartered. These smaller pieces are interleaved with goldbeater's skin. It was found about three hundred years ago that the best skin for this purpose was the gut of an ox. This second packet, 4¼ in. square, is called the "shoder." This in turn is beaten until the gold has expanded as far as the shoder will permit.

The leaves are again quartered and interleaved into four packages of 1000 skins each, these packages being called the "molds." The skins used for the molds, however, are less worn than those used in the shoder and are first rubbed over with finely powdered burnt gypsum—"brime"—to prevent any possibility of friction. The hind foot of a Belgian hare is always used to apply brime because of its fine texture and great durability as compared to a brush. The third and most exacting beating takes place in the mold. The physical properties of gold leaf, its weight, uniformity, and freedom from pinholes and other imperfections depend on the skill applied to this beating. The goldbeater works on a block of granite which is mounted on a wooden post sunk deep in the ground for the purpose of obtaining resiliency.



*Catching the rays of the sun and distinguishing this building from its neighbors, the gold leaf on the dome and trim of the New York Central Building makes this building a landmark.*
WARREN & WETMORE, Architects



*The use of gold leaf in the ceiling design of the beautiful modern Chinese Theatre in Hollywood is but one of many examples of the use of gold leaf in modern, public building architecture.*
MEYER & HOLLER, Architects

In the next step, the cutters remove each leaf from the mold with boxwood tweezers, the leaf being too delicate to handle, and place it on the cutting cushion, which is covered with specially prepared calfskin, tough and entirely free from grease. The cutters trim the leaf to size, using a tool called a "wagon," which has two parallel cutting edges made from the bark of a reed. The trimmed gold leaf is placed in books of rouged tissue paper, twenty-five leaves to a book, twenty books to the pack.

Goldbeater's skin is exceedingly sensitive to changes in weather, taking up moisture from the atmosphere. If too moist or too dry it may cause the production of an unsound leaf. Hastings installed air conditioning machinery years ago to control this condition. They were the first to adopt the electric furnace to assure the absolute control of annealing temperatures. Although the basic processes in the development of gold leaf have remained the same for centuries, in 1882 Hastings developed machines to beat the cutch and the shoder and have recently put into use a machine to beat the mold up to a certain point. The actual finishing has to be done by hand, as the sensitive and varying touch required cannot be obtained by mechanical means.

As the result of the care exercised in the manufacturing process Hastings Gold Leaf meets all Government specifications and requirements.

## HOW GOLD LEAF IS SPECIFIED AND APPLIED

### Trades Applying Gold Leaf

Decorators usually have in their employ gilders experienced in the application of gold leaf. It is well, however, in order to make sure of the competency of the gilder, to request samples of various finishes, references, and the location of actual gilding he has done. An average gilder working on a flat surface can lay 144 sq. ft. a day, but on uneven surfaces an allowance must be made for greater care. For work on domes and towers it is advisable to engage the services of a steeplejack experienced in the laying of gold leaf.

### Preparation of Surface

Gold leaf can be successfully applied to any surface which will take a coat of paint. The gilder should be consulted on the preparation of the surface. Any surface intended for the application of gold leaf should be made non-absorbent; for example, plaster should be painted and sized. Where absorbent surfaces are to be gilded the surfaces must be carefully treated so that moisture cannot enter from any direction. The back as well as the front of a wooden surface should be sealed. The coat of sizing and the gold leaf should simply be considered as an "extra" coat; in other words, prepare your surface exactly as though it were going to have to "stand up" without the protection of gold leaf.

### Specifications

The only way of obtaining a permanent gold color is to specify "Genuine 23-karat Gold Leaf." There are two other karats of gold leaf available, "Lemon Gold" 18½-karat and "Pale Gold" 16-karat. These should never be specified for exterior work because they will tarnish. They are also considerably lighter in color. Genuine 23-karat Gold Leaf will *not* tarnish. The effect of gold leaf is sometimes obtained by the use of paint, Composition Leaf (also known as Imitation Gold or Dutch Metal), and Aluminum Leaf overpainted with lacquer. These substitutes tarnish or fade rapidly.

The gilder should be consulted before the finish for the gold leaf is specified. On glass many different and beautiful effects are possible. On other surfaces variety is usually confined to "overstaining" and "antiquing," effects obtained by the use of stains in varnish or shellac.

If an unusually brilliant effect is desired, gold leaf may be burnished or rubbed.

### Maintenance

Gold leaf requires little if any care, except where it is subject to smoke and fumes which cause deposits of dirt and soot. Washing with mild soap and water will restore the original brilliance.

Gilded surfaces damaged by structural cracks, leakage, or other accidents can be repaired, but it is difficult to get a perfect match.

### Costs

It is impossible to give exact costs for gold leaf work because of the variation in local labor rates and the somewhat unstable price of gold. However, it is safe to estimate that gold leaf can be laid on flat surfaces or in not too intricate designs for approximately one dollar per square foot. This estimate includes cost of material and labor.

### Research Department

HASTINGS & COMPANY have a thoroughly experienced Research Department which is at the disposal of architects for the purpose of answering questions, furnishing samples, or conducting experiments.

A 16-page book "Gold Leaf in Architecture" will be sent on request.




*S. S. Kresge Co. achieve a striking modern store-front effect by using Hastings genuine 23-karat gold leaf on raised letters against a red background with valances and glass lettering done in Hastings Palladium leaf—the new, tarnish-proof "white metal" leaf.*

112JT




*A rich, warm light and beautiful reflective effects are achieved by the use of gold leaf in the ceilings of RKO Center Theatre in New York.*

REINHARD & HOFMEISTER, CORBETT, HARRISON & MACMURRAY.
HOOD & FOUILHOUX, Architects

# KEYSTONE VARNISH COMPANY

Manufacturers of Paints, Varnishes and Enamels

TELEPHONE
CUmberland 6-7060

71 Otsego Street, BROOKLYN, N. Y.

BOSTON, MASS., 146 High St. (Telephone: Liberty 7841)  CHICAGO, ILL., 5219 No. Clark St. (Telephone: Long Beach 0200)


# KEYSTONA FLAT FINISH

Keystona Flat Finish overcomes in every way all objections raised against paint as a decorative medium for walls and ceilings. It is easy to apply, shows no laps or brush marks, when properly applied will not crack or peel, and *most important of all*—furnishes a sanitary surface that may be kept clean with no harm to the finish. This is a point that is of prime consideration, not only in hospital, school and public building work, but in the home as well.

In addition, Keystona Flat Finish is a most economical material to use, as it possesses extreme stretch, covering a greater surface per gallon than ordinary flat paints, and gives a perfect finish with fewer coats because of its high opacity.

Leading architects and engineers have long recognized Keystona as a supreme finish for plaster walls and ceilings, as proven by its use on many of the largest building projects in this country and abroad. It may be used with perfect results on all interior surfaces, including wallboards, woodwork, metal ceilings and radiators, over wall paper, burlap, Sanitas or embossed wall covers. It is an excellent material for priming work under enamels. It is available in 20 shades and white.

## Specifications for Application

**General**—For best results on large surfaces, a 5-in. black flat wall brush should be used and the material flowed on. If Keystona Flat Finish shows laps or brush marks it is being applied too heavy, in which case it should be thinned with turpentine.

Glue size, shellac or varnish should not be used as a primer under Keystona Flat Finish.

For tinting use colors in oil.

**Preparation**—All surfaces to be finished should be dry and free from grease or loose dirt. Woodwork should be sandpapered smooth. Metal work should be wire-brushed and all rust removed. Plaster walls should be prepared by cutting out all cracks and filling with putty made from Keystona Flat Finish and whiting. Rough spots on plaster (except sand-finish plastering) should be sandpapered smooth.

Paint should be thoroughly mixed by pouring off half the contents of can, the remainder thoroughly mixed with a flat paddle and the part poured off gradually returned, stirring meanwhile.

*Important:* Wet plaster should never be painted—it should first be allowed to dry.

**New or Previously Flat Painted Plaster**—

*Priming Coat*—Should be mixture of equal parts Keystona Flat Finish of shade selected and Keystona Wall Priming Liquid, with a pint of turpentine added to each gallon. This should dry with a semi-gloss appearance. If burned or flat spots appear after 24 hours, these should be touched up with the same mixture and allowed to dry for 24 hours.

*Finish Coats*—After priming coat is thoroughly dry, one or two coats of Keystona Flat Finish (reduced with sufficient turpentine to eliminate brush marks) should be applied. This is approximately 1-qt. to each gallon of Keystona. Allow 24 hours between coats.

**Metal Ceilings or Radiators**—One or two coats of Keystona Flat Finish thinned with sufficient turpentine to eliminate brush marks.

**New Woodwork**—All knots should be coated with shellac, followed by a priming coat of a mixture of 1-qt. raw linseed oil to the gallon of Keystona Flat Finish. When dry, apply one or more coats of Keystona Flat Finish thinned with sufficient turpentine to eliminate brush marks.

**To Stipple**—The final coat of Keystona Flat Finish for stipple should be applied *without thinning.* It should be allowed to set slightly, then stippled.

# KEYSTONA GLOSS FINISH

Keystona Gloss Finish is a pure linseed oil paint with the resultant increased stretch, elasticity and ease of brushing when compared with ordinary combination oil and varnish paints. It may be washed with no harm to the finish, and will hold its color indefinitely without yellowing, on any surface for which it is intended.

Keystona Gloss Finish can be used on all interior metal, wood, plasterboard, wallboard, brick, cement and wall and ceiling surfaces that have been properly primed.

Keystona Gloss Finish gives bright, light-reflecting walls in stores, bakeries, laundries, restaurants, garages, public institutions, industrial plants, etc. It is available in 10 shades and white.

## Specifications for Application

**General**—Keystona Gloss Finish is intended *for inside work only*—it should not be used on exterior surfaces. Gloss oil or glue size should not be used as a primer under Keystona Gloss Finish. It should not be applied to hot pipes or boilers. Only turpentine should be used to thin Keystona Gloss Finish. It may be tinted to any desired shade with colors in oil.

**Preparation**—Same as specified for Keystona Flat Finish.

When using Keystona Gloss Finish in the tints, the undercoats should be of approximately the same shade as the finish coat.

When more than one coat is to be applied, each coat should be allowed to dry thoroughly and should be sandpapered lightly before application of the succeeding coats.

**One Coat Work**—Keystona Gloss Finish should be used as it comes from the can.

**Two Coat Work**—

*Priming Coat*—This should consist of half Keystona Flat Finish and half Keystona Wall Priming Liquid, thoroughly mixed.

*Second Coat*—Keystona Gloss Finish as it comes from the can.

**Three Coat Work**—

*Priming Coat*—Same as for Two Coat Work.

*Second Coat*—Half Keystona Flat Finish and half Keystona Gloss Finish, thoroughly mixed.

*Third Coat*—Keystona Gloss Finish as it comes from the can.

# KEYSTONA SATIN SHEEN FINISH

Keystona Satin Sheen Finish is a superior washable finish for general interior decorative use—it is particularly adapted for walls, ceilings and woodwork. The name of the product describes perfectly the resultant finish obtained—a pleasing soft gloss that imparts a dignified and restful appearance to any surface.

Keystona Satin Sheen Finish covers solidly, and no particular skill is required to do a perfect job free from brush marks, laps and sags. It forms an extremely elastic and durable coating that will not crack or chip, and may be washed as often as necessary without harm. The fact that it is a pure linseed oil paint gives it easy brushing qualities and a greatly increased stretch when compared to ordinary paint of this type made on a combination oil and varnish base. The tendency of the finish to yellow with age is also reduced to a minimum, and tints retain their original sharpness and beauty.

Keystona Satin Sheen Finish may be used with equal success on surfaces of plaster, brick, wood, metal or composition wallboards. It is an ideal finish for homes, apartments, hospitals, schools, office buildings, industrial plants. It is available in ten shades and white.

## Specifications for Application

**General**—Keystona Satin Sheen Finish is intended *for inside work only.* Gloss oil or glue size should not be used as a priming coat. It should not be used for radiators, hot pipes or boilers. If necessary to thin Keystona Satin Sheen Finish, add pure turpentine only. Free lime or alkali in wall surfaces should be neutralized by the application of vinegar—if severe, a wash coat of 2-lbs. zinc sulphate crystals to the gallon of water should be used, thoroughly allowed to dry and any deposit remaining on the surface brushed off before application of the priming coat.

**Preparation**—Same as for Keystona Gloss Finish.

**One Coat Work**—Use Keystona Satin Sheen Finish as it comes from can, thinned with turpentine if necessary.

**Two Coat Work**—

*Priming Coat*—Two parts of Keystona Satin Sheen Finish and one part of Keystona Wall Priming Liquid, thoroughly mixed.

*Second Coat*—Keystona Satin Sheen Finish as it comes from the can, thinned with turpentine if necessary.

**Three Coat Work**—

*Priming Coat*—Half Keystona Flat Finish of a similar shade and half Keystona Wall Priming Liquid, thoroughly mixed.

*Second Coat*—Four parts of Keystona Satin Sheen Finish and one part of Keystona Flat Finish of a similar shade, thoroughly mixed.

*Third Coat*—Keystona Satin Sheen Finish as it comes from the can, thinned if necessary with turpentine.

**Refinishing Glossy Surfaces**—Follow directions for second and third coats as shown above under *Three Coat Work.*

**New Woodwork**—For this we recommend Keystone Enamel Undercoat for priming. In two coat work, the second coat should be the same as shown for *Two Coat Work* above, or, if three coats are desired, follow the priming coat with the second and third coats as outlined under *Three Coat Work* above.

ESTABLISHED 1834

# E. & F. KING & CO.

INCORPORATED

Manufacturers of Paints and Putty

FACTORY AND GENERAL OFFICE
405 Atlantic Avenue,
BOSTON, MASS.

NEW YORK OFFICE
60 East 42nd Street

HAMPDEN PAINT DIVISION
E. & F. King & Co., Inc.
Springfield, Mass.

SOUTHERN DISTRIBUTORS: Taylor Salt & Chemical Co., NORFOLK, VA.

## Products

SUNRAY WHITE; TRIPLE LEADKOTE PRIMER; "BREER'S" METAL COATING; "BREER'S" WALL FINISH; "BREER'S" METAL SASH PUTTY; "KINGLAZE" QUALITY WOOD SASH PUTTY; "BREER'S" CASEMENT SASH PUTTY.

Also various Interior Wall Paints.

## Triple Leadkote, a Primer for Structural Steel and All Metal Work

This paint is designed as a primer for every class of steel construction where absolute protection from corrosion is required. It is composed of all pure lead pigments, which give the maximum adhesion, cohesion, and inhibition when properly incorporated with our specially processed oil vehicle.

## Breer's Metal Coatings for Structural Steel and All Metals

Designed and proven to give the best steel protection, they stand the highest test when used over Triple Leadkote. Especially used for painting of bridges, standpipes, steel sash, structural steel, etc.

Over fifteen years of thoroughly satisfactory service on specified work have established irrefutably the excellent quality and entire dependability of Breer's Metal Coatings.

## Specifications for Painting Steel

All steel shall be thoroughly cleaned and scraped of all metal scale, rust, grease and any other foreign substance at the shop, and shall be given one full priming coat of Triple Leadkote before erection.

After erection, the complete structure shall have two full coats of Breer's Metal Coating of colors to be selected. All surfaces which cannot be second-coated after erection shall have a field coat of Breer's Metal Coating before erection.

**Specifications for Structural Steel—(1) Encased in Concrete**—The steel shall be thoroughly cleaned and scraped, removing all loose metal scale or grease and other foreign substances, and shall be painted one shop coat of Breer's Metal Coating No. 202 Dark Gray. Any places where the paint film is ruptured or torn, shall be touched up after erection with No. 202 Dark Gray.

**(2) Steel Encased in Brick, Terra Cotta and Limestone**—Structural steel shall be thoroughly cleaned of all metal scale and grease and shall then receive one full coat of Breer's Metal Coating No. 202 Dark Gray, followed by two coats of Breer's Metal Coating, color to be selected by the architect after erection.

**(3) Steel Standpipes, Tanks and Similar Structures**—***Interior Painting***—Steel shall be thoroughly cleaned of all metal scale and grease and given three full coats of Triple Leadkote A, B, and C.

***Exterior Painting***—Apply one full coat of Triple Leadkote No. 3, followed by two full coats of Breer's Metal Coating, color to be selected.

## Breer's Wall Finish

A durable flat, eggshell or gloss wall paint in twenty attractive shades. Can be washed repeatedly without impairing the color or finish.

Goes on very smoothly and freely, leaving no streaks or brush marks, and since it is an oil paint the danger of cracking and chipping is eliminated. This paint can be stippled immediately after application. One gallon covers 500 to 700 sq. ft. of surface, one coat. Put up in barrels, 5 and 1-gal. cans.

## Specifications for Wall Finish

**New Walls**—Apply one priming coat of Breer's Wall Primer, allow to dry and then apply one or more coats of Breer's Wall Finish, either flat, eggshell or gloss. This Primer is pigmented, so that it not only stops all wall porosity, but is equal in covering to one full coat of paint.

**Old Walls**—All dust and dirt of a greasy nature should be removed by washing with gasoline or a solution of ½ lb. Metso in 1 gal. of water. Walls should then be cleaned with soap and water before the paint is applied. If painted walls are in good condition only one coat will be required, unless a light color is to be used over a dark color.

## Sunray White—An Interior Coating

Adaptable to any interior surface material from brick to gypsum block, and to any and all types of construction. It is used extensively for offices, factories, public buildings, schools, hospitals, theaters, and wherever a durable, washable, light reflecting, brilliant, enduring surface is essential. Sunray White washes like a china dish and remains *white* an unusually long time. It will not chip, flake, or peel if applied according to our directions. For clarity, permanence, and longevity there is a record test of over 20 years behind this extraordinary Interior White.

Sunray White is furnished in undercoat and three finishes, flat, eggshell, or gloss.

## Putty Should Be Specified

The failure of putty, due to cracking, wrinkling, sagging, and breaking away, can be avoided by specifying putty made to a definite formula by a special process and properly aged. The importance of putty specifications, from an architectural and engineering viewpoint, cannot be overstressed.

## Breer's Metal Sash Putty

Proved by fifteen years of service and recognized by engineers as most durable. Manufactured for special use on industrial steel sash, marquises, etc. Our own special process of manufacture and aging produces a putty which works very freely under the knife, sets sufficiently on the surface for painting within a week. Will last indefinitely if properly painted.

## Breer's Casement Sash Putty

For all casement sash glazing, use Breer's Casement Sash Putty.

## "Kinglaze" Quality Wood Sash Putty

Widely known and used by large sash manufacturers and glaziers for bedding and setting glass in sash, doors, skylights, conservatories, etc. Guaranteed pure English chalk whiting and linseed oil, free from adulterants.

Manufactured and aged by our own special process and produces most satisfactory results.

MEMORANDA

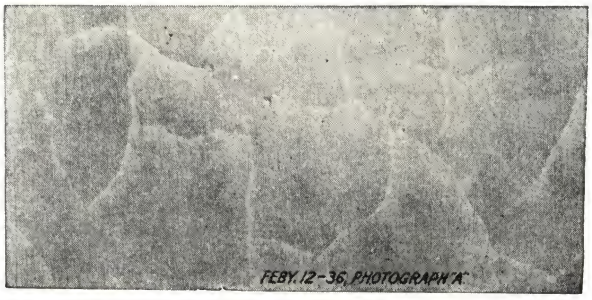
# MONROE, LEDERER & TAUSSIG, INC.

Manufacturing Paint Specialists

606-608 North American Street

PHILADELPHIA, PA.

## MOLETA FLAT WHITE E. S. FINISH—THE TRULY WASHABLE FLAT OIL PAINT




"A"—Section of Painted Wall Before Washing




"B"—Same Section of Painted Wall After Washing

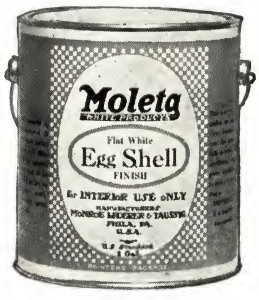
The fine hair lines shown on *"A"* are frequently noted on walls in buildings. The hair lines become pronounced by reason of the dirt accumulating on the walls, and where the hair lines exist the dirt penetrates into the hair lines, caused either by the law of gravity or by the breathing of the plaster, which results in less dirt on the actual hair line than the immediate surface bordering the hair line, with the result that hair lines become more visible as more dirt surrounds it on the balance of the surface.

By having a washable paint upon the walls, when dirt is removed as illustrated in *"B,"* the hair lines are not apparent to the eye on ordinary inspection. This clearly illustrates one of the many reasons why it is important to apply *Moleta Washable Paints,* in addition to the necessary requirements demanded by sanitation.

### Users

U. S. Naval Academy, Annapolis, Md.
Pennsylvania Railroad
Mt. Sinai Hospital, Philadelphia, Pa.
U. S. Veterans' Bureau Hospitals, Coatsville, Pa., Perry Point, Md., Danville, Ill., etc.
University Hospital, Philadelphia, Pa.
Howard University, Washington, D. C.
U. S. Military Academy, West Point, N. Y.
Walter Reed Hospital, Washington, D. C.
Marshall Field Company, Chicago, Ill.
Municipal Building, New York, N. Y.
Pilgrim State Hospital, Brentwood, L. I., N. Y.
U. S. Marine Barracks, Quantico, Va., Fortress Monroe, Va.
Ambassador Apartments, Baltimore, Md.
U. S. Naval Air Station, Lakehurst, N. J.
Fitzsimmons General Hospital, Denver, Colo.
Agricultural and Technical College, Greensboro, N. C.
New York Navy Yard
Philadelphia Navy Yard
Department of Agriculture, Washington, D. C.
Northeastern Penitentiary, Lewisburg, Pa.
U. S. Penitentiary, Leavenworth, Kan.
North Carolina State College, Raleigh, N. C.
Morrison Hotel, Chicago, Ill.
Strawbridge & Clothier, Philadelphia, Pa.
L. Bamberger & Co., Newark, N. J.




### What the World's Largest and One of the Most Beautiful Hotels, says about Moleta




WABASH 4400

THE STEVENS CHICAGO

MICHIGAN BOULEVARD SEVENTH TO EIGHTH STREET

December 8, 1936

Monroe, Lederer, & Taussig
606 N. American Street
Philadelphia, Pa.

Gentlemen:

In answer to your inquiry as to what we think of Moleta paint perhaps the best proof of our satisfaction I can offer is that we have used it for five years in painting various parts of our hotel.

We have found that Moleta Washable Paint is extremely easy and quick to apply. Its eggshell finish and washable qualities are valuable in keeping our rooms fresh and bright.

I trust that this letter assures you of our satisfaction with Moleta paint.

Yours truly

Walter H. Bird

Chief Engineer

*Moleta Painting Specifications will be sent on request.*

# THE MURALO COMPANY, INC.

## Decorative Wall Coatings, Casein Paints, Calcimines, Texture Paints, Water Paints, Wall Paints, Cement Paints, Wall Sizes and Patching Plasters

570 Richmond Terrace, STATEN ISLAND, N. Y.

CAMBRIDGE, MASS., 200 First Street
CHICAGO, ILL., 320 North La Salle Street
ATLANTA, GA., 82 Central Avenue, S. W.
LOS ANGELES, CALIF., 2461 Porter Street
SAN FRANCISCO, CALIF., 447 Hampshire Street

## MURAL-TONE—HIGH GRADE CASEIN WALL PAINT

### A Scientific Achievement in Paint Manufacture

Mural-tone meets every decorating requirement—speed, beauty, economy, and durability. The principal paint pigments used in the manufacture of Mural-tone are noted for their extraordinary hiding and covering and intense whiteness. Casein, recognized as an excellent adhesive, is the vehicle, and in conjunction with certain chemical compounds completes a scientifically balanced paint formula.

Once Mural-tone is applied, the paint film remains in sound condition. At any future time, Mural-tone, or any other decorative material (flat paint, enamel, lacquer, calcimine, water paint, texture paint, wall paper and wall fabrics) can be applied without any treatment of the surface.



**Central Theatre, Yonkers, N. Y., Walls and Ceilings Finished with Mural-tone**
ALWIN STUDIOS, N. Y.

### Special Advantages

**(1) Beauty**—Due to its clarity of tone, true flatness, and rich velvety finish (no trace of gloss), Mural-tone ranks high as a decorative medium.

**(2) Speed**—Mural-tone dries to the touch in 40 minutes, making it possible to do speedy painting jobs in the home without confusion, and in stores, factories, etc., without interfering with business. Has no unpleasant paint odors.

**(3) Economy**—Will save at least 25% on painting costs, due to the ease and speed with which it can be applied. It covers and hides with *one coat* on many surfaces.

**(4) Remarkable Opacity**—Because of its remarkable hiding capacity, Mural-tone does a complete paint job with only *one coat* where surface conditions are favorable.

**(5) Exceptional Coverage**—One gallon, when mixed with water, yields 1⅔ gallons of paint, with a covering capacity of 750 to 1000 sq. ft. (depending on surface conditions), on bare walls of smooth, hard finish plaster, or over flat paint.

**(6) Intense Whiteness**—A superfine, brilliant white, and clear, flawless tints of lasting beauty. Will not yellow with age. Exposure to strong light or darkness will not cause fading or graying. Acid fumes, vapor and heat will not affect it.

**(7) 90% Light Reflective**—Due to the high index of refraction possessed by the white pigments used, Mural-tone is over 90% light reflective. This reduces lighting costs substantially (one-third or more).

**(8) Cleansable**—Water, a mild neutral soap and a soft sponge are all that are necessary to clean the painted surface.

### Ideal for Unseasoned Plaster and Masonry

Mural-tone can be applied to fresh (not soaking wet) unseasoned plaster and masonry immediately after they have hardened (usually 48 hours), as it possesses the right degree of porosity to permit the escape of moisture and the free passage of air essential to the proper curing of the surfaces. All colors are permanently limeproof and alkaliproof. For *new* construction or *old* surfaces we believe there is no finer paint.

### For Walls, Ceilings and Interior Surfaces

Mural-tone is especially suitable for use on walls, ceilings, and other surfaces where *good* decoration is an important factor. It is also widely used in factories, industrial and other buildings, where surfaces must be maintained in bright, clean condition, and where proper diffusion of light is essential. It functions perfectly on:

| | |
|---|---|
| Plaster—fresh or seasoned. | Wall Boards—pulp or fibre. |
| Plaster Boards and Blocks. | Insulating Boards. |
| Acoustical Plaster. | Steel, Iron—if primed. |
| Concrete—green or cured. | Aluminum, Zinc. |
| Cement and Cinder Blocks. | Galvanized Iron, Tin. |
| Smooth Wood—if primed. | Paint, Enamel, Varnish. |
| Rough Wood. | Wall Paper—some kinds. |
| Brick, Stone, Tile. | Canvas, Wall Fabrics. |

### Mural-tone Exceeds Government Specifications

Mural-tone conforms to—in fact exceeds—the requirements for casein paste paint set forth in Federal Specifications TT-P-23 for Casein Binder Cold Water Paint, Grade B, Type 2, issued by the U. S. Government.

### Range of Colors

Color range includes a brilliant white, ten beautiful pastel tints, sixteen Positive colors and black. An endless variety of other tints is easily obtainable by intermixing. We will be happy to send you the Mural-tone *Color Mixing Guide.*

### Mural-tone Positive Colors

Finely ground, concentrated colors in casein vehicle, especially developed for tinting regular Mural-tone white and other casein-vehicle paste paints.

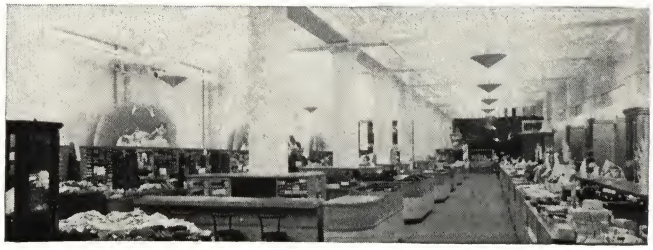
Positive Colors can also be used full strength, alone or intermixed, where strong, brilliant effects are desired. Because of their high tinting strength are very economical. They produce clear tints of unusual brilliancy.

### Approved by Prominent Architects

Among those who have expressed approval are:

| | | |
|---|---|---|
| McKim, Mead & White | Wm. L. Bottomley | William & Geoffrey Platt |
| Shreve, Lamb & Harmon | Holland & White | Eugene De Rosa |
| C. C. Wendehack | Eric Gugler | H. O. Milliken |





**J. R. Coppin Department Store, Covington, Ky.—Before and After Painting with Mural-tone**
"Tests prove all you said about 'Better White—Better Light' "

# OTHER MURALO PROCESS PAINT PRODUCTS

## Muralo Decorative Wall Coatings—High Grade Calcimine




*The ideal water colors* for decorating interior walls and ceilings in all manner of residences and public buildings where harmonious color treatments are essential factors. Made in white and a wide range of attractive tints. Manufactured in dry powder form and require only the addition of water to prepare them for immediate application on plaster, wall board, wood, canvas and burlap.

**Decorative Value**—Muralo Wall Coatings are perfectly adaptable to any type of decoration, no matter what the style, the general treatment or proposed color scheme may be. The dainty tints with their rich velvety finish, devoid of gloss or glare, afford unlimited possibilities to achieve color effects and harmonies that express cheerfulness and good taste in interior decoration.

*Economy* is often one of the deciding factors, when choosing the form of decoration for walls and ceilings, yet the finish must possess real decorative merit. That is why Muralo Wall Coatings are recommended and used everywhere by leading craftsmen who recognize the possibilities of wall coatings that are really decorative and at the same time economical to use.

**Brands**—Muralo, Calcimo, Dutch Kalsomine, Suntone, Cal-o-tint, Tinto, Victor, Murocal.

## Hi-Tex Textural Finish—Plastic Paint




*A plastic paint* of modern invention by which a most interesting and unusual array of decorative effects in both texture and color may be obtained. Manufactured in dry powder form and requires only the addition of water to prepare it for immediate application on interior wall and ceiling surfaces.

**Decorative Value**—Hi-Tex Textural Finish provides a decorative medium which enables modern craftsmen to reproduce faithfully the interesting and attractive Old World textured walls easily and economically—also countless individual texture treatments to harmonize with and lend character to various decorative schemes.

Then, too, the opportunities for color in Hi-Tex are as varied as its textures, making it an unusually fine medium for artistic expression.

**Brands**—Hi-Tex, Mural-Tex, Marvel-tex.

## Spackle Surfacing Compound




Properly prepared surfaces mean perfect paint jobs that give lasting satisfaction. Spackle is an efficient repair material for filling cracks, holes, dents, joints, and rough grain, and for building up surface irregularities before painting and decorating interior surfaces. It dries quickly to a smooth, hard snow-white surface, sands easily and takes any paint or decorative coating perfectly.

Spackle is packed in handy dry powder form, and is made ready for immediate use by the admixture of water. Varnish, white lead or colors-in-oil may be added to make the old-fashioned Swedish Putty.

## Muralo Cement Paint




*A special paint* based on the cement principle, employing in its manufacture white portland cement as the basic raw material.

**Adaptability** — Especially designed for painting concrete, stucco, brick, building tile, hollow tile, cinder block, stone and porous masonry wall surfaces in general, both outside and inside. Aside from excellent wearing and lasting properties, it is decorative in every sense of the word, making it adaptable for any building where the preservation and decoration of masonry surfaces are important factors. Made in white and 10 attractive colors.

**Special Advantages**—Muralo Cement Paint, in addition to the usual properties of a good painting material, possesses the following advantages:

(1) It penetrates the pores of porous masonry.
(2) It forms a permanent bond with the wall, becoming an integral part of the wall.
(3) All colors are permanent, limeproof and alkaliproof.

Intensive studies of the requirements of a painting material that will function properly on masonry surfaces indicate conclusively that *portland cement* provides the ideal basis material for a protective coating that will embody the qualifications enumerated above.

## King's Perfected Interior Cold Water Paint




*A durable snow-white paint* that possesses sanitary, fire-retarding and light-reflecting properties. Manufactured in dry powder form and requires only the addition of water to prepare it for immediate application on wood, brick, stone, concrete, cement wall board, plaster and other interior surfaces.

**Adaptability**—King's Cold Water Paint fills a specific need for a high grade painting material that compares favorably with expensive oil paints for the interior painting of certain types of buildings, and yet is low enough in cost to spell real economy. It is especially designed for the interior painting of factories, warehouses, garages and similar types of buildings.

## Used in Many Notable Buildings

Leading building contractors and operators the country over have used Muralo Process Paint Products for years in the interiors of many notable buildings, some of which are listed herewith:

Chrysler Building, New York
Waldorf-Astoria Hotel, New York
Grand Central Terminal, New York
Harvard University, Cambridge
Newton City Hall, Newton
Florida State Hospital, Miami
Mayflower Hotel, Washington
Atlanta-Biltmore Hotel, Atlanta

Muralo Process Paint Products have the benefit of a background of more than 40 years' experience specializing in the manufacture of high grade Wall Coatings, Wall Paints, Water Paints and kindred products. This record of experience is reflected in the popularity of these paint products which enjoy a world-wide reputation for supreme quality.



Chrysler Building

# MURPHY VARNISH COMPANY

Manufacturers of

Paints, Varnishes, Enamels, Lacquers

224 McWhorter Street
NEWARK, N. J.

1073 Howard Street
SAN FRANCISCO, CAL.

6540 South Laramie Avenue
CHICAGO, ILL.

---

### History

For three-quarters of a century the MURPHY VARNISH COMPANY has specialized in architectural finishes. By means of the most modern machinery, control and research laboratories Murphy Paints, Varnishes, Enamels, Lacquers, Colors and Stains are kept uniform and to the highest standard of quality.



TRADE SYMBOL

### D D Paint

A "first grade white paint." It has a full body, brushes well and dries out to a rich white finish. It absorbs color readily and holds tints well.

### Exterior Paste Paint White

A formulation of lead, titanium and zinc pigments, combined with proper vehicles to provide excellent penetration, hiding and durability. When reduced in accordance with specifications on label, 1 gal. of paste will produce 2 gals. of paint.

### Exterior Paint Primer

A pigmented first coater on any exterior wood surface, either as an intermediate coat over old paint and succeeding coats or on new work. Its use insures improved filling and sealing, together with sufficient adhesion, flexibility and penetration to form a proper bond for such work. The succeeding coat or coats are thereby held out to a greater extent, resulting in better coverage, more gloss and an improved general appearance.

### White Stucco Paint

A dependable paint, especially designed for finishing stucco, cement and brick surfaces. Made of selected pigments dispersed in a special waterproofing vehicle giving it exceptional sealing, hiding and weather-resisting properties. Has excellent adhesion and spreads easily.

### S O Permanent Green Paint

For trim and trellis painting. An exclusive development, containing no chrome green pigment. It holds its color in all types of climates. The special vehicle permits retention of gloss-flexibility and affords quick drying. The most durable green paint that is made. Available in three shades—light, medium and deep.

### M P Interior Primer Sealer White

A titanium pigmented product, designed for use on new plaster walls and other interior surfaces, such as wood, brick, cement and wallboard. It stops suction, seals pores and hot spots to an unusual degree, providing a smooth hard surface for succeeding coats. Easy to brush, spreads well and has excellent hiding qualities.

### Flat Wall Finish

A new and improved titanium pigment flat finish that affords maximum hiding and covering, with extreme ease of application. A washable flat finish for walls, ceilings, burlap, canvas and woodwork. Flows to a smooth surface free of ridges and brushmarks.

### M P Satin Eggshell White

A Master Painter product that gives a strictly semi-gloss finish on wood or walls. It covers exceptionally well, besides being extremely repellant to every day uses. Dries overnight.

### Vari-Use Enamel

Eliminates much common duplication as it will serve for several purposes. It is a pure titanium enamel of maximum whiteness and has ideal working properties. Dries to an enamel-like finish. Adapted for all interior purposes, such as walls, woodwork, furniture, etc., and for outside wear of semi-sheltered exposure. It brushes easily and dries quickly. It incorporates perfectly with Murphy Inside Flat in cases where one wishes to reduce "sheen" or gloss.

### Super White Enamel

A new product with an old name. Super White Enamel now combines the distinctive qualities provided for in its synthetic vehicle and selected pigments which together give it an unusual degree of whiteness, color retention and durability. Out of dust in about 1½ hours and hard overnight to a gloss that lasts. It has excellent hiding properties. This enamel is second to none.

### White Enamel Undercoating No. 37

An undercoating of exceptional whiteness, drying to a smooth finish, free of brush marks, overlaps and ridges. Being non-porous, it holds out enamel coats to an unusual degree. Sands easily. Dries free of dust in from two to three hours.

### Da-Cote Floor and Deck Enamel

For finishing interior or exterior floor surfaces of wood, concrete, canvas or cement. Has unusual resistance to water and sun and does not scuff up. Brushes easily and dries quickly to a tough durable finish. Available in twelve popular colors.

### Permanent Brushing Stains

Effectively preserves the natural beauty of hard and soft woods. Made from the purest of water soluble anilines, they are fast to light. Penetrate deeply; do not bleed, will not raise the grain of the wood, and require no wiping. Dry so quickly that varnish, lacquer or wax may be applied in a short while—always the same day.

### Fluid Tinting Colors

Of fluid consistency, these colors are ready for use and may be poured. Eliminates labor of mixing and when added to "whites" they disperse quickly producing a sharp clean color not hitherto obtainable. Murphy Fluid Tinting Colors comprise the finest of pigments, especially crushed in a vehicle made exclusively by Murphy.

### Waterproof Mixing for Shellac

A shellac improver Waterproof Mixing when added to shellac prevents shellac from scratching or turning white. Makes it brush more easily and increases durability of the finish. Waterproof Mixing should never be used alone—only use with shellac.

### Other Popular Finishes

Transparent Floor Varnish.
Transparent Interior Varnish.
Best Hard Church Oak Varnish.
Velvet Floor Varnish.
Bar Top Varnish.
Bar Top Lacquer.
Aluminum Heat Resistant.

17
20



# *Painting*— SPECIFICATIONS

COVERING THE USE OF

# DUTCH BOY PRODUCTS

17
20

# DUTCH BOY

## "GOOD PAINT'S OTHER NAME"



"Good paint's other name" is a statement often made in referring to Dutch Boy white-lead. But it is more than just a slogan. Actually it expresses the experience of thousands of architects, owners and painting contractors who have specified or applied Dutch Boy white-lead on many thousands of buildings . . . who have watched Dutch Boy withstand years of weather exposure . . . who have seen Dutch Boy beautify the finest interiors.

Today, white-lead is accepted as the standard in quality paint. The specification of it is recognized as an assurance of a quality paint job—one that protects both an owner's property and his pocket-book.

## THE PAINTING SPECIFICATIONS

The specifications for painting and finishing contained in this booklet are divided into two parts: Section A and Section B.

Section A contains those clauses which specify the materials to be used and outlines the general manner in which the work shall be carried forward.

Section B contains the directions for surface preparation and application of the paint on the particular surfaces to be painted.

In preparing specifications for the painting contractor, it will be necessary to include only those paragraphs that cover the exact work to be done. For the user's convenience we have employed letters and numerals to designate the sections, their main divisions and the paragraphs of the latter.

If desired, detail of work to be done as outlined in Section B is the only part which need be written out in full. The details of materials and workmanship may then be covered by the following clause:

*All painting work under this contract, except as hereinafter specified, shall be executed in strict conformity with the Painting Specifications covering the use of Dutch Boy Products as issued by National Lead Company, which Specifications are hereby declared and made part of this specification, with the same force and effect as if written herein in full.*

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THE PRODUCERS' COUNCIL INCORPORATED — QUALITY · PRODUCTS · CONSULT · AN · ARCHITECT · USE

**NATIONAL LEAD COMPANY**
111 BROADWAY, NEW YORK

*Branch addresses are listed on back cover.*

# THE DUTCH BOY LINE

## A QUALITY LINE OF PAINT PRODUCTS



A quality line of paint products is marketed under the Dutch Boy trademark. It includes nearly all the materials needed for painting any type of surface, interior or exterior.

To the architect this Dutch Boy line offers a definite check on the quality of every brushful of paint. Inferior materials—even those used as sparingly as colors in oil or liquid drier—sometimes impair a paint's protective or decorative qualities to a degree out of all proportion to their volume percentage.

Each Dutch Boy product is of the same high quality as the basic materials . . . white-lead and red-lead. Each is a tested product . . . tested in the laboratories of science and of practical experience. Although intended primarily for use together, each also stands, on its own merit, as the finest material available for the purpose.

The full Dutch Boy line simplifies the preparation of specifications—they can be made "Dutch Boy" throughout. Furthermore, the presence on the job of the brilliant orange and black containers facilitates inspection.




## DUTCH BOY WHITE-LEAD

Dutch Boy white-lead is sold in two forms, heavy paste and soft paste. Both are pure white-lead. Both sell for the same price. Heavy paste white-lead has been used for many years. Soft paste is of more recent development.

The terms "heavy" and "soft" refer to the consistency of the white-lead. In fact, soft paste white-lead is simply heavy paste to which has been added a small amount of turpentine, thoroughly ground in at the factory with special mills. This produces a white-lead which can be thinned to paint more quickly and more easily than heavy paste. The resulting paint is exactly the same in either case so it is simply a matter of personal preference which form of white-lead shall be used.

Both forms of white-lead can be used for all jobs . . . on interior as well as exteriors . . . for flat or eggshell as well as gloss finishes . . . are sold in 100-lb. steel kegs and 50, 25 and 12½-lb. steel pails.

## DUTCH BOY LINSEED OIL




Dutch Boy linseed oil is clear, uniform and well settled. Since it is easy to adulterate linseed oil but difficult to detect the adulteration, the safest procedure in preparing specifications is to specify a brand of known purity and quality. Three types of strictly pure linseed oil—raw, boiled and standoil type are marketed under the Dutch Boy trademark.

**DUTCH BOY RAW LINSEED OIL**—is the filtered oil obtained by crushing the finest grade of flaxseed. After filtering, the oil is permitted to stand for a long period so that impurities may settle out.

**DUTCH BOY BOILED LINSEED OIL**—is oil which has been put through a heating process during which certain drying compounds are added. It is thicker than raw oil and hastens the drying action of paint.

**DUTCH BOY STANDOIL TYPE LINSEED OIL**—is pure linseed oil which is treated by a special process. It is called "Standoil Type" because it is similar to the bodied oil made by the Dutch and long employed in preparing high-grade enamels. Its use gives improved gloss and better leveling qualities to white-lead paint, reduces the tendency toward dirt collection and helps prevent paint troubles due to absorbent, weathered surfaces.

All three types are sold in 1 gallon cans and 5 gallon drums—*sealed at the factory* as a guarantee of purity.

## DUTCH BOY LEAD MIXING OIL




Dutch Boy Lead Mixing Oil is a companion vehicle to Dutch Boy linseed oil. It was developed for a particular purpose—to provide an oil which would mix perfectly with white-lead for the sealing and decoration of all porous surfaces—plaster, wallboard, concrete, brick and stucco — whether on the interior or exterior.

A special virtue of white-lead paint made with Lead Mixing Oil is its sealing quality. It stops suction on plaster and wallboard and on exterior stucco, concrete and brick. It fills up fine firecracks and forms a film that is resistant to water and moisture penetration.

It dries to a soft flat finish. The surface is free from brushmarks or shiners. It retains its good appearance, despite frequent washing and everyday wear and tear.

Paint made from Lead Mixing Oil has the easy working qualities characteristic of white-lead and linseed oil. It tints and brushes out easily. It hides well and spreads far. It produces a solid, durable finish . . . and gives REAL economy.

Dutch Boy Lead Mixing Oil is available in *sealed* 1 gallon cans and 5 gallon drums.




## DUTCH BOY COLORS IN OIL

Colors in oil are concentrated color pigments used for tinting white paint. Some are natural earths. Others are chemical compounds.

For accurate tinting, colors in oil should have a true clear tone. This insures pure clean tints. They should have a high tinting strength so that a minimum quantity of color is needed to produce a given tint. The pigment particles should be of an extreme fineness to insure even coloring and rapid dispersion in the paint. Care in the selection of pigments and thorough grinding (backed by over seventy-five years of color making experience) guarantees that Dutch Boy colors in oil possess all these qualities.

Dutch Boy colors in oil are specially made for tinting white-lead paint. They come in a soft paste form and can be mixed into the paint without thinning. They disperse rapidly. There is no lumping or streaking. Thus they save time and labor for the painter.

There is a wide range of colors in the Dutch Boy line. They come in airtight, friction top 1 gallon, 1 quart and ½ pint cans and in 2-ounce tubes.




## DUTCH BOY WALL PRIMER

For the first coat on interior plaster, Dutch Boy wall primer is the best possible recommendation. Not only does it effectively stop the surface suction and seal fine fire cracks, but it hides the surface as well, providing an ideal foundation for the succeeding coats. It does all these things because it is an actual paint—not simply a sealing liquid—and made with a carefully prepared varnish type vehicle.

Dutch Boy wall primer works easily under the brush and penetrates the surface sufficiently to give proper anchorage. It makes a perfect foundation for later coats of white-lead flat. It requires no special thinners or special colors.

Dutch Boy wall primer is sold in 1 quart and 1 gallon cans and 5 gallon kits.




## DUTCH BOY LIQUID DRIER

Drier that acts too rapidly may cause skin-drying and wrinkling. If it works too slowly, dirt and dust collect, discoloring the job.

Dutch Boy liquid drier is a dependable drier made especially for use with Dutch Boy white-lead. Its action is neither too fast nor too slow. It is an unusually strong drier of the best known composition—properly balanced to bring about efficient drying. The contents of every container are exactly the same, uniform in strength and uniform in results produced. It will not curdle or discolor the paint.

It is sold in ½ pint, pint, quart and gallon cans.




## DUTCH BOY RED-LEAD

Red-lead paint is the standard coating for the protection and preservation of iron, steel and other metal surfaces. No other paint thus far developed, either in the laboratory or the field, has proved to be its equal for this purpose. Properly mixed and applied, it remains for many years as an unbroken, closely adhering coating, sufficiently elastic to follow the movement of the metal surface as it expands and contracts with temperature changes. This extreme durability is not only desirable from the technical standpoint, but it makes red-lead by far the most economical paint for the permanent maintenance of large or small metal structures of all types.

Just as pure red-lead excels other paint materials as a protection for metal, so does highly-oxidized red-lead—that is, red-lead containing more than 97% $Pb_3O_4$—excel other red-leads with a lower true red-lead content. Paint made from highly oxidized red-lead has better keeping qualities. It is easier to apply and has a greater spreading capacity. It produces a uniform film of greater density and thus is more durable and more resistant to destructive atmospheric influences.

Only this better type of red-lead, containing more than 97% $Pb_3O_4$, is used in the paste or ready-to-use red-lead paints sold under the Dutch Boy trademark.

**DUTCH BOY PASTE RED LEAD**—is highly oxidized red-lead ground in pure linseed oil. It is sold in 100-lb. kegs, 50, 25, and 12½ lb. steel pails.

**DUTCH BOY LIQUIID RED-LEAD No. 1 (ORANGE RED)**—is a heavy-service ready-to-use paint mixed on the basis of 33 lbs. of dry red-lead to a gallon of linseed oil. It is unexcelled for all metal surfaces exposed to the weather and especially for surfaces that have to withstand extreme exposure conditions. Sold in 20-gallon drums, 5 gallon kits and quart and gallon cans.

**DUTCH BOY LIQUID RED-LEAD No. 6 (LIGHT BROWN)**—Is similar to No. 1 except for the addition of a small amount of carbon black. It was designed for use as a second coat, its light brown color facilitating inspection. Sold in 20-gallon drums; 5 gallon kits and gallon cans.

**DUTCH BOY LIQUID RED-LEAD No. 7 (DARK BROWN)**—Is similar to No. 6 but contains more carbon black. It may be used either as a second coat or a finishing coat. Sold in 20-gallon drums, 5 gallon kits and gallon cans.

**DUTCH BOY LIQUID RED-LEAD No. 5 (BLACK)**—Is a long-oil black paint designed for finishing coat purposes. It has better drying properties than are usually found in paints containing a large volume of carbon black. It is especially valuable as a finish coat in industrial localities where soot and gas in the atmosphere result in an immediate discoloration of light-colored paints. Sold in 20-gallon drums, 5 gallon kits and gallon cans.




**DUTCH BOY QUICK-DRYING RED-LEAD PRIMER**—Is a special type of red-lead paint designed for use when the available drying time is short. It dries for recoating in from four to six hours, may be painted over the same day if necessary. It contains nothing but pure highly-oxidized red-lead ground in a synthetic resin vehicle. In addition to its quick-drying properties, this primer has excellent protective qualities. It adheres tightly to metals, is elastic and resistant to water and abrasion. It holds well any paint applied over it. It can be used for either brush or spray application and is self-leveling, a feature which produces a film of very uniform thickness. Sold in 20 gallon drums, 5 gallon kits and gallon cans.

# PAINTING SPECIFICATIONS

Covering the Use of

# DUTCH BOY PAINT PRODUCTS

## Notes Regarding Specifications

*If desired, the general requirements and workmanship, as set down in Section A, can be omitted in detail and covered by the following clause: All painting work under this contract, except as hereinafter specified, shall be executed in strict conformity with the Painting Specifications covering the use of Dutch Boy Products as issued by National Lead Company, which Specifications are hereby declared and made part of this specification, with the same force and effect as if written herein in full.*

## SECTION A • PART I

## GENERAL REQUIREMENTS

### 1. GENERAL CONDITIONS

The General Conditions of the American Institute of Architects, latest edition, shall form a part of these specifications, and all work shall be subject to the provisions thereof, insofar as they apply to work under these specifications.

### 2. WORK INCLUDED

(*a*) The painting contractor shall supply all labor, materials, tools, staging, and equipment necessary and shall perform all painting and finishing work in connection with the building described as follows:
(*b*) (Here describe generally the work which is to be painted.)
(*c*) (Here also describe work which is to be primed under other specifications but finished under these specifications.)

### 3. DRAWINGS

(*a*) The painting contractor shall be furnished with all drawings, details and other information necessary for the painting of all classes of work which are to receive a painted finish.
(*b*) In the event of any doubt or question, respecting the drawings and/or specifications, reference shall be made to the architect whose decision thereon shall be final.

### 4. SAMPLES

(*a*) Samples of all finishes shall be submitted to the architect for approval before applying, and finished work shall match same.
(*b*) The painting contractor shall carefully inspect each surface before applying any finish and, if same is not in proper condition, he shall notify the architect in writing. Otherwise the contractor will be held responsible for any defects in the finish arising therefrom.

### 5. INSPECTION

(*a*) The architect, or his duly authorized representative shall have access at all times to the stock of materials and shall be furnished with every reasonable facility for ascertaining that the workmanship is in accordance with the requirements and intent of these specifications.
(*b*) Defective work shall be made good and unsuitable materials may be rejected. The architect reserves the right to replace both at the expense of the painting contractor.

### 6. ALTERATIONS AND REMODELING

All present work that is removed and reset or that is affected in any way by the alterations and remodeling, shall be refinished to match the finished surfaces adjacent thereto.

### 7. STORAGE

The painting contractor shall store his materials in one place in the building, and such storage place shall be kept neat and clean and all damage thereto or to its surroundings shall be made good; care being taken in the storage of paints, oils, etc. to prevent all danger of fire. Oily rags shall be removed from the building every day upon the stopping of work.

### 8. CLEANING

Upon completion of the building, the painting contractor shall remove all paint spots from all finished work, and shall leave the entire premises free from rubbish caused by his work; and shall remove his equipment from the premises. He shall present the work clean and free from blemish.

(Washing glass is not intended to be included in this specification. If the architect wishes it to be included, he should specifically mention it.)

### 9. EXTRAS

The painting contractor shall not be entitled to payment in excess of the amount agreed upon in his contract for any extra work over and above that specified herein, unless authorized in writing by the architect or his superintendent.

### 10. PROTECTION OF WORK

It shall be the painting contractor's responsibility to protect his work, and the work of all other contractors during the time his work is underway. He shall be responsible for any and all damage to the work or property of others caused by his employees or himself.

### 11. WORKMANSHIP

(*a*) Before any painting is done, all surfaces shall be clean, smooth and free from dust, dirt, grease, mortar, rust and other foreign substances and all parts where paint remover has been used shall be washed off with turpentine or benzine.
(*b*) All paint shall be evenly spread and thoroughly brushed out.
(*c*) No coat of paint shall be applied on a wet or damp surface and in no case until preceding coat is dry and hard.
(*d*) No painting shall be done on outside work in extremely cold, frosty, foggy or damp weather. Painting done in winter weather shall be done only when the temperature is above 50°F. and when all surfaces are dry.

# SECTION A • PART II • MATERIALS

## 12. GENERAL

All materials for painting shall be delivered at the building in unbroken packages, bearing the manufacturer's brand and name, and shall be used without adulteration.

The following materials are covered in these specifications: white-lead, colors in oil, linseed oil, Lead Mixing Oil, flatting oil, wall primer, turpentine, drier, varnish, shellac varnish, putty and red-lead.

## 13. MIXING

All paint shall be mixed at the job in a manner to assure the proper incorporation of the ingredients and in conformity with formulas as given hereinafter.

## 14. MATERIALS

(*a*) WHITE-LEAD—All white-lead shall be pure white-lead of Dutch Boy brand which conforms to the latest specifications of the American Society for Testing Materials.

(*b*) RED-LEAD—All red-lead shall be pure red-lead of Dutch Boy brand which conforms to the latest specifications of the American Society for Testing Materials.

(*c*) COLORS IN OIL—All colors in oil shall be of Dutch Boy brand.

(*d*) LINSEED OIL—All linseed oil shall be pure linseed oil of Dutch Boy brand which conforms to the latest specifications of the American Society for Testing Materials.

(*e*) LEAD MIXING OIL—All Lead Mixing Oil shall be Dutch Boy Lead Mixing Oil.

(*f*) FLATTING OIL—All flatting oil shall be Dutch Boy flatting oil.

(*g*) WALL PRIMER—All wall primer shall be Dutch Boy wall primer.

(*h*) TURPENTINE—All turpentine shall be pure gum spirits of turpentine or pure steam-distilled turpentine and shall conform to the latest specifications of the American Society for Testing Materials.

(*i*) DRIER—All drier used shall be pure drier of Dutch Boy brand which conforms to Type I of the latest Federal Specifications for liquid paint drier.

(*j*) VARNISH—All varnish shall be the best grade of floor varnish, the product of an approved manufacturer and suitable for mixing with white-lead as specified.

(*k*) SHELLAC VARNISH—All shellac varnish shall be free from rosin and composed of pure gum shellac cut in pure denatured alcohol, using four pounds of gum to the gallon.

(*l*) PUTTY—Putty shall be composed of pure white-lead and whiting, mixed with pure linseed oil to proper consistency, and shall conform to white-lead whiting putty, Class B, of the latest specifications of the American Society for Testing Materials. For metal sashes, the pigment may include 10% powdered litharge.

# SECTION B • APPLICATION

## 1. PAINTING NEW EXTERIOR WOOD

(*a*) (Here list and describe surfaces to be painted.)

(*b*) Door and window casings, mullions, etc. shall be sanded to remove loose edges left by sanding machine. All surfaces shall be free from slivers, splinters, etc.

(*c*) After priming coat is dry, knots and sappy streaks shall receive one coat of shellac varnish brushed out thin and all cracks, nail holes, etc. shall be puttied with white-lead putty.

(*d*) All painting work shall be allowed to dry from four to six days before the next coat is applied.

(*e*) All surfaces shall be primed with Formula No. 1 and receive two additional coats, using Formulas No. 2 and No. 3, respectively.

(*f*) (If colors other than white are to be used, the necessary tinting materials should be added to the last two coats of paint. Specifications of colors and where they are to be used should be stated here.)

**FORMULA No. 1**
**Priming Coat—New Exterior Wood**

| MATERIALS | SOFT PASTE | HEAVY PASTE |
|---|---|---|
| Dutch Boy white-lead | 100 pounds | 100 pounds |
| Dutch Boy linseed oil | 4 gallons | 4 gallons |
| Pure turpentine | 1¾ gallons | 2 gallons |
| Dutch Boy liquid drier | *1 pint | *1 pint |

**The above formula makes 9 gallons of paint which covers about 600 square feet per gallon, one coat.**

**FORMULA No. 2**
**Second Coat—New Exterior Wood**

| MATERIALS | SOFT PASTE | HEAVY PASTE |
|---|---|---|
| Dutch Boy white-lead | 100 pounds | 100 pounds |
| Dutch Boy linseed oil | 1½ gallons | 1½ gallons |
| Pure turpentine | 1¼ gallons | 1½ gallons |
| Dutch Boy liquid drier | *1 pint | *1 pint |

**The above formula makes 6 gallons of paint which covers about 700 square feet per gallon, one coat.**

**FORMULA No. 3**
**Finish Coat—New Exterior Wood**

| MATERIALS | SOFT PASTE | HEAVY PASTE |
|---|---|---|
| Dutch Boy white-lead | 100 pounds | 100 pounds |
| Dutch Boy linseed oil | 3 gallons | 3 gallons |
| Pure turpentine | ..... | 1 quart |
| Dutch Boy liquid drier | *1 pint | *1 pint |

**The above formula makes 6¼ gallons of paint which covers about 700 square feet per gallon, one coat.**

## 2. REPAINTING EXTERIOR WOOD

(*a*) (Here list and describe surfaces to be painted.)

(*b*) (If any portions of old paint must be removed and surface re-primed, here list and describe such surfaces and their treatment.)

(*c*) After the first coat has dried sufficiently, nailholes, cracks, etc. shall be puttied with white-lead putty.

(*d*) All painting work shall be allowed to dry from four to six days before the next coat is applied.

(*e*) All surfaces shall receive two coats of paint, using Formulas No. 4 and No. 5, respectively.

(*f*) (If colors other than white are to be used, the necessary tinting materials should be added to both coats of paint. Specifications of colors and where they are to be used should be stated here).

**FORMULA No. 4**
**First Coat—Repainting Exterior Wood**

| MATERIALS | SOFT PASTE | HEAVY PASTE |
|---|---|---|
| Dutch Boy white-lead | 100 pounds | 100 pounds |
| Dutch Boy linseed oil | 2 gallons | 2 gallons |
| Pure turpentine | 1¾ gallons | 2 gallons |
| Dutch Boy liquid drier | *1 pint | *1 pint |

**The above formula makes 7 gallons of paint which covers about 700 square feet per gallon, one coat.**

**FORMULA No. 5**
**Finish Coat—Repainting Exterior Wood**

| MATERIALS | SOFT PASTE | HEAVY PASTE |
|---|---|---|
| Dutch Boy white-lead | 100 pounds | 100 pounds |
| Dutch Boy linseed oil | 3 gallons | 3 gallons |
| Pure turpentine | ..... | 1 quart |
| Dutch Boy liquid drier | *1 pint | *1 pint |

**The above formula makes 6¼ gallons of paint which covers about 700 square feet per gallon, one coat.**

*If boiled oil is used, reduce drier to ½ pint.

## 3. PAINTING BRICK, STUCCO, STONE OR CONCRETE

(*a*) (Here list and describe surfaces to be painted.)

(*b*) UNPAINTED STUCCO OR CONCRETE—which has not been allowed to age for a period of six months or longer, shall be treated with a solution made by dissolving two pounds of zinc sulphate in one gallon of water. After the zinc sulphate solution has been applied, sufficient time shall be allowed for the stucco or concrete to dry before priming.

(*c*) UNPAINTED BRICK WORK—shall be brushed vigorously with a wire brush to remove efflorescence or other foreign substances. If any mortar has become loose or damaged, all such places shall be pointed with motar before paint is applied. After priming, small defects in the surface shall be corrected with putty.

(*d*) PREVIOUSLY PAINTED STUCCO, CONCRETE, BRICK OR STONE SURFACES—shall be dry-brushed before painting. If the old paint is blistered, cracking or scaling, the surfaces shall be brushed vigorously with a wire-brush before painting.

(*e*) UNPAINTED EXTERIOR BRICK, STUCCO, STONE OR CONCRETE SURFACES—or all such surfaces which have been wire-brushed to remove completely the old paint, shall be primed with Formula No. 6 and shall receive two additional coats, using Formula No. 7 for the second coat and Formula No. (8, *flat finish;* 9, *semi-gloss finish;* or 10, *gloss finish*) for the finishing coat. (Previously painted surfaces on which the old paint is in good condition do not require the priming coat.)

(*f*) (If brick is to be lined, it should be so specified here.)

(*g*) INTERIOR BRICK, STUCCO, STONE OR CONCRETE SURFACES—should be painted the same as interior plaster. See paragraph (*f*), Page 8.

(*h*) (If colors other than white are to be used, the necessary tinting materials should be added to the last two coats of paint. Specifications of colors and where they are to be used should be stated here.)

**FORMULA No. 6**
**Priming Coat—Brick, Stucco, Stone or Concrete**

| MATERIALS | SOFT PASTE | HEAVY PASTE |
|---|---|---|
| Dutch Boy white-lead | 100 pounds | 100 pounds |
| Dutch Boy Lead Mixing Oil | *4 to 5 gallons | *4 to 5 gallons |

**The above formula makes from 7 to 8 gallons of paint which covers about 200 square feet per gallon, one coat.**

**FORMULA No. 7**
**Second Coat—Brick, Stucco, Stone or Concrete**

| MATERIALS | SOFT PASTE | HEAVY PASTE |
|---|---|---|
| Dutch Boy white-lead | 100 pounds | 100 pounds |
| Dutch Boy Lead Mixing Oil | *3 to 4 gallons | *3 to 4 gallons |

**The above formula makes 6 to 7 gallons of paint which covers about 400 square feet per gallon, one coat.**

**FORMULA No. 8 (Flat Finish)**
**Third Coat—Brick, Stucco, Stone or Concrete**

| MATERIALS | SOFT PASTE | HEAVY PASTE |
|---|---|---|
| Dutch Boy white-lead | 100 pounds | 100 pounds |
| Dutch Boy Lead Mixing Oil | *3 to 4 gallons | *3 to 4 gallons |

**The above formula makes 6 to 7 gallons of paint which covers about 600 square feet per gallon, one coat.**

**FORMULA No. 9 (Semi-Gloss Finish)**
**Third Coat—Brick, Stucco, Stone or Concrete**

| MATERIALS | SOFT PASTE | HEAVY PASTE |
|---|---|---|
| Dutch Boy white-lead | 100 pounds | 100 pounds |
| Dutch Boy Lead Mixing Oil | *2 to 3 gallons | *2 to 3 gallons |
| Spar varnish | 1 gallon | 1 gallon |

**The above formula makes 6 to 7 gallons of paint which covers about 600 square feet per gallon, one coat.**

**FORMULA No. 10 (Gloss Finish)**
**Third Coat—Brick, Stucco, Stone or Concrete**

| MATERIALS | SOFT PASTE | HEAVY PASTE |
|---|---|---|
| Dutch Boy white-lead | 100 pounds | 100 pounds |
| Dutch Boy linseed oil | 3 gallons | 3 gallons |
| Pure turpentine | | 1 quart |
| Dutch Boy liquid drier | **1 pint | **1 pint |

**The above formula makes 6¼ gallons of paint which covers about 600 square feet per gallon, one coat.**

## 4. PAINTING INTERIOR WOOD

(*a*) (Here list and describe surfaces to be painted.)

(*b*) New woodwork shall be cut smooth with sandpaper where required and dusted clean before priming.

(*c*) Old painted or varnished woodwork that shows bad cracking, checking or scaling shall be stripped by means of a good paint and varnish remover, and then cleaned with benzine or turpentine. Woodwork that is greasy or coated with wax should be scrubbed clean with turpentine or benzine before painting.

(*d*) All nail holes, cracks, dents or other defects shall be filled with white-lead putty after the priming coat has dried.

(*e*) All unpainted wood, or surfaces from which the paint has been removed completely, shall be primed with Formula No. 11 and shall receive two additional coats, using Formula No. 12 for the second coat and Formula No. (13, *flat finish;* or 14, *semi-gloss finish*) for the finishing coat. (Previously painted surfaces on which the old paint is in good condition do not require the priming coat.)

(*f*) (If a gloss finish is wanted on interior wood, specify a prepared enamel for the third or finishing coat.)

(*g*) (If colors other than white are to be used, the necessary tinting materials should be added to the last two coats of paint Specifications of colors and where they are to be used should be stated here.)

**FORMULA No. 11**
**Priming Coat—Interior Wood**

| MATERIALS | SOFT PASTE | HEAVY PASTE |
|---|---|---|
| Dutch Boy white-lead | 100 pounds | 100 pounds |
| Dutch Boy linseed oil | 3 gallons | 3 gallons |
| Pure turpentine | 1¾ gallons | 2 gallons |
| Dutch Boy liquid drier | 1 pint | 1 pint |

**The above formula makes 8 gallons of paint which covers about 700 square feet per gallon, one coat.**

**FORMULA No. 12**
**Second Coat—Interior Wood**

| MATERIALS | SOFT PASTE | HEAVY PASTE |
|---|---|---|
| Dutch Boy white-lead | 100 pounds | 100 pounds |
| Dutch Boy Lead Mixing Oil | 3 gallons | 3 gallons |

**The above formula makes 6 gallons of paint which covers about 800 square feet per gallon, one coat.**

**FORMULA No. 13 (Flat Finish)**
**Third Coat—Interior Wood**

| MATERIALS | SOFT PASTE | HEAVY PASTE |
|---|---|---|
| Dutch Boy white-lead | 100 pounds | 100 pounds |
| Dutch Boy Lead Mixing Oil | 3 gallons | 3 gallons |

**The above formula makes 6 gallons of paint which covers about 800 square feet per gallon, one coat.**

**FORMULA No. 14 (Semi-Gloss Finish)**
**Third Coat—Interior Wood**

| MATERIALS | SOFT PASTE | HEAVY PASTE |
|---|---|---|
| Dutch Boy white-lead | 50 pounds | 50 pounds |
| Dutch Boy Lead Mixing Oil | 1½ gallons | 1½ gallons |
| Dutch Boy wall primer | 3 gallons | 3 gallons |

**The above formula makes 6 gallons of paint which covers about 800 square feet per gallon, one coat.**

*The minimum amount of Lead Mixing Oil should be used when the greatest amount of hiding is desired.
**If boiled oil is used, reduce the drier to ½ pint.

## 5. PAINTING INTERIOR PLASTER

(*a*) (Here list and describe surfaces to be painted.)

(*b*) Before any paint is applied, plaster surfaces, either new or old, shall be made clean and smooth.

(*c*) All cracks and holes shall be filled with plaster of paris or approved patching plaster. Large cracks before filling shall be opened up in dovetail shape clear to the lath and soaked with water. The filling plaster shall be leveled off even with the adjoining plaster surfaces, and when dry shall be sandpapered smooth.

(*d*) Walls that have been calcimined shall be washed until all calcimine is removed before applying any paint.

(*e*) Where new plaster to be painted is not properly aged, the surfaces shall be treated with a solution made by dissolving two pounds of zinc sulphate in one gallon of water. After the zinc sulphate solution has been applied, sufficient time shall be allowed for the plaster to dry before priming.

(*f*) All plaster not previously painted shall be primed with Formula No. 15 and shall receive two additional coats, using Formula No. 16 for the second coat and Formula No. (17, *flat finish;* 17-1, *Special flat finish for stippling;* or 18, *semi-gloss finish*) for the finishing coat. (Plaster previously painted does not require the priming coat.)

(*g*) (If a gloss finish is wanted on interior plaster, specify a prepared enamel for the third or finishing coat.)

(*h*) (If colors other than white are to be used, the necessary tinting materials should be added to the last two coats of paint. Specifications of colors and where they are to be used as well as any instructions as to special decorative finishes should be stated here.)

**FORMULA No. 15**
**Priming Coat—Interior Plaster**
*Dutch Boy wall primer
(or)

| MATERIALS | SOFT PASTE | HEAVY PASTE |
|---|---|---|
| Dutch Boy white-lead | 100 pounds | 100 pounds |
| Dutch Boy Lead Mixing Oil | **4 to 5 gallons | **4 to 5 gallons |

**The above formula makes 7 to 8 gallons of paint which covers about 800 square feet per gallon, one coat.**

**FORMULA No 16**
**Second Coat—Interior Plaster**

| MATERIALS | SOFT PASTE | HEAVY PASTE |
|---|---|---|
| Dutch Boy white-lead | 100 pounds | 100 pounds |
| Dutch Boy Lead Mixing Oil | **3 to 4 gallons | **3 to 4 gallons |

**The above formula makes 6 to 7 gallons of paint which covers about 800 square feet per gallon, one coat.**

**FORMULA No. 17**
**Third Coat—Interior Plaster**
**(Flat Finish)**

| MATERIALS | SOFT PASTE | HEAVY PASTE |
|---|---|---|
| Dutch Boy white-lead | 100 pounds | 100 pounds |
| Dutch Boy Lead Mixing Oil | **3 to 4 gallons | **3 to 4 gallons |

**The above formula makes 6 to 7 gallons of paint which covers about 800 square feet per gallon, one coat.**

**FORMULA No. 17-1**
**Third Coat—Interior Plaster**
**(Special Flat Finish for Stippling)**

| MATERIALS | SOFT PASTE | HEAVY PASTE |
|---|---|---|
| Dutch Boy white-lead | 100 pounds | 100 pounds |
| Dutch Boy Lead Mixing Oil | 2 gallons | 2 gallons |

**The above formula makes 5 gallons of paint which covers about 600 square feet per gallon, one coat.**

NOTE: For a stipple with a somewhat sharper texture, Dutch Boy flatting oil instead of Lead Mixing Oil may be used. The quantity should be lowered to 1½ gallons per 100 pounds of soft paste and 1¾ gallons for heavy paste.

**FORMULA No. 18**
**Third Coat—Interior Plaster**
**(Semi-Gloss Finish)**

| MATERIALS | SOFT PASTE | HEAVY PASTE |
|---|---|---|
| Dutch Boy white-lead | 50 pounds | 50 pounds |
| Dutch Boy Lead Mixing Oil | 1½ gallons | 1½ gallons |
| Dutch Boy wall primer | 3 gallons | 3 gallons |

**The above formula makes 6 gallons of paint which covers about 800 square feet per gallon, one coat.**

*Dutch Boy wall primer should always be specified when walls are extremely porous or in an otherwise poor condition. It covers about 800 square feet per gallon, one coat.
**The minmium amount of Lead Mixing Oil should be used when the maximum amount of hiding is wanted.

## 6. PAINTING WOOD FLOORS

(*a*) (Here list and describe surfaces to be painted.)

(*b*) All wood floors shall be cleaned and sandpapered smooth before painting. If the old paint on a previously painted floor is in bad condition, it should be removed by planing, scraping or by the use of a liquid paint remover.

(*c*) All work shall be allowed to dry for at least four days before the next coat is applied.

(*d*) All floors not previously painted, or from which the paint has been removed, shall be primed with Formula No. 19 and shall receive two additional coats, using Formulas No. 20 and 21, respectively.

(*e*) All floors previously painted shall be touched up on worn places using Formula No. 20, after which they shall receive two coats, using Formulas No. 20 and No. 21, respectively.

(*f*) (Specifications of colors should be stated here. The necessary tinting materials should be added to the last two coats.)

(*g*) Underside of all new porch floors and the tongued and grooved edges of the boards shall receive one coat, using Formula No. 22.

**FORMULA No. 19**
**Priming Coat—Wood Floors**

| MATERIALS | SOFT PASTE | HEAVY PASTE |
|---|---|---|
| Dutch Boy white-lead | 100 pounds | 100 pounds |
| Dutch Boy linseed oil | *3 gallons | *3 gallons |
| Pure turpentine | 2¼ gallons | 2½ gallons |
| Dutch Boy liquid drier | **1 pint | **1 pint |

**The above formula makes 8½ gallons of paint which covers about 600 square feet per gallon, one coat.**

*If the floor is of hardwood, reduce the linseed oil to 2½ gallons.
**When boiled oil is used, reduce the drier to ½ pint.

**FORMULA No. 20**
**Second Coat—Wood Floors**

| MATERIALS | SOFT PASTE | HEAVY PASTE |
|---|---|---|
| Dutch Boy white-lead | 100 pounds | 100 pounds |
| Dutch Boy linseed oil | ½ gallon | ½ gallon |
| Pure turpentine | 2¼ gallons | 2½ gallons |
| Dutch Boy liquid drier | ½ pint | ½ pint |

**The above formula makes 6¼ gallons of paint which covers about 700 square feet per gallon, one coat.**

**FORMULA No. 21**
**Third Coat—Wood Floors**

| MATERIALS | SOFT PASTE | HEAVY PASTE |
|---|---|---|
| Dutch Boy white-lead | 100 pounds | 100 pounds |
| Dutch Boy linseed oil | ½ gallon | ½ gallon |
| Pure turpentine | ¾ gallon | 1 gallon |
| Floor varnish† | 1 gallon | 1 gallon |
| Dutch Boy liquid drier | ½ pint | ½ pint |

**The above formula makes 5¾ gallons of paint which covers about 700 square feet per gallon, one coat.**

**FORMULA No. 22**
**Underside of Porch Floors**

| MATERIALS | SOFT PASTE | HEAVY PASTE |
|---|---|---|
| Dutch Boy white-lead | 100 pounds | 100 pounds |
| Dutch Boy linseed oil | 3 gallons | 3 gallons |
| Pure turpentine | ..... | 1 quart |
| Dutch Boy liquid drier | 1 pint | 1 pint |

**The above formula makes 6¼ gallons of paint which covers about 600 square feet per gallon, one coat.**

†If the floor is exposed to the weather, use spar varnish instead of a floor varnish.

## 7. PAINTING CONCRETE FLOORS

(*a*) New concrete floors shall be aged at least six months before being painted. If necessary to paint before that time, they may be aged artificially by washing with a solution of two pounds of zinc sulphate to a gallon of water.

(*b*) Previously painted concrete floors shall be wire-brushed to remove all loose paint.

(*c*) All work shall be allowed to dry at least four days before the next coat is applied.

(*d*) Unpainted concrete floors shall be primed with Formula No. 23 and receive two additional coats, using Formula No. 24 for the second coat and finished as specified in Paragraph (*e*). (Previously painted floors do not require the priming coat.)

(*e*) (Here specify whether floors are to be finished with floor enamel or waxed or varnished. If waxing or varnishing is specified, a third coat of paint mixed according to Formula No. 24 should first be applied.)

(*f*) (The undercoat of paint should be brought to an approximate match with the desired finish coat color by the addition of the necessary tinting materials. Specifications of colors should be stated here.)

**FORMULA No. 23**
**Priming Coat—Concrete Floors**

| MATERIALS | SOFT PASTE | HEAVY PASTE |
|---|---|---|
| Dutch Boy white-lead | 100 pounds | 100 pounds |
| Dutch Boy Lead Mixing Oil | *4 to 5 gallons | *4 to 5 gallons |

**The above formula makes 7 to 8 gallons of paint which covers about 200 square feet per gallon, one coat.**

**FORMULA No. 24**
**Second Coat—Concrete Floors**

| MATERIALS | SOFT PASTE | HEAVY PASTE |
|---|---|---|
| Dutch Boy white-lead | 100 pounds | 100 pounds |
| Dutch Boy Lead Mixing Oil | *3 to 4 gallons | *3 to 4 gallons |

**The above formula makes 6 to 7 gallons of paint which covers about 400 square feet per gallon, one coat.**

*The minimum amount of Lead Mixing Oil should be used when the maximum amount of hiding is wanted.

## 8. PAINTING METAL

(*a*) (Here list and describe surfaces to be painted.)

(*b*) All metal surfaces before priming shall be cleaned thoroughly with steel scrapers, wire brushes or by means of sandblasting where necessary.

(*c*) Galvanized iron, or all metal surfaces where solder fluids have been used, shall be carefully cleansed with petroleum spirits before any paint is applied.

(*d*) All metal work shall receive three coats of paint as follows: (Here specify paint to be used for each coat; writing in the formulas if Dutch Boy paste red-lead is to be used; designating by name and number in the case of the Dutch Boy Liquid Red-Lead Paints. If a light-colored finish is wanted on exterior metal, specify for the second and third coat Formulas No. 2 and No. 3 (Pages 6, 7), respectively. If a light-colored finish is desired on interior metal, specify for the second and third coat, Formulas No. 16 and No. 17 (Page 8), respectively.)

**FORMULA No. 25**

**Priming Coat—Metal Surfaces**

**(Orange-Red)**

| MATERIALS | QUANTITIES |
|---|---|
| Dutch Boy paste red-lead | 100 pounds |
| Dutch Boy raw linseed oil | 1⅞ gallons |
| Pure turpentine | 1½ pints |
| Dutch Boy liquid drier | 1½ pints |

**The above formula makes 4½ gallons of paint which covers about 600 square feet per gallon, one coat. This paint weighs 26.1 pounds per gallon and contains 33 pounds of dry red-lead to the gallon of oil.**

(or)

**DUTCH BOY LIQUID RED-LEAD No. 1**

**(Orange-Red)**

**This paint weighs 28 pounds per gallon, contains 33 pounds of dry red-lead to the gallon of oil and covers about 600 square feet per gallon, one coat.**

**FORMULA No. 26**
**Second Coat—Metal Surfaces**
**(Light Brown)**

| MATERIALS | QUANTITIES |
|---|---|
| Dutch Boy paste red-lead | 100 pounds |
| Dutch Boy linseed oil | 1⅞ gallons |
| Dutch Boy lampblack | ¾ pint |
| Pure turpentine | 1½ pints |
| Dutch Boy liquid drier | 1½ pints |

**The above formula makes 4⅝ gallons of paint which weighs 25.9 pounds per gallon and covers about 600 square feet per gallon, one coat.**

(or)

**DUTCH BOY LIQUID RED-LEAD No. 6**
**(Light Brown)**

**This paint weighs 26.8 pounds per gallon and covers about 600 square feet per gallon, one coat.**

**FORMULA No. 27**
**Third Coat—Metal Surfaces**
**(Black)**

| MATERIALS | QUANTITIES |
|---|---|
| Dutch Boy paste red-lead | 25 pounds |
| Dutch Boy lampblack | 1⅞ gallons |
| Dutch Boy C. P. prussian blue | ½ gallon |
| Dutch Boy linseed oil | 2¼ gallons |
| Pure turpentine | 3 pints |
| Dutch Boy liquid drier | 3 pints |

**The above formula makes 6 gallons of paint which weighs 11.6 pounds per gallon and covers about 700 square feet per gallon, one coat.**

(or)

**DUTCH BOY LIQUID RED-LEAD No. 5**
**(Black)**

**This paint weighs 11.6 pounds per gallon and covers about 700 square feet per gallon, one coat.**

NOTE: The red-lead priming coats offered in these specifications are mixed on the basis of 33 pounds of dry red-lead to the gallon of linseed oil. Experience has shown that a primer of this composition gives maximum durability and service, particularly where exposure conditions are severe as in warm, moist climates or near the seacoast.
If, however, exposure conditions are not so severe it is frequently possible to use a lighter weight primer containing a lower percentage of pigment and secure perfectly satisfactory results.
For this purpose, National Lead Company offers Pure Red-Lead Paint No. 25 and Pure Red-Lead Paint No. 16. Both are 100% pure red-lead paints, the former mixed on the basis of 25 pounds of dry red-lead to one gallon of vehicle, the latter on the basis of 16 pounds of dry red-lead to one gallon of vehicle.

## 8-A. PAINTING METAL WHEN QUICK DRYING IS REQUIRED

Whenever conditions demand quick drying Dutch Boy Quick-Drying Red-Lead Primer should be specified.

Dutch Boy Quick-Drying Red-Lead Primer is a straight red-lead paint weighing 19.3 pounds to the gallon. Its quick drying properties are obtained through the use of a synthetic resin vehicle. It dries for recoating in from two to six hours. It is specially adapted for use in painting ships, water tanks and other equipment which cannot be conveniently kept out of service for an extended period.

Dutch Boy Quick-Drying Red-Lead Primer dries to a hard, firm, yet elastic film, uniform in thickness. It adheres tightly to metal, holds well the paint coats applied over it, and will stand severe rubbing. On exposure, it is resistant to the softening action of water. It may be used for all coats. For inspection purposes succeeding coats can be tinted to brown by the addition of from ⅛ to ½ pint of lampblack per gallon. If the proportion is increased beyond ½ pint to a gallon, the lampblack should be ground in japan.

# GOOD PAINTING AND HOW TO ASSURE IT

The preceding specifications are based not only on our own constant testing of paints and painting methods under actual service conditions but also upon the practical knowledge and experience of skilled painters. But no matter how carefully worked out they may be, the usefulness of these specifications to any particular individual depends chiefly on his acceptance of white-lead and red-lead as satisfactory paints for the job he is considering at the time.

In other words, the specifications represent standard practices and it seems only logical to devote a portion of the space to a discussion of the facts upon which the recommendations are founded. In this way the picture will be complete. It will include the "why" as well as the "how" of specifying Dutch Boy paint products.

## NOTES ON EXTERIOR PAINTING

Paint is specified for exterior surfaces to bring about a combination of benefits including preservation and better appearance. The exterior surfaces for which it is fittingly specified include practically all the common building materials . . . wood, concrete, brick, stucco, stone, metal. But no matter what the purpose nor what the surface, the man who pays the bill wants the paint that is specified and used to function longer than any other paint that might have been used. In short, he wants maximum paint life and, usually, minimum paint cost.

So it becomes the problem of those responsible for the specifications to merge these two requirements into realization. This can be done and has been done on numberless occasions through the selection of white-lead.

That is to say—white-lead has a long, proved background of practical use behind it. It takes years, as a rule, to prove whether a paint or a painting method is sound. There are plenty of instances where trouble has developed ten years after the wrong materials were employed or the wrong method followed. But white-lead has been used for many generations. Its qualities have been attested by thousands upon thousands of actual paintings and repaintings. Its performance thus becomes a matter of past knowledge and not a matter for future speculation.

This is why we can say that white-lead is a safe paint to specify and a safe paint to use, a statement which remains true not only under ideal laboratory conditions but in practical, everyday situations as well. In other words, white-lead is a paint with a generous margin of safety. Factors that may be beyond the specifiers control, such as poor weather conditions at the time of painting, are rendered less hazardous. Of course, such unfortunate happenings do affect the life and the appearance of any paint job but the more foolproof the paint, the less the damage.

White-lead has another important characteristic, too. It permits a custom-made paint. Just as the architect selects the building material that fits his purpose, so the architect or his painter, with white-lead, selects the mixture that fits the conditions at the time of painting.

For example, all building materials are not the same in the way they take paint. Not even all wood is alike. Neither do all exposures of a building affect the paint to the same extent. Nor are all climatic conditions equal in their influence on paint life and paint appearance. The foregoing specifications give proper formulas for all surfaces under average conditions and if followed to the letter should produce a long-wearing paint job that will retain its original fine appearance for a long time. But the competent painter will know from his experience what slight variations to make in the proportions of vehicle and pigment that will result in even longer life for the paint film. That's the advantage of hiring a skilled painting craftsman who knows how to use his head as well as his brush. It is a plus for the owner and a safeguard for the architect.

Another fact that should never be forgotten is that today's painting governs tomorrow's repainting. Paint must wear out . . . must be replaced sooner or later. How soon and how inexpensively depends on what is done now.

It is a simple, arithmetical truth that the longer repainting can be postponed safely, the less the cost per year for the original painting. It is likewise true that the cost of the repainting will be much less if the old surface requires no more preparation than dusting off loose dirt. That's all a white-lead job needs. White-lead wears down slowly and evenly . . . an action known as "chalking." One of its great advantages is that the surface is smooth and unbroken when it is time to repaint.

Any other type of paint wear, such as cracking and scaling, resulting in spotty disintegration of the paint, requires complete removal of what is left of the old film. This is a laborious task and a costly one—doubly irritating to the owner because it would have been unnecessary if the proper materials had been specified at the time the original paint was applied.

Whenever cost enters into the picture it is important to remember that the only painting cost worth considering is the cost per year. That's not saying that one should not "buy right" both the materials and the labor for the painting job. It is simply saying that neither the materials nor the labor should be bought because of "cheapness."

It is easy to figure why. A paint job is made up of only these two elements, material and labor, and low quality in either or both is bound to decrease the life of the paint job, shorten the time between painting and thus increase the cost per year.



*This photograph of the siding on a double house tells its own story about paint. The owner of the left side of this double house "saved" money on the initial cost of his paint job. He paid $16 less than the owner on the right side who got a white-lead job. Both jobs were two years old when the picture was taken. The "cheap" paint job is through. The white-lead job is still good for plenty of service.*

It is particularly risky to skimp on the materials because not even the most skilled applicator can make inferior paint stick long enough to justify its low price.

Take the case shown photographically on the opposite page. It is one of many that can be cited but it is especially apt because the two jobs are side by side on the same house. There is no question but that exposure and surface conditions were the same. The owner of the left side of this double house saved money on the first cost of the paint job. He paid $16 less than the other owner who got a white-lead job. When the pictures were taken both jobs were 2 years old. It is perfectly evident which owner got his money's worth and why he got it. Paint wear and cost per year tell the final story every time.

The specifications contained in this booklet also cover the use of red-lead for painting iron and steel surfaces. It requires little argument to prove that exposed surfaces of iron and steel need continual paint protection. Frequently, a few hours in the weather is enough to start rust on bare metal and once started rust never rests. Rust spots soon develop into damage spots and in a few months can seriously endanger an expensive structure.

Pure red-lead paint has the faculty of sticking so tight to metal that it becomes almost a part of the surface it covers. Red-lead has long been as prominent in the protection of metal as white-lead is in the preservation of wood and other surfaces. Most of the important structures in the world have had red-lead protection ever since the metal left the mill.

The long wear and resultant economy of Dutch Boy red-lead is a matter of record and the same arguments we have used to justify the specifying of white-lead apply with equal truth and force to this standard metal protecting paint. It is always to the best interests of the architect or engineer, the owner and the structure itself to specify red-lead paint—Dutch Boy red-lead paint—of proper type and formulation to fit the job to be done.

## NOTES ON INTERIOR PAINTING

To properly choose an interior paint the standard for judging it must first be determined. On many jobs—probably on most jobs—the standard is appearance.

In this respect, white-lead is really in a class by itself. There is no other paint that gives quite the same effect—an effect which can best be described as a solid, rich beauty of finish. For many generations this quality has made white-lead the unquestioned choice for fine interiors. The elaborate decorations of church interiors, the impressive treatments of the important rooms in hotels and public buildings, the best effects in homes, all have been achieved with white-lead paint.

White-lead must necessarily bring this same beauty of finish, this same fine appearance to all interiors for which it is used.

Another factor related to appearance is color. So often it is imperative that an exact shade or tint of color be employed to effect the architect's purpose or to fit in with a particular structural design. White-lead, being a custom-made paint mixed on the job, can be tinted to just the right color with Dutch Boy colors in oil. The architect, the decorator and the owner will all receive the effect they want, not just something approximately like it.

On the other hand, the standard for judging the value of an interior paint might be durability. That is, the type of durability that will successfully withstand cleaning with soap and water as well as the ordinary wear and mechanical abrasion to which most interior surfaces are subject.

Here again, white-lead mixed as recommended in these specifications has unique advantages. The resulting flat paint produces a thoroughly "cleanable" surface—one that can be scrubbed as frequently as necessary to keep it in good condition. It is a flat paint that is daily demonstrating its durability under actual service conditions. The test illustrated on this page shows in graphic form just how much abuse this paint will take.

There are times, just as in the specifying of outside paint, when cost becomes the all-important factor. Even on this basis white-lead has nothing to fear if all the phases of cost are considered. There are interior "flats" sold for a lower price per gallon, of course, but application has a vital influence on interior painting costs. Dutch Boy goes on so easily and levels out so smoothly that a man can paint more surface per hour. Thus the labor charge per square foot applied is lowered. Also, Dutch Boy white-lead covers at least 800 square feet per gallon on smooth plaster which makes it an economical paint from the standpoint of the quantity needed for the job.

So, no matter what the yardstick for selecting an interior paint may be, Dutch Boy white-lead will work out to the advantage of the man who foots the bill. It is a flat paint that will stand out against the field in any reasonable and fair test and one that the architect can specify with perfect confidence both as to its immediate satisfaction and its future performance.



*WALKED ON---*



*SMEARED---*

*Just to prove the remarkable sturdiness of white-lead flat paint we put it through a special gruelling test. Instead of painting it on a wall we used a square of wallboard that could be walked on. For a full week, lying on the floor in a busy doorway, this paint was tramped upon by hundreds of feet. Back and forth . . . heel and toe . . . grind and crush went these feet until the original white became a very dirty gray.*

*Even this wasn't all. Walls aren't walked on but many of them are soiled with such things as grease, lipstick, iodine, shoeblacking, ink and pencil marks. So all of these were streaked on this already mistreated painted surface. Then it was washed. Water and washing powder cleaned this paint so that it looked practically new again.*

*This, we respectfully submit, is* PAINT WEAR *. . . the kind of wear that you should get from the flat paint you specify . . . or else your client is not getting everything from his paint dollar.*



*WASHED---*



*---CLEANED!*

# NATIONAL LEAD COMPANY

111 Broadway, New York

116 Oak Street, Buffalo

900 West 18th Street, Chicago

659 Freeman Avenue, Cincinnati

1213 West Third Street, Cleveland

722 Chestnut Street, St. Louis

973 John Street, Seattle

1211 N. W. Glisan Street, Portland, Oregon

2240-24th Street, San Francisco

932 Wilson Street, Los Angeles

National-Boston Lead Co., 800 Albany Street, Boston

National Lead & Oil Co. of Pennsylvania
316 Fourth Avenue, Pittsburgh

John T. Lewis & Bros. Co., Widener Building, Philadelphia

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# NATIONAL CHEMICAL & MFG. CO.

3617 South Wall Street, CHICAGO, ILL.

EASTERN FACTORY AND OFFICES: 25 Forrest Street, BROOKLYN, N. Y.

Made in Canada by: STANDARD PAINT & VARNISH CO., Ltd., Windsor, Ontario

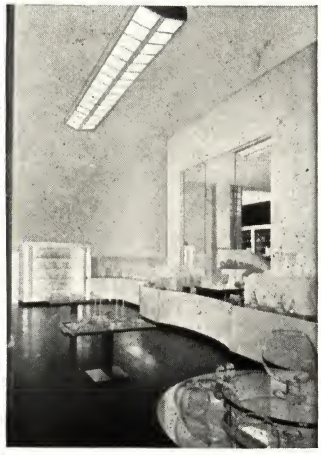
DISTRIBUTORS IN ALL PRINCIPAL CITIES

## LUMINALL—A SUPERIOR PASTE CASEIN PAINT

Luminall is a (paste) casein paint using casein emulsified with chinawood oil as a binder and lithopone as pigment. It has all the desirable qualities of any good flat paint and in addition greater beauty; higher light reflection; odorless; dries in 40 minutes; one-coat coverage.

The higher light reflection and the greater beauty of color in this paint is due to the fact that casein is used as a binder. Casein is substantially colorless and in no way changes or obscures the color value of the pigment. It does not yellow with age. The thinness of the binder film and the low index of refraction minimize refraction losses. Unlike oils, casein does not tend to rob pigment of opacity.

Added reasons for the effectiveness of Luminall are to be found in the fact that this paint has a higher ratio of pigment-to-binder and greater pigment exposure; giving pigment a value approaching 100% of its effective color value.



*Luminall Gives Unusual Beauty*

### Colors

Standard colors in addition to black and white are: gray, dark buff, blue, pink, buff, cream, green, orchid, ivory, tan. Deep colors are regularly manufactured for special decorative work in blue, bright red, yellow, dark brown, bright green, yellow green, raw umber, raw sienna, burnt sienna. Any other color can be produced if ordered in lots of 30 gals. or more.

Luminall is packed in quarts, gallons, 5-gallon and 30-gallon drums.

### Coverage

| Type of material | Square feet |
|---|---|
| Painted surface | 700–750 |
| Finish coat plaster | 500 |
| Concrete | 400 |
| Sand lime brick | 250–350 |
| Insulating Boards | 200–225 |
| Concrete Block | 200–350 |
| Sand finish plaster | 175–250 |
| Cinder block | 150–175 |

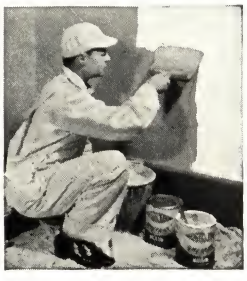


*An Excellent Paint for Walls and Ceilings of Homes*

### Where to Use Luminall

**Residences**—Use wherever flat paint is desired. Gives greater beauty and clarity of color in decorative effects. Greater light reflection advantageous in small rooms—or in rooms with poor exposure, hallways, closets, etc.

**Schools**—High light reflection qualities and economy of material and application. Does not affect absorptivity of acoustical plaster. Not affected by acid fumes in chemical laboratories.



**Hospitals**—Odorless. Permits redecoration without ill effect to patients.

**Stores**—Permits better lighting effects for merchandise display; attractive decorative effects; odorless and does not harm stocks.

**Office Buildings**—40-minute drying and odorless shortens redecorating inconvenience to tenants. Quick drying saves scaffolding where more than one color is used. Luminall may be applied on green plaster or concrete if desired.



**Some Well Known Luminall Interiors**
Stevens Hotel, Chicago; University of Washington, Seattle; Union Station, Cincinnati




**Hotels**—Not necessary to shut off entire floor when painting is done. Recommended for simple decorative schemes in guest rooms and more complex treatments in ballrooms, restaurants, etc.

**Theaters**—Attractive decorative treatment of lobbies and better light in auditorium. One-coat coverage allows striking but outmoded decorations to be replaced at low cost.

**Miscellaneous**—Various special merits mentioned in foregoing may be applied with equal advantage to museums, exposition buildings, churches and various types of structures. In redecoration following fire-smoke damage Luminall is specified because of its great opacity and one-coat coverage.

**Industrial**—Widely used in factories and warehouses on account of economy; high light reflection; non-yellowing with age; unaffected by acid fumes.

### Advantages of Luminall

**Tests**—Reports of tests available showing resistance to acid fumes and alkalis; oxidation; violet ray. Also V. O. Knudsen's tests of Luminall on acoustical plaster.

**Saving in Labor**—Saving in labor in one-coat coverage of Luminall is evident as compared with paints where more than one coat is required. Luminall goes on so easily that a wide brush of the Dutch calcimine type is ordinarily used, which in itself is an important economy.

**Application**—Same as ordinary paint. Luminall comes in paste form. Uses water as thinner. In mixing, add water sparingly and stir in thoroughly, repeating until proper consistency is reached.

### "Outside" Luminall

For exterior use on stucco, concrete and brick, "Outside" Luminall is recommended. One coat covers. May be applied on bare or previously painted surfaces. Extremely durable and satisfactory. Made in white and 8 colors.

### Other Products

Our other products include Marb-L-Cote; X-Cell-All Paint and Varnish Removers (both liquid and paste); Fresco Colors.

### On Request

We will be glad to furnish on request our 24-page fully illustrated booklet, "Painting for Light and Decoration." Also color cards and generous free samples of Luminall.

SINCE 1875

# O'BRIEN VARNISH COMPANY

SOUTH BEND, IND.

BRANCH OFFICES

CHICAGO, ILL., 1811 South Wabash Avenue
WASHINGTON, D. C., 2422 18th Street, N. W.
MINNEAPOLIS, MINN., 210 Third Avenue, No.
MILWAUKEE, WIS., 1751 North Third Street
NEW YORK, N. Y., 33 East 20th Street
OMAHA, NEB., 2311 Cuming Street
KANSAS CITY, MO., 1819 Troost Avenue
BALTIMORE, MD., 14 East 21st Street

### The Company

Manufacturers of paints, varnishes, and enamels since 1875. Pioneers in the development of washable flat wall paints, the use of synthetic resins and lately inventors of patented Thermolyzed Tung Oil. O'Brien Paints are universally respected by fine decorators for high quality and dependability.

### Service

Special technical advice on any particular painting job which presents unusual problems will be gladly furnished on request. Special panels showing particular finishes—or panels attempting to develop some new finish will be made up for any architect requesting them, without any obligation.

## PATENTED THERMOLYZED TUNG OIL FINISHES

(U. S. Reissue Patent No. 19307)




One of the most important basic developments ever made in paint manufacture, the patented O'Brien Thermolyzing Process accomplishes two significant results.

First, it eliminates chemical peculiarities which have seriously obstructed the free use of Tung Oil in varnishes and enamels, and prevented its use in paints.

Second, it actually *pre-shrinks* the oil and makes it by far a tougher, more waterproof, and more resilient binder than any paint vehicle previously available.

Practically every O'Brien finish is made with this new vehicle. As a result, O'Brien finishes possess smoothness, waterproofing and durability far greater than can be obtained with ordinary oils.

## GENERAL SPECIFICATIONS

**Interior Woodwork**—New wood shall be sanded smooth and dusted before painting. Before the priming coat all knots and sap streaks shall receive a thin coat of shellac. After priming all dents and defects shall be neatly puttied and sanded smooth. All surfaces receiving more than one coat of enamel or varnish must be carefully sanded between coats. Enameling must not be done when other contractors are working and creating a flow of dust.

**New Plaster**—New plaster should be aged at least 90 days before painting. Before painting, all cracks shall be filled with patching plaster.

**New Brick Work**—Must have a week in dry weather before it is painted.

**New Stucco**—Should age six months before painting.

**Metal Work**—Must be cleaned thoroughly of all dirt, oil, grease, rust, or scale.

**Exterior Painting**—Must not be done in wet weather, or while dew is on the surface. Temperature must be above 60° F. Inspection for construction defects (loose joints, improper flashing, etc.) which might cause interior moisture pressure and subsequent peeling must be made by the painting contractor and such defects, if any, reported to the architect.

**Tinting Prime Coats**—Where the final coat on any surface is to be a light color, the next-to-last coat of primer or undercoat must be tinted with oil colors to approximate the color of the finish coat.

## PARTICULAR SPECIFICATIONS

### Exterior Painting

**The T.T.O. System for Exterior Finishing**—This has been carefully worked out to cover every normal case in exterior painting. It represents many years of experience and research—plus the great waterproofing and wearing advantages made possible by using exterior finishes made with Thermolyzed Tung Oil.

**Back Painting**—Wherever possible back painting of new siding is unhesitatingly recommended as practically positive insurance against paint trouble in later years. One coat of O'Brien's T.T.O. Aluminum Paint should be used.

**New Wood**—

*No. 1. High Lustre Finish*—Apply three coats: One coat O'Brien's Penetrating Priming Oil. Allow to dry at least six days in good painting weather; one coat O'Brien's T.T.O. White Primer. Allow to dry 48 hours in good painting weather; one coat O'Brien's T.T.O. Paint.

*Note:* If the final color is to be a dark brown or dark green, the second coat in the above specification should be a half-and-half mixture of T.T.O. White Primer and T.T.O. Paint of the finish-coat color.

*No. 2 Dull Finish*—Substitute O'Brien's T.T.O. Dull White as the last coat in Specification No. 1. Tint to a pastel shade if desired.

**New Brick, Stucco, Concrete**—

*No. 3. Dull Paint Finish*—Apply 3 coats: 1 coat O'Brien's No. 701 (clear) size reduced with ½ gallon Mineral Spirits, or Turpentine to each gallon of Size. Allow to dry overnight; then apply 1 coat T.T.O. White Primer; 1 coat T.T.O. Dull White (tinted if desired).

*No. 4. High Lustre Paint Finish*—Substitute O'Brien's T.T.O. Paint in the color desired as the last coat in Specification No. 3.

**New Shingles**—

*No. 5. Dull Paint Finish*—Apply 3 coats: 1 coat O'Brien's Penetrating Priming Oil. Allow to dry at least 6 days; 1 coat O'Brien's T.T.O. White Primer; 1 coat T.T.O. Dull White (tinted, if desired).

*No. 6. Stained Finish*—Apply 2 coats of O'Brien's Shingle Stain in the color selected. Allow 2 days between coats for drying.

**New Metal Trim—**

*No. 7. High Lustre Paint Finish*—Apply 2 coats: 1 coat O'Brien's T.T.O. White Primer tinted to approximate the finish color; 1 coat T.T.O. Paint.

**Painting Over Old Paint**—On wood, metal, brick, concrete, stucco or shingles.

*No. 8. Where the Old Finish Is In Very Good Condition*—(And the color not to be greatly changed)—Apply 1 coat of either T.T.O. Paint or T.T.O. Dull White as high lustre or dull finish is desired.

*No. 9. Where Two Coats Are Necessary*—Apply 1 coat T.T.O. White Primer tinted to approximate the finish color. Apply 1 coat T.T.O. Paint or T.T.O. Dull White as lustre or dull finish is preferred.

*Note:* If the finish color is to be a dark brown or dark green, the first coat should be a 50-50 mixture of T.T.O. White Primer and T.T.O. Paint of the finish-coat color.

**Repainting a House That Has Peeled or Scaled—**

*First*—Check the house for construction defects (loose joints, improper flashing, etc.). Correct any defects before painting.

*No. 10. Preferred Specification*—Burn the paint off all areas where peeling has occurred. Then finish these areas following Specification No. 1 or No. 2 as preferred.

*No. 11. "Second Choice" Where Cost Prohibits "Burning"*—Wire brush thoroughly and remove all loose paint. "Spot-prime" all bare spots with a 50-50 mixture of O'Brien's Penetrating Priming Oil and Turpentine. Allow to dry at least 6 days. Then follow Specification No. 9 for finishing.

## Interior Woodwork

**High Lustre Enamel Finish**—*O'Brien's T.T.O. Enamel* is unreservedly recommended as the finest possible finish for interior woodwork. It produces a tough, elastic film of great beauty and color depth and can be depended upon for extra long wear and absolute freedom from checking or crazing. Obtainable in twenty modern colors, besides black and white. *O'Brien's Liquid Lite Decorators White Enamel* may, however, be used on interior woodwork with excellent results where the cost of the job is a very important factor.

*No. 12. On New Wood*—Apply 4 coats: 2 coats O'Brien's T.T.O. White Surfacer, each thinned 10% with turpentine. 2 coats O'Brien's T.T.O. Enamel of the color desired. Sand and dust carefully between coats.

*Note:* If economy demands, the 2nd coat of Surfacer may be omitted.

*No. 13. Over Old Enamel or Varnish*—Sandpaper the surface thoroughly. Then rinse down with a cloth saturated in alcohol. Immediately following this (while "tacky") apply one coat O'Brien's T.T.O. White Surfacer, tinted to approximate the finishing color. Sand and dust when dry. Then finish with 1 coat O'Brien's T.T.O. Enamel of the color desired.

**Eggshell Enamel Finish** — O'Brien's *Liquid Lite Eggshell Enamel* produces a soft "hand-rubbed" finish of great beauty and durability. It may be tinted to any pastel shade.

*No. 14. On New Wood*—Apply 4 coats: 2 coats T.T.O. White Surfacer thinned 10% with turpentine; 1 coat Liquid Lite Eggshell Enamel thinned 10% with turpentine; 1 coat Liquid Lite Eggshell Enamel unthinned.

*Note:* If economy demands it, the second coat of surfacer may be omitted.

*No. 15. Over Old Enamel or Varnish*—Follow specification No. 13, substituting Liquid Lite Eggshell Enamel for T.T.O. Enamel.

**Stain and Varnish Finishes** — O'Brien Pyramid Paste Oil Stains are national favorites among decorators and wood finishers. They lend unusual depth of color and the decorator can vary them by thinning so as to produce exactly the shade desired by the owner or architect. O'Brien T.T.O. Varnishes are of three types: Spar (for exterior work), 2-Hour (for interior), and Rubbing Varnish—and represent the nearest approach to perfection possible in each type.

*No. 16. Close Grain Woods*—(Beech, Cedar, Fir, Gum, Maple, Pine. Redwood, Spruce, etc.)—Apply 1 coat Pyramid Paste Oil Stain of the shade desired. Wipe it off across the grain. Follow with a very thin coat of shellac (1 lb. of shellac per gallon of alcohol). Then apply 2 coats T.T.O. 2-Hour Varnish.

*No. 17. Open Grain Woods*—(Oak, Mahogany, Birch, Walnut, Ash, Hickory, etc.)—Apply 1 coat O'Brien's Natural Paste Filler tinted to the desired shade with Pyramid Paste Oil Stain. Apply 1 thin coat of shellac 1 lb. cut. Apply 2 coats T.T.O. 2-Hour Varnish.

*No. 18. For Hand-Rubbed Finish*—Substitute T.T.O. Rubbing Varnish for 2-Hour Varnish in Specification No. 16 or No. 17. Rub with pumice and water or rotten stone and oil to produce the desired effect.

*No. 19. For Satin Finish*—Substitute O'Brien's 4-Hour Satin Finish Varnish for the *last coat* in Specification No. 16 or 17.

*No. 20. For Dull (Flat) Finish*—Use O'Brien's Q. D. Flat Oil Finish for the *last coat* in Specification No. 16 or No. 17.

## Exterior Woodwork

**New Wood—**

*No. 21. Clear Varnish Finish*—In the case of Open Grain woods, apply 1 coat Natural Paste Filler. Then apply 3 coats T.T.O. Spar Varnish.

*No. 22. High Lustre Enamel Finish*—Follow Specification No. 12.

## Floor Finishing

O'Brien's *Floor Enamel* and O'Brien's *Celluseal* are ideal products for this work. Floor Enamel comes in ten good looking colors, dries quickly to a high lustre, and, because it is made with Thermolyzed Tung Oil, can be depended upon to wear extra well on any type of floor, indoors or outdoors. Celluseal produces a semi-lustre clear finish of amazing elasticity and extraordinary toughness.

**On New Wood Floors—**

*No. 23. Colored Enamel Finish*—Apply 3 thin, well brushed coats of O'Brien's Floor Enamel. Thin each coat 20% with turpentine. Allow plenty of time for thorough drying between coats.

*No. 24. Stained Clear Finish on Close Grain Woods*—Apply 1 coat Pyramid Paste Oil Stain of the color desired. Wipe off across the grain. Apply 1 thin coat of shellac (1 lb. cut). Apply 2 very thin coats of Celluseal, allowing plenty of time for thorough drying between coats.

*No. 25. Stained Clear Finish on Open Grain Woods*—Apply 1 coat Natural Paste Filler tinted to the desired shade with Pyramid Paste Oil Stain. Apply 1 thin coat of Shellac (1 lb. cut). Finish with 2 thin coats of Celluseal, allowing plenty of time for thorough drying between coats.

*No. 26. Clear Finish on Maple (Gymnasium Floors, etc.)*—Apply 2 thin coats of Celluseal, allowing plenty of time for thorough drying between coats.

*No. 27. Clear Finish on Open Grain Woods*—Apply 1 coat Natural Paste Filler. Apply 2 thin coats Celluseal, allowing plenty of time for thorough drying between coats.

*No. 27a. High Lustre Varnish Finish*—Substitute O'Brien's T.T.O. 2-Hour Varnish or O'Brien's "910" Varnish for Celluseal in Specifications No. 24, No. 25, No. 26 or No. 27.

*No. 28. Waxed Finish*—Follow whichever of the above specifications fits the particular case. Omit the last coat of Celluseal and in its place apply a coat of wax of the type desired.

**New Concrete or Cement Floors—**

*Note:* If the floor lies on the ground and is wet all of the time, we recommend against painting. Otherwise, it may be finished thus:

*No. 29. Colored Enamel Finish*—Apply 1 coat O'Brien's Neutralizing solution. Allow to dry overnight. Apply 1 thin coat O'Brien's Priming Oil. Apply 2 very thin coats O'Brien's Floor Enamel of the color desired, allowing plenty of time for hard drying between coats.

## Wall Painting

O'Brien's *Liquid Velvet* (washable flat)—O'Brien's *Satin Finish* (semi-gloss) — O'Brien's *Interior Gloss* — and *Liquid Lite Non-Yellowing Enamel* provide the finest available materials for use in doing dependable, good-looking and economical wall finishing. All of them are highly washable. All of them cover well, work easily, and are very acceptable to the painter.

**New Plaster, Wallboard, Canvas Wall Surfaces—**

*No. 30. Flat Finish*—Apply 3 coats: 1 Coat Liquid Velvet Primer; 1 coat Liquid Velvet Primer tinted to approximate the finish color; 1 coat Liquid Velvet.

*No. 31. Semi-gloss Finish*—Apply 3 coats: 1 coat Liquid Velvet Primer; 1 coat Liquid Velvet Primer tinted to approximate the finish color; 1 coat Satin Finish.

*No. 32. Gloss Finish*—Apply 3 coats: 1 coat Liquid Velvet Primer; 2 coats O'Brien's Interior Gloss.

*No. 33. Non-yellowing White Enamel Finish*—(For kitchens, bakeries, etc.)—Apply 3 coats: 1 coat Liquid Velvet Primer; 2 coats Liquid Lite Non-Yellowing White Enamel.

**Repainting Over Old Paint—**

*No. 34. Flat Finish*—If the wall is in very good condition, 1 coat of Liquid Velvet. If old, apply 1 coat Liquid Velvet Primer tinted to approximate the finish color. Finish with 1 coat Liquid Velvet.

*No. 35. Semi-gloss Finish*—1 or 2 coats O'Brien's Satin Finish as necessary to produce the desired effect.

*No. 36. Gloss Finish*—1 or 2 coats O'Brien's Interior Gloss.

## Walls, Structural Iron, Etc., in Industrial Buildings

O'Brien *Liquid Lites* are the ideal finishes for factories, dairies, garages, and other industrial buildings. They provide extraordinary covering ability, easy application with spray or brush, and lastingly good appearance.

**New Metal, Plaster, Concrete, etc.—**

*No. 37. Flat Paint Finish*—Apply 2 coats: 1 coat Liquid Velvet Primer; 1 coat Liquid Lite Flat White (tinted if desired).

*No. 38. Non-yellowing White Enamel Finish*—Apply 3 coats: 1 coat Liquid Velvet Primer; 2 coats Liquid Lite Non-Yellowing White Enamel. (The last coat may be omitted if cost demands.)

*No. 39. Aluminum Paint Finish*—Apply 2 coats O'Brien's T.T.O. Aluminum Paint.

**Over Old Paint—**

*No. 40.* Apply one or two coats of Liquid Lite Flat White, Liquid Lite Non-Yellowing White, or T.T.O. Aluminum Paint as necessary to produce the desired result.

## MISCELLANEOUS INFORMATION

**Modern, Deep Colors in Flat Paint**—O'Brien's Liquid Velvet is now available to architects and decorators in four deep, "primary" colors, which can easily be mixed together to form almost any deep shade for modern decorative work. A color chart showing these colors and many of the possible mixtures will be sent on request.

**For "Better Light—Better Sight"** — O'Brien offers Liquid Velvet N-D-Rect White, a special "blued white" for ceilings that is invaluable on jobs where high light reflection must be secured. Samples sent on request.

**Free**—A post card will bring a complete spiral bound compilation of color cards showing, on large chips, every standard architectural color manufactured by O'Brien.

O'BRIEN

# THE PASSONNO-HUTCHEON CO.

## Paints, Varnishes and Enamels

## CLEVELAND, OHIO

BRANCH OFFICES AND WAREHOUSES

BOSTON, MASS., 218 W. 1st Street, South Boston
NEW YORK, N. Y., 49 Throop Avenue, Brooklyn
PITTSBURGH, PA., 811 Wood Street, Wilkinsburg
DISTRIBUTORS AND DEALERS IN PRINCIPAL CITIES

### Products

A full line of ARCHITECTURAL PAINTS, VARNISHES and ENAMELS.

RUST PREVENTING PAINT for structural iron, iron pipe, etc.

SHINGLE STAINS; CEMENT PAINTS.

Also Aluminum Paint; Aluminum Vehicle; Semi-paste Whites; Roof Cements, etc.

### Pigmented Primer and Sealer

A combination sealer and prime coat. Kills lime, suction, fire cracks and makes possible a perfect two coat job on new plaster and composition board.

### Olo-Seal

An oil size for use under paints, calcimine and wall coatings. It kills suction. Prevents lime and stains from striking through the top coats.

Olo-Seal contains no rosin or glue.

### Olotone Flat Oil Paint

A flat oil paint of great covering and hiding quality. For all interior work, such as walls, ceilings, woodwork, etc. Spreads easily and flows out to a beautiful flat finish. Made in white and colors.

### Varnishes

**Olo-Speed Universal Four-Hour Varnish**—A high quality varnish that dries ready for use in four hours.

**Olo-Spar**—A pale, quick-drying elastic universal varnish for exterior or interior work. Will not mar white or turn white under hot or cold water.

**Elastic Floor and Trim**—A pale, elastic finish for floors. Withstands hard usage and will not scratch white or show heel marks.

**Olo-Var Floor and Trim**—A high grade moderately priced waterproof varnish. Dries hard over night. Will withstand hard usage.

A moderately priced product of excellent quality.

### Master Painters' 80-20 White

A heavy paste made of 80% carbonate of lead, 20% zinc oxide ground in pure linseed oil and turpentine dryer.

### Olo-Lite Enamel Undercoat

A hard-drying, flat finish undercoat for all enamels. It covers well and can be sanded to a very smooth finish.

### Satin-Amel

A high grade semi-gloss enamel paint with excellent hiding qualities. Provides a satisfactory one-coat finish over old paint. Satin-Amel can be washed with soap and water, hence is an ideal finish for use in schools, hospitals, office and public buildings or any interior that requires frequent washing. Made in white and colors.

### Enamelac 4-Hour High Lustre Enamel

A quick drying universal enamel. It dries in four hours, works easily and can be applied over any varnish or paint surface without raising old finish. Made in white and colors.

### Olo-Lite Enamel

For interior or exterior work where only the highest grade enamel is desired. It is easy to apply and is made with specially treated oils, turpentine, turpentine dryer and pure French process zinc. Made in white only.

### A Few Projects on Which Olo Paints Were Used

Juvenile Court Buildings, Cleveland, Ohio
State House, Boston, Mass.
City Hall, Albany, N. Y.
Public Schools, Albany, N. Y.
Cathedral Latin School, Cleveland, Ohio
St. Philomenas Church, Cleveland, Ohio
Watervliet High School, Watervliet, N. Y.



Before Remodeling



After Remodeling

### Historic Village of Dickeyville, Maryland Made Modern

The above pictures show a great improvement in which Olo Products played an important part. Dickeyville, Md., a mill town over 100 years old, was modernized by the Dickeyville Sales Co. under the supervision of Arthur Lee Hoff. After competitive tests by the painting contractor, Robert L. Clark, Olo Products were selected and used for exterior and interior surfaces due to their coverage, ease of application and smooth durable finishes

# PITTSBURGH PAINTS

*Smooth as Glass*



*of the* PITTSBURGH PLATE GLASS COMPANY

# PITTSBURGH MAKES THE TIME AND

## *The Story of* PITTSBURGH PLATE GLASS COMPANY

The Pittsburgh Plate Glass Company, since its inception, has consistently maintained the highest standard of quality in the products it offers to the building trade. This high quality is no mere advertising claim. It is, and has always been, an established fact in the industry. To make it so and keep it so, millions of dollars have been expended.

To assist members of the architectural profession in any question which may arise concerning the use of Pittsburgh Products, a corps of highly trained specialists is maintained, who work in co-operation with the regular warehouse field forces. Problems concerning Paint Products may be referred to a Board of Technical Engineers at the Milwaukee and Newark factories. (See outside back cover for local addresses.)

### An Enormous Research Program on All Products

The exhaustive research continuously carried on in connection with all products, the field tests, the development and perfection of the most modern and efficient manufacturing methods and machinery, the integration of facilities which in many cases permits the Pittsburgh Plate Glass Company to exercise complete control of its products from raw material to the finished article . . . these are a few of the reasons why Pittsburgh Products have earned by actual performance in the building trade, an enviable reputation for their quality and dependability.

### Outstanding Distribution Facilities

In the service rendered to the trade, the Pittsburgh Plate Glass Company is also outstanding. Twenty-six plants, operating in strategic locations, manufacture Pittsburgh Products. The products thus made are distributed through a system of seventy-two warehouses in principal trading centers, direct from the factories, and, through progressive jobbers. With an organization like this, it is obvious that the Company is particularly well equipped to provide prompt, efficient service throughout the country.

## OTHER PRODUCTS OF THE COMPANY

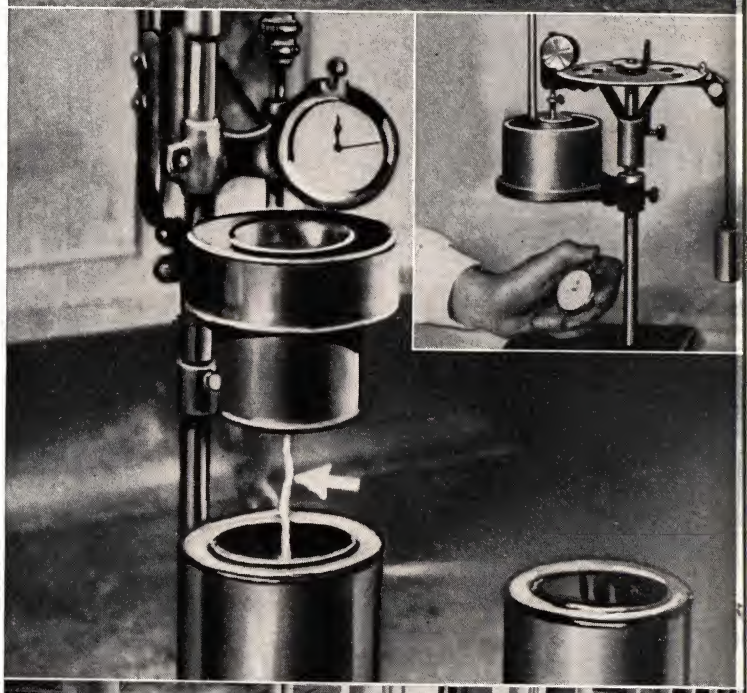
Polished Plate Glass
Vista Plate Glass
Flesh Tinted Plate Glass
Blue Plate Glass
Crystalex Plate Glass
Heavy Polished Plate Glass
Heavy Rough Glass
Herculite Plate Glass (Tempered)
Solex Plate Glass (Heat Absorbing)
Tapestry Glass
Bent Glass
X-Ray Lead Glass
Duplate Safety Plate Glass
Multiplate Bullet-Resisting Glass
Carrara Structural Glass
Pittco Store Front Construction
Pittco Store Front Metal
Pennvernon Window Glass
Pennvernon 16-oz. Picture Glass
Pennvernon Heavy Sheet Glass, $\frac{3}{16}$ and $\frac{7}{32}$ inch
Ornamental Glass
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Brushes
Chemicals
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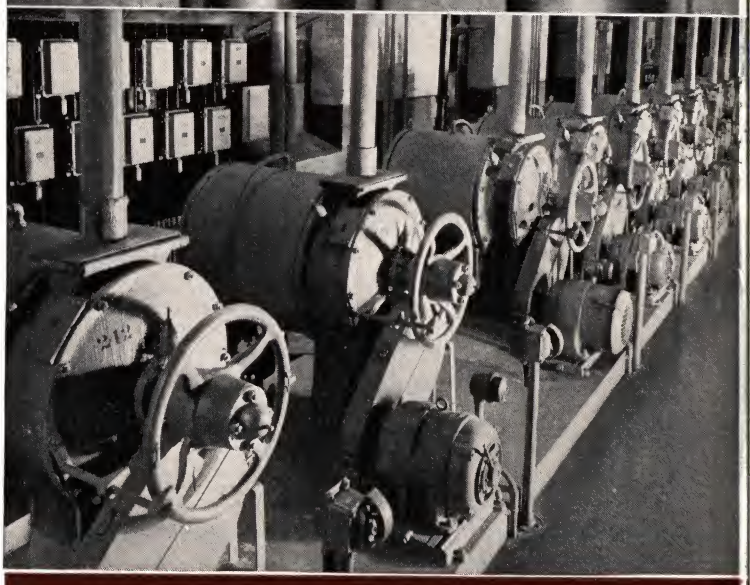
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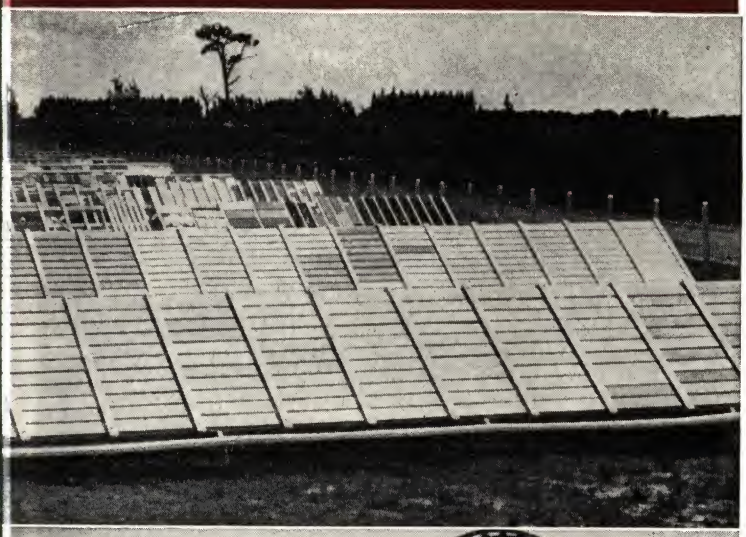
*General Offices*

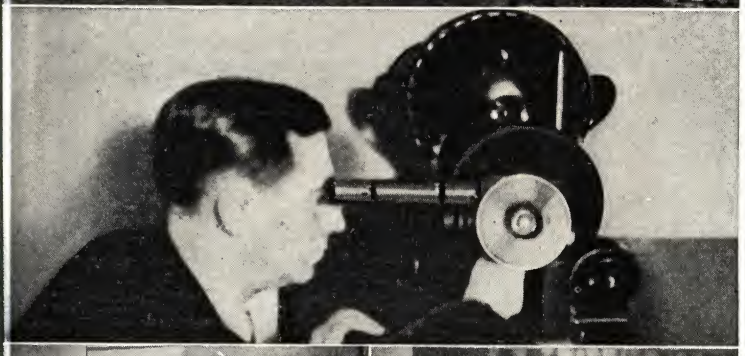
GRANT BUILDING PITTSBURGH, PA.



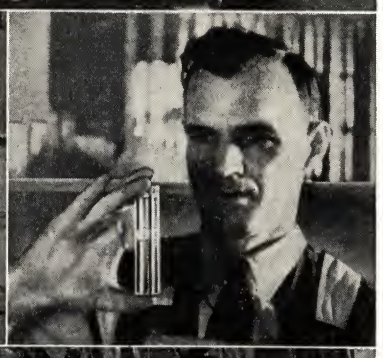


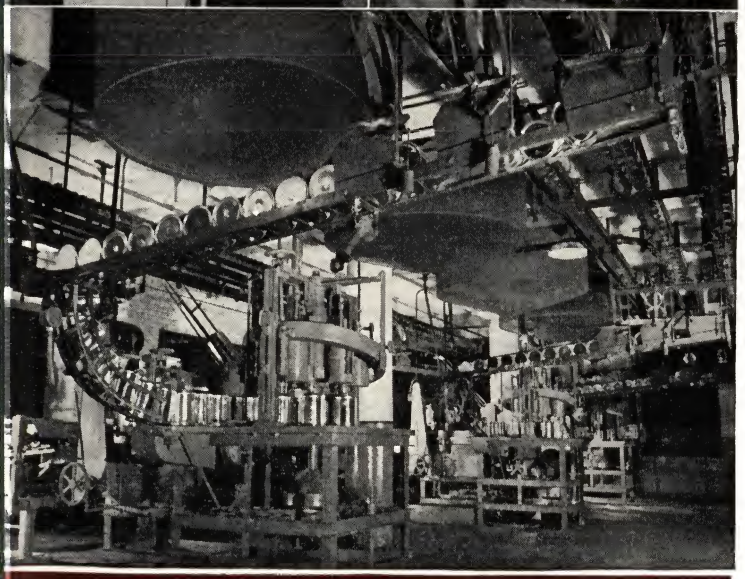












## PITTSBURGH PAINTS ARE TIME AND COLOR TESTED

In the Pittsburgh Research Laboratories are dozens of devices to test the basic virtues of paint. Tests of such rigor, and standards so exacting, might satisfy any user of paints but they do not satisfy the PITTSBURGH PLATE GLASS COMPANY.

That is why they maintain a chain of outdoor proving grounds—outdoor laboratories—for testing the wearing qualities and the fastness of color of all of their paint products. Pittsburgh Paints are gauged to meet the requirements of consumers, painters and dealers from every viewpoint.

These outdoor proving grounds are situated at three distinct locations in the United States—at Milwaukee, Wis.; Newark, N. J., and at Fort Lauderdale, Fla.—each selected for its peculiar climatic conditions.

At these proving grounds there are long, inclined racks, on which hang test panels of their present products and competitive materials. There, too, are exposed thousands of experimental panels every year. In this endurance marathon, Nature herself is the judge, and from her verdict there is no appeal. "Only the fittest survive" to reward their users with Pittsburgh assurance of field-tested, merit-proved quality.

## THROUGH EXTENSIVE NATIONAL ADVERTISING

### They Are *Known* to Your Clients

The PITTSBURGH PLATE GLASS COMPANY has long been among the country's leading advertisers, resulting in their products being well and favorably known. The accumulated experience of eighty-two years and the entire facilities of their organization are reflected in the value they offer in Pittsburgh Paints.

This unusual value of Pittsburgh Paints has been accomplished by maintaining quality, foreseeing demand, and keeping production facilities equal to demand. Their products have been kept modern through the efforts of an extensive research organization ever on the alert to discover better formulas and improved manufacturing processes.

## AN EXTENSIVE RANGE OF COLOR SELECTION

The colors available in Pittsburgh Paints are kept modern and acceptable through the constant study of their Color Research Department.

## ILLUSTRATIONS SHOW

Upper illustration shows our Fort Lauderdale, Florida, Proving Ground, where thousands of panels are exposed in Nature's own laboratory.

Center left—a sample from every batch of paint passes through various tests, one checking the other, they disclose consistency or viscosity, insuring that its body and working qualities will always be the same.

Center right—constantly, research chemists search for the finer raw material, for the better way to solve finishing problems.

Lower left—a battery of Bramley Mills, the latest development in paint grinding equipment.

Lower right—automatic paint filling and labelling machines.

# A LIST OF PITTSBURGH PAINT PRODUCTS

## EXTERIOR PAINTS

### EXTERIOR PRIMER •

#### Wallhide Exterior Primer—The "Vitolized Oil" Paint

Designed for use on any exterior standing wood surface. Its use results in an undercoat that effectively counteracts the causes of exterior paint failures. Because of its flexible nature it is not suited for use on floors or steps.

It will improve appearance and durability of any suitable finish-coat paint. The "Vitolized Oil" gives it new properties—overcoming dead flat spots, fading of tints, and premature chalking. It provides unusual resistance to blistering and peeling.

Available in two colors: White and Neutral.

White should be used under white and light colored finish coats, and Neutral under darker colors. White and Neutral may be intermixed to produce intermediate shades.

Wallhide Exterior Primer is a liquid paint which should be thinned to brushing consistency with not to exceed one pint of Leptyne or Turpentine per gallon.

Much superior in hiding to ordinary Lead and Oil Primer. Hiding of predominating lead pigment has been considerably increased by addition of Titanium White. Therefore, a two-coat job consisting of Wallhide Exterior Primer and a suitable finish coat is equal in appearance to the average three-coat job obtained when ordinary or penetrating primer is used.

Depending upon the kind of surface, the following figures may be used for estimating purposes:

**Coverage**—*New Work—400 sq. ft. per gal.*
*Old Work—600 sq. ft. per gal.*

### EXTERIOR VEHICLE •

#### Vitoloil

A paint oil that, when added to exterior paste or liquid paints, will impart many desirable qualities that add to durability and general success of painting operations. It improves flowing and leveling properties, decreasing brush marks and producing a more uniform coating. Color retention is also improved due to proper degree of sealing and the elasticity that Vitoloil imparts. Pigments are strengthened to function properly and fading of color is retarded considerably.

Vitoloil contains no resins or gums. A specially processed vegetable oil that adds life to paints and improves appearance.

### GENERAL EXTERIOR •

#### Sun-Proof Paint

Unfailing in uniform quality. Built on time tested formula which all usage has proven gives satisfactory results. Its use assures protection through extreme durability, economy, through long service, and beauty because of the twenty-four modern colors (in addition to White and Black) in which it is made.

**Coverage**—*350-400 sq. ft., two coats, or 250-275 sq. ft., three coats.*

#### Snolite—White Paint

A super-quality, semi-paste intensely white which permits of quick reduction at a minimum expense of time and labor. When ready for application, Snolite has fully one-half greater opacity than standard, many paints considered, which makes it economical to use. Can be tinted any shade and mixed with other pigments. Dries to a smooth surface which chalks moderately and leaves surface in excellent condition for repainting.

#### Plasco—Ready Mixed—a lower priced paint

Suitable for exterior surfaces. Works easily, hides exceptionally well, good body and dries to an oil gloss.

Twenty-four colors, also Black and White.

**Coverage**—*250-300 sq. ft., two coats.*

### MOISTURE RESISTANT •

#### Cementhide—A subdued gloss coating

For dampproofing, preserving and beautifying standing surfaces of stucco, concrete, brick, stone or plaster, exteriors of residences, business buildings, warehouses, etc. Made in eight colors and white. Proper pigment selection and treatment of oil used in the liquid results in remarkable wearing properties. Cementhide works very easily and dries overnight.

**Coverage**—Primer—100-200 sq. ft. per gal. Cementhide Finishing Coats will cover 200-450 sq. ft. per gal. depending upon surface.

#### Porchide—where temperature change is frequent

Designed to give utmost durability where temperature changes are frequent and exposure to weather, moisture and sunlight are severe. Withstands traffic and abrasion, will hold color and retain its gloss. May be recoated in six to eight hours. Overnight drying is recommended.

**Coverage**—*One gallon of Porchide will cover approximately 250-275 sq. ft. of surface, two coats, depending on type of surface.*

#### Ironhide—A tough, elastic, ready-mixed paint

Mixed ready for use. It is tough and elastic. Bonds firmly to the metal. Gives long, rust-protective service. It dries for recoating overnight when brushed, or in six to eight hours when sprayed.

**Coverage**—*600-800 sq. ft., one coat.*

**Colors**—Made in Red, Brown, Green, Black, Light Gray and Dark Gray.

#### Tor-On—Liquid Shingle Stain

A combination of penetrating and preserving oil and pigments which fill the pores and fibres, keeping out moisture and thus protecting surfaces from fungus, warping, splitting or decay. Made in nine colors.

**Coverage**—*2½ gal. will dip 1000 shingles, ⅔ their length. 3 gal. will suffice for dipping, spraying, or brushing 1000 shingles. 1 gal. will brush coat 60-70 sq. ft. of surface, two coats.*

### VARNISH AND ENAMEL •

#### Waterspar—83-200—Transparent

Designed to give complete satisfaction on all surfaces, where an exterior varnish is specified. Pale in color; does not yellow or darken when exposed to sunlight. Has twice the durability of varnishes previously offered for exterior use. Dries dust-free in one hour; may be recoated in six hours or overnight.

#### Waterspar Auto Enamel

A quick drying enamel of high quality for exterior surfaces. Produces a high gloss, durable finish that will hold its color. Suitable for wood and metal surfaces exposed to the elements. Sets dust free in two to four hours and dries overnight.

## EXTERIOR AND INTERIOR PAINTS

### ALUMINUM PAINTS •

#### Metaleaf—For general requirements

Designed to meet all general requirements as a priming coat for wood and as a finishing coat for all surfaces. Both the liquid and the aluminum portion are of the highest quality and combined in Metaleaf show definite advantages during application and in service. Furnished with the aluminum portion in paste or powdered form for preference. Packed in convenient two-compartment cans, one for holding liquid and the other the aluminum portion. Freshly mixed Aluminum Paint has a distinct advantage in leafing action over the same paint prepared in ready mixed form and kept for considerable time before use.

#### Aluminum Liquids Nos. 20, 30, 40

These mixing liquids are made to hold the powdered or paste aluminum in proper suspension for painting. The liquids cause the paint to adhere well to the surface and retain elasticity without becoming brittle from use or exposure.

# INTERIOR PAINTS

## GENERAL INTERIOR ●

### Alba-Lux (White-Light) Smooth, Durable, Washable

Smooth, impervious, washable, durable, non-poisonous, economical and sanitary. For use in mills, creameries, shops, factories, etc., on all types of interior surfaces—wood, brick, plaster, concrete. May be applied with brush or spray gun.

**Coverage**—*New Work—First Coat Flat—300-500 sq. ft. one coat. Second Coat Gloss—600-800 sq. ft. one coat.*

*Old Work—First Coat Flat—450-650 sq. ft. one coat. Second Coat Gloss—600-800 sq. ft. one coat.*

### Plastic Velumina—For Decorative Effects

A plastic, paste-like material which may be applied to any surface to which paint or varnish may be applied, new or old work. It offers opportunity to show skill and individuality in producing various plastic effects in swirls, imitation stone, etc.

## WALL PAINTS ●

### Wallhide Interior Wall Paint—The "Vitolized Oil" Paint for Interiors

The outstanding characteristic of Wallhide, the "Vitolized Oil" Paint, is its ability to produce a satisfactory paint job under difficult conditions.

### Wallhide Interior First Coater—A "Vitolized Oil" Paint

Designed primarily for plaster walls, for either new work or repainting, but is equally suitable for use on standing interior wallboard, wood, brick, and cement surfaces under any type of oil or varnish base finishing material—flat, eggshell, or gloss. The "Vitolized Oil" in this product gives it superior properties of sealing, stopping suction, and overcoming effects of hot spots. May be used also under other interior paints.

### Wallhide Interior Flat Wall Paint—A "Vitolized Oil" Paint

Wallhide Interior Wall Paint, in colors, is a "Vitolized Oil" Paint, of the same type as Wallhide Interior First Coater. It possesses unusual characteristics—the most outstanding of which are:

(1) Finished walls in one day, one or two coats—old or new walls.
(2) Unsurpassed hiding; one coat over old paint; two coats on new walls.
(3) Washable: Easy washing replaces redecorating.
(4) Perfect light diffusion.
(5) Modern, soft, pleasing colors.
(6) Easy to apply.
(7) Proof against peeling or cracking.
(8) No brush marks.
(9) Tough, adherent, non-absorbent film.

Made in 15 colors and white, and blending and glazing liquid.

### Wallhide Interior Semi-Gloss

For the busy rooms, where cooking and washing are the daily activity, and where children play, Wallhide Semi-Gloss, the impervious, dirt-resistant finish, offers excellent service. A finish that resists grease, ink and pencil marks, is washable with a minimum of effort, and this same washability makes Wallhide Semi-Gloss the practical material for baths and laundries.

Wallhide Semi-Gloss is also recommended for use in certain hospital rooms, corridors in public buildings, schools, hotels, hospitals, office buildings, and stores.

Twelve shades, White and Gloss White.

## WALLHIDE PRODUCTS FOR THE MASTER PAINTER ●

There are available, in addition to Wallhide Interior First Coater and Interior Wall Paint, two other Wallhide products, as follows:

(1) Wallhide P. B. X.—White.
(2) Wallhide Finishing Coat—Stipple White.

These products enable master painters to do their own tinting, producing shades not found in the regular Wallhide Interior Wall Paint line.

Wallhide Stipple White is a semi-paste which can be manipulated to produce a fine or coarse stipple finish.

Wallhide P. B. X. White was developed especially for use in schools, hospitals, public buildings, etc., where walls are subjected to frequent washings. It will withstand this treatment to an unusual degree without showing streaks and spotting. This finish results in a slightly higher sheen than regular Wallhide Finishing Coats.

## ENAMELS, STAINS AND VARNISHES ●

### Florhide Enamel

The Florhide film is hard and tough. It resists wear and water. Frequent mopping and scrubbing with soap solutions of varying strength are injurious to many floor enamels. Florhide withstands this treatment to an exceptional degree. Made in ten colors.

Dries dust free in two hours and is hard enough for recoating in four to six hours.

May also be used on upright surfaces of wood, concrete, stone, plaster or metal. 250 to 275 sq. ft. per gallon two coats.

### Utility Enamel

Produces a tough, high gloss, durable finish, proof against harm from water or oil. Ideal for use over larger surfaces when cost of the highest grade enamel would be prohibitive.

### Banzai Quick Drying Enamel

Perfect body: Ideal flowing. Furnished in Gloss White Enamel, Eggshell White Enamel, and Double Cover Undercoater—for interior or exterior finishing. Banzai Enamel possesses individuality and distinction seldom approached by other enamels.

### Waterspar Quick Drying Enamel

Waterspar Quick Drying Enamels are full-bodied and hide solidly in one coat. These bright colored enamels are intendes for all home decorative purposes.

*Note: Quick Drying has been secured without sacrifice of durability, brushing, hiding, or adhesion.*

### Pitcairn Wood Stains

For use in staining wood, tinting fillers, and coloring varnishes for interior use. Equally effective on hard or soft woods.

Pitcairn Wood Stains penetrate open or closed grained woods without causing objectionable raising of grain. Suitable for use on all interior wood surfaces. All Colors mix readily with varnish, except 74-16 Silver Gray, which is an acid stain. They contain no water, alcohol, acid, or alkali—except 74-16. They set slowly enough that surplus may be easily removed by wiping, without laps.

### Pitcairn Aged Varnishes

In the "Balanced" Line of Pitcairn Aged Varnishes there is a quality product to meet every varnish requirement. While some special quality may have been emphasized in certain varnishes to meet special needs, it has not been at the expense of other properties which are essential to quality results in application and service. The completeness and conciseness of the "Balanced" Line will be apparent from the listing of the individual products:

1. Marine Spar.
2. Compo Drier
3. Finishing Spar.
4. Master Painters' Spar.
5. Satin Finish.
6. Floor Spar.
7. Cabinet Rubbing and Polishing Spar.
8. Pure Batavia Damar.
9. Church Pew and Seat.
10. Utility Spar.
11. Dull Finish.
12. Gym Spar.

### Waterspar 83-400 Floor Varnish

A durable quick drying varnish especially for use on interior floors. It will withstand extreme hard wear from foot traffic and abrasion. Produces a transparent finish of high gloss that is resistant to moisture and alkali. Dries dust free in one hour and may be recoated in six hours or overnight.

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## GENERAL CONDITIONS

### Instructions to Bidders

The general conditions and instructions to bidders as applied on the general contract, apply also on the painting contract.

### Scope of Work

The work to be done by the painting contractor includes the furnishing of all material, labor, tools and equipment which shall be required to complete the painting and finishing of the buildings as specified.

**Exceptions**—Painting contract does not include shop coats.

### Workmanship

All work shall be done in a workmanlike manner and by skilled mechanics. All materials shall be evenly spread and smoothly flowed on and shall be free from runs or sags, and no paint, varnish or enamel shall be applied until preceding coat is thoroughly dry and hard.

No exterior painting shall be done in rainy, damp or frosty weather or until surface is thoroughly dry.

No interior painting or finishing shall be permitted until building has been thoroughly dried out by artificial heat.

In general and unless otherwise recommended and specified, exterior oil paints shall be allowed to dry at least forty-eight hours between coats and interior paints shall be allowed to dry at least twenty-four hours between coats.

Enamels and varnishes shall be allowed to dry at least forty-eight hours between coats unless noted in the detail specifications and shall be sanded lightly between coats with No. 0 sandpaper and dusted before succeeding coat is applied.

After applying paste wood fillers, excess shall be carefully and neatly cleaned from surface by rubbing across grain. All nail holes shall be filled with putty, tinted to match finish.

### Preparation of Surfaces

Painting contractor shall be wholly responsible for finish of his work, and therefore, shall not commence any part of it until surface is in proper condition in every respect. If painting contractor considers any surface so unsuitable for proper finish of his work that it cannot be rectified by slight sanding, he shall notify the Architect of this fact in writing before any materials are applied and he shall not apply any material until the unsuitable surfaces have been made satisfactory, or the Architect has instructed him to proceed.

All knots or sappy spots shall be given one coat of shellac at least ten hours before painting.

All necessary puttying of nail holes, cracks and blemishes shall be done after priming coat has become hard and dry and before second coat is applied, and putty shall match the shade of finish coat.

On old paint the surface shall be first brushed with a wire brush or sandpapered and where it is scaling badly, shall be scraped or burned off.

All greasy or oily metal surfaces shall be cleaned with turpentine or benzine before applying any materials. All scale or rust shall be removed by scraping, wire brushing or sandblasting.

### Materials

All materials used under painting contract shall be as manufactured by the PITTSBURGH PLATE GLASS COMPANY and shall be delivered on the work in the original sealed containers.

All mixing required shall be done on premises, and materials shall be thoroughly stirred and agitated. No materials shall be reduced or changed in any way except as and when specified, and thinners must be pure.

Any tinting or matching of colors shall be done under the supervision of the Architect. In all cases a sample shall be applied on the job and the Architect must give his approval of it before work is actually begun.

### Protection of Property

Painting contractor shall be responsible for condition of building in his charge. He shall protect adjacent work and materials as well as his own.

### Inspection

Every facility shall be provided for inspection of work at any time by the Architect or his authorized representative. Any work not conforming to these specifications shall be cleaned off and repainted at expense of contractor.

### Removal

When work is completed, the painting contractor shall remove all surplus materials, scaffold, etc., and he shall clean off all misplaced paint, varnish, etc., so as to leave premises in perfect condition, acceptable to the Architect.

# SPECIFICATIONS FOR PAINTING AND VARNISHING

## METAL PROTECTIVE COATINGS—Exterior and Interior

### 1 EXTERIOR and INTERIOR, IRON, STEEL, and ORNAMENTAL IRON (Not Galvanized)

**Three Coat Work**

**1st.** Apply Inhibitive Red Ironhide. If brushed, allow overnight drying. If sprayed, succeeding coat can be applied in 6 to 8 hours. Use as received for brush work. For spraying add not to exceed one pint of Leptyne or Turpentine. It is advisable that first or shop coat be applied at shop before metal is shipped to site or exposed to weather.

*Note: Any portion of surface that may have become scuffed off during handling or transportation should be touched up with Inhibitive Red Ironhide before applying second coat.*

**2nd.** Apply Inhibitive Brown Ironhide. If brushed, allow overnight drying. If sprayed, succeeding coat can be applied in 6 to 8 hours. Use as received for brush work. For spraying add not to exceed one pint of Leptyne or Turpentine.

**3rd.** Apply Finishing Black, Dark Green, Light or Dark Gray Ironhide as received for brush work. If sprayed, add not to exceed one pint of Leptyne or Turpentine.

*Note: If Gray Ironhide is selected for Third Coat, it is advisable that second coat be Gray also to insure proper hiding.*

**Two Coat Work**

Eliminate second coat from above directions.

### 2 ALTERNATE TO SPECIFICATION NO. 1

**Three Coat Work**

**1st.** Apply Ironhide Inhibitive Red as received in the package.

**2nd.** Pittsburgh Liquid Graphite as received in the package.

**3rd.** Same as second coat.

**Two Coat Work**

Eliminate third coat from above directions.

### 3 EXTERIOR and INTERIOR GALVANIZED IRON, PROCESSED METALS and METALBOARDS

**Two Coat Work**

PREPARATION OF SURFACE

(1) Clean surface thoroughly with naphtha using a stiff brush to remove all oil, grease and dirt. (2) Treat all surfaces with a wash coat consisting of one pound of Copper Sulphate dissolved in a gallon of water. Application may be made by spray, sponge, brush or any other convenient method. If surface turns black, it signifies that it is clean. (3) Rinse off thoroughly with clear water using a brush, if necessary, to insure removal of sludgy deposit. The rinsing may be done immediately after application. After surface is dry proceed as follows:

**1st.** Apply a coat of 20811 Galvanized Iron Primer after mixing the powder which is in a separate compartment with paint liquid in liquid compartment. After mixing the material is ready for use but may be reduced slightly with Leptyne or Turpentine if necessary. Allow twenty-four to thirty-six hours for drying.

**2nd.** Apply any suitable brushing coat such as Black or Dark Green Ironhide or selected color of Sun-Proof Paint or Waterspar Auto Enamel as received in the package.

*Note: 20811 Galvanized Iron Primer should be used on all galvanized iron or processed metals under any finishing coats after preparing surface as directed above.*

### 4 EXTERIOR and INTERIOR, IRON and STEEL ALUMINUM PAINT

**1st.** Apply Ironhide Inhibitive Red as received in the package.

**2nd.** Apply Metaleaf Aluminum Paint per directions on the package.

**3rd.** Same as second coat.

*Note: Metaleaf Aluminum Paint is furnished in a two-compartment package to permit mixing of aluminum portion just before use. This assures greater smoothness, brilliance and adds to durability.*

### 5 EXTERIOR and INTERIOR HOT SURFACES of IRON and STEEL

When repainting old work it is especially important that all old scale and burnt paint are thoroughly removed by scraping and using a wire brush.

One coat only is recommended to permit a film which is not too thick, as a thick film would have a tendency to blister and peel off.

Use one coat of Aluminum Paint made by mixing two pounds of aluminum powder or paste to one gallon of Pitcairn Aluminum Liquid. Use No. 40 Liquid for interior use and No. 20 Liquid for exterior use.

*Note: For surfaces where temperature reaches over 600 degrees F. write* PITTSBURGH PLATE GLASS COMPANY *for recommendations.*

### 6 EXTERIOR ENAMELS for METAL SURFACES (Not Galvanized)

**1st.** Select proper Waterspar Primer-Surfacer. Use 55-55 White under White and light colors and 55-56 Red Oxide under dark colors. Apply as received or reduced slightly with Leptyne or Turpentine. After overnight drying, sand smooth.

**2nd.** Apply a coat of selected color of Waterspar Auto Enamel as received in the package or reduced slightly with Leptyne or Turpentine.

**3rd.** Same as second coat.

*Note: Galvanized or processed metal surfaces should be prepared and first coated as directed in Specification No. 3 and followed by above three coats.*

### 7 PAINTING METAL ROOFS (Not Galvanized)

**New or Old Work**

**1st.** Apply Ironhide Inhibitive Red as received in the package.

**2nd.** Apply Ironhide Inhibitive Red, Dark Green, or Finishing Black depending on preference.

**Alternate**

As an alternate system to above use the following:

**1st.** Apply a mixture of one gallon Pittsburgh Barn and Roof Paint (Red or Gray) and one-half gallon Boiled Linseed Oil.

**2nd.** Apply Pittsburgh Barn and Roof Paint (Red or Gray) as received in the package.

*Note: Galvanized or processed metal surfaces should be prepared and first coated with 20811 Galvanized Iron Primer as directed in Specification No. 3 and followed by the two coats as directed in either of above two systems.*

### 8 INTERIOR WHITE ENAMEL—METAL TRIM and CEILINGS, ORNAMENTAL IRON

**1st.** Banzai Quick Drying Undercoater reduced slightly with Leptyne or Turpentine if necessary. Dry overnight. Sand lightly.

**2nd.** Same as first coat. If final finish is to be gloss, greater depth may be secured by using a mixture of equal parts of Banzai Quick Drying Undercoater and Quick Drying Gloss Enamel for second coat. After overnight drying, sand lightly and dust thoroughly.

**3rd.** Banzai Quick Drying Gloss White or Eggshell White depending on type of finish desired. Dry overnight. Sand lightly.

**4th.** Same as third coat.

*Note: Banzai Quick Drying Undercoater and Enamels may be tinted to light shades with Pittsburgh Fluid Oil Colors.*
*Galvanized Iron or processed metal surfaces should be prepared and first coated with 20811 Galvanized Iron Primer as directed in Specification No. 3 and followed by second, third and fourth coat as recommended above.*

### 9 INTERIOR—WHITE and COLORED ENAMELS, ORNAMENTAL IRON

**1st.** Wallhide Interior First Coater, each gallon reduced with one quart of Leptyne or Turpentine.

**2nd. and 3rd.** Waterspar Quick Drying Enamel of shade selected, applied as received in the package.

# SPECIFICATIONS

## 10 INTERIOR—RADIATORS

The most pleasing and satisfactory way to finish radiators is to make them inconspicuous by painting them the same color as the surrounding wall as follows:

**1st.** Wallhide Interior First Coater, each gallon reduced with one quart of Leptyne or Turpentine.

**2nd.** Wallhide Interior Wall Paint of same shade as wall.

## 11 INTERIOR—FLAT or SEMI-GLOSS PAINT—Metal Trim and Ceilings

Same as Specification No. 27.

## 12 ABNORMAL EXPOSURES

*Recommendations should be secured from* PITTSBURGH PLATE GLASS COMPANY *by describing in detail conditions involved in individual cases.*

# EXTERIOR PAINTING AND VARNISHING

## 13 HOUSES, GARAGES, FENCES and WOOD SURFACES in GENERAL

**New Work**

**1st.** Wallhide Exterior Primer thinned to brushing consistency with Leptyne or Turpentine. Tint Primer with Pittsburgh Fluid Oil Colors to approximate shade of finish coats.

**2nd.** Sun-Proof Paint of selected color thinned with one pint of Leptyne or Turpentine.

**3rd.** Sun-Proof Paint of selected color to which add from one pint to one quart of Exterior Vitoloil to each gallon.

**Repainting**

Eliminate second coat from above directions.

## 14 HOUSES, GARAGES, FENCES and WOOD SURFACES in GENERAL

Snolite is furnished in semi-paste consistency for the use of the Master Painter and can be reduced, tinted and manipulated by him for many diversified uses. The following formulas are furnished as a general guide, but ratio of drier to oil should be adhered to:

| *Formula No. 2* | *Formula No. 3* |
|---|---|
| *1 gal. Snolite* | *1 gal. Snolite* |
| *⅜ gal. Raw Linseed Oil or Exterior Vitoloil* | *⅞ gal. Raw Linseed Oil or Exterior Vitoloil* |
| *⅜ gal. Leptyne or Turpentine* | *⅛ gal. Leptyne or Turpentine* |
| *¼ pint Pitcairn Compo Drier* | *¼ pint Pitcairn Compo Drier* |

**New Work**

**1st.** Wallhide Exterior Primer thinned to brushing consistency with Leptyne or Turpentine.

**2nd.** Formula No. 2 Snolite.

**3rd.** Formula No. 3 Snolite.

**Repainting**

Eliminate second coat from above directions.

*Note: While three coats are preferable on outside painting of new work, due to the use of Wallhide Exterior Primer in above specifications No. 13 and No. 14, the second coat may be eliminated if two-coat work is specified.*

## 15 BARNS, ROOFS, WAREHOUSES, GRAIN ELEVATORS, ETC.

**New or Old Work**

**1st.** Apply a coat of Pittsburgh Barnhide (Red, White or Green) as received in the package for brush or spray. If desired it may be reduced slightly with Leptyne or Turpentine but not to exceed ⅛ gallon per gallon of paint. Dry overnight.

**2nd.** Same as first coat.

*Note: White Barnhide may be tinted with Pittsburgh Fluid Oil Colors if desired.*

## 16 INTERIOR FLOORS, STEPS, DADOS, ETC., OF WOOD, STONE, BRICK, CONCRETE or METAL

### Where a High Gloss Enamel of Superior Wearing Quality Is Required

Two coats of Florhide Enamel are recommended for all old work. Three coats should be used on all new work.

**1st.** Add one pint of Leptyne or Turpentine to each gallon of Florhide of selected color. Allow six hours drying.

**2nd. and 3rd.** Florhide Enamel as received in the package.

## 17 EXTERIOR FLOORS, DECKS, PORCHES and STEPS of ALL TYPES of SURFACE for Use Where Severe Weather Conditions or Extreme Foot Traffic and Abrasion Are Encountered

**1st.** Add one pint of raw linseed oil and one pint of Leptyne or Turpentine to each gallon of Porchide. Dry overnight.

**2nd. and 3rd.** Apply Porchide as received in the package.

*Note: For painting Canvas Decks for first coat apply Plasco Primer Sealer reduced with one quart of Leptyne or Turpentine to the gallon. Follow with three coats of Porchide as directed above. Third coat may be omitted if desired.*

## 18 STAINING WOOD SHINGLES

**New Work**

**1st.** Dip shingles for two-thirds their length in a mixture of one quart of Boiled Linseed Oil and one gallon of Tor-On Shingle Stain of color selected. Allow to remain immersed fifteen minutes to secure proper penetration.

**2nd.** Apply Tor-On Shingle Stain by brush or spray from package.

**Old Work**

Brush or spray mixture of one quart of Boiled Linseed Oil and one gallon of Tor-On Stain. If second coat is necessary use as received in the package.

## 19 STANDING EXTERIOR SURFACES OF CONCRETE, BRICK, STUCCO and CEMENT

**New Work**

**1st.** Cementhide Primer reduced with not to exceed 1½ pints of Leptyne, Turpentine, or Painter's Naphtha to the gallon of primer. Tint primer to approximate shade of finishing coat with Pittsburgh Fluid Oil Colors.

**2nd.** Cementhide of color selected reduced with not to exceed 1½ pints of Leptyne, Turpentine, or Painter's Naphtha to the gallon of paint.

**3rd.** Repeat second coat as above.

*Note: Three coats are always preferable on outside painting of new work, but if two coats are specified third coat may be eliminated.*

**Repainting**

On old work or over old "Cold Water Paint" jobs, first and second coat as above should be used. When repainting over old oil paint which is still in fair condition, second coat directions above will produce a satisfactory one-coat job.

## 20 ENAMEL for EXTERIOR WOOD SURFACES

**1st.** Select proper Waterspar Primer-Surfacer. Use 55-55 White under White and light colors and 55-56 Red Oxide under dark colors. Apply as received or reduced slightly with Leptyne or Turpentine. After overnight drying sand smooth.

**2nd.** Apply a coat of selected color of Waterspar Auto Enamel as received in the package or reduced slightly with Leptyne or Turpentine.

**3rd.** Same as second coat.

## 21 ABNORMAL EXPOSURES

Recommendations should be secured from the PITTSBURGH PLATE GLASS COMPANY by describing in detail conditions involved in individual cases.

## EXTERIOR VARNISHING OF STANDING SURFACES

Two products in the line of varnishes are especially suitable for exterior use and either may be specified in the following specifications with assurance of satisfactory results.

**83-200 Transparent Waterspar** is recommended for general use on exterior surfaces. It has double the durability of varnishes previously offered for this use, is pale in color, retains brilliance and resists darkening or yellowing on exposure.

**Marine Spar** is designed for exterior use where the maximum in durability and water resistance is demanded. It produces a tough, flexible finish for all marine work. For use on surfaces subject to severest exposures.

### 22 EXTERIOR NATURAL VARNISH FINISH, OPEN GRAIN WOOD

**1st.** Apply Pitcairn Natural Paste Wood Filler reduced to brushing consistency with Benzine. Work across grain well into pores of wood and allow to dry overnight. Sand smooth with fine sandpaper.

**2nd.** Apply 83-200 Waterspar Transparent or Marine Spar reduced at rate of one quart of Leptyne or Turpentine per gallon.

**3rd. and 4th.** Apply 83-200 Waterspar Transparent or Marine Spar as received in the package. Sand lightly between coats.

### 23 EXTERIOR NATURAL VARNISH FINISH, CLOSE GRAIN WOOD

**1st.** Apply 83-200 Waterspar Transparent or Marine Spar *reduced at rate of one quart Leptyne or Turpentine per gallon.*

**2nd., 3rd., and 4th.** Apply 83-200 Waterspar Transparent or Marine Spar as received in the package. Sand lightly between coats.

### 24 EXTERIOR STAINED and VARNISHED FINISH, OPEN GRAIN WOOD

**1st.** Apply Pitcairn Paste Wood Filler of shade selected reduced to brushing consistency with Benzine. Work across grain well into pores of wood and allow to dry overnight.

**2nd.** Apply 83-200 Waterspar Transparent or Marine Spar reduced at rate of one quart of Leptyne or Turpentine per gallon.

**3rd. and 4th.** Apply 83-200 Waterspar Transparent or Marine Spar as received in the package. Sand lightly between coats.

### 25 EXTERIOR STAINED and VARNISHED FINISH, CLOSE GRAIN WOOD

**1st.** Apply a coat of Tor-On Shingle Stain and permit to dry forty-eight hours. Sand lightly to smooth surface.

**2nd., 3rd. and 4th.** Apply 83-200 or Marine Spar as received in the package.

## EXTERIOR VARNISHING OF FLOORS

### 26 NATURAL VARNISH FINISH, OPEN or CLOSE GRAIN WOOD

Fill open grain woods with Pittsburgh Natural Paste Wood Filler. Close grain woods need no filling.

**1st.** Reduce 83-200 Transparent Waterspar or Marine Spar with one quart of Leptyne or Turpentine.

**2nd. and 3rd.** 83-200 Transparent Waterspar or Marine Spar as received in the package.

## INTERIOR PAINTING AND DECORATING

### 27 FLAT WALL PAINT and SEMI-GLOSS WALL PAINT for Use on Plaster, Bricks, Cement, Metal Trim and Ceilings, Interior Wood Trim

**Two Coat Work**

**1st.** Wallhide Interior First Coater, each gallon reduced with one quart of Leptyne or Turpentine. Tint this mixture with one quart of the material of color selected for finishing coat, either Wallhide Interior Flat or Wallhide Interior Semi-Gloss, depending on the type of finish desired.

**2nd.** Wallhide Interior Flat or Wallhide Interior Semi-Gloss of color selected for finish coat, as received in package.

**Three Coat Work**

**1st.** Wallhide Interior First Coater, each gallon reduced with one quart of Leptyne or Turpentine.

**2nd.** Use a mixture of equal parts of Wallhide of selected color and Wallhide Interior First Coater, reduced wtih one quart of Leptyne or Turpentine to the gallon.

**3rd.** Wallhide Interior Flat or Wallhide Interior Semi-Gloss of color selected for finish coat as received in package.

*Note: If stipple finish is desired, use Wallhide Stipple White for last finishing coat*

**Wallhide P. B. X. White**—(In natural color or tinted with Pittsburgh Fluid Oil Colors) is recommended on jobs which will require frequent washing such as schools, public buildings, hospitals, etc. It should be used with Wallhide Interior First Coater for second coat on three-coat system as directed above, and for finishing coat on both two and three-coat systems.

**Wallhide Toners**—Occasionally deep tints or solid colors are required in decorative schemes to produce modernistic, unusual or artistic effects. Wallhide Toners answer this need and may be used alone or intermixed with any of the above flat finishes. The directions for use are the same as regular Wallhide Interior Flat Finishes.

### 28 FUMEPROOF WHITE FINISHING SYSTEM FOR USE IN BAKERIES, BREWERIES, DAIRIES, ETC., Where Gases or Fumes Cause Discoloration to Painted Surfaces

**1st.** Apply one coat of 52-20 Snotex Primer reduced with one quart of Leptyne to the gallon. Allow to dry overnight.

**2nd.** Apply one coat of 52-21 Undercoater as received in the package. Allow overnight drying.

**3rd.** Apply one coat of 52-22 Finishing Flat White, 52-23 Finishing Eggshell White or 52-24 Finishing Gloss White as received in the package.

### 29 ENAMEL for INTERIOR WOOD TRIM

Open grain woods should be filled with Pittsburgh Natural Paste Wood Filler.
Close grain woods should be sanded with fine sandpaper and all knots and sappy places given a coat of shellac.

**Three Coat Work**

**1st.** Banzai Quick Drying Double Cover Undercoater reduced with a small amount of turpentine if necessary.

**2nd.** Banzai Quick Drying Double Cover Undercoater from package.

**3rd.** Apply Banzai Quick Drying Gloss or Eggshell Enamel as received in the package.

*Note: A mixture of equal parts of Quick Drying Double Cover Undercoater and Enamel in place of second coat as above, adds to the gloss of the finishing coat. Banzai Undercoater and Enamels may be tinted with Pittsburgh Fluid Oil Colors if desired.*

### 30 COLORED ENAMELS for INTERIOR WOOD TRIM

Open grain woods should be filled with Pittsburgh Natural Paste Wood Filler.
Close grain woods should be sanded with fine sandpaper and all knots and sappy places given a coat of shellac.

**Enamel Coats**—Apply two coats of Waterspar Quick Drying Enamel allowing four hours drying between coats.

*Note: Waterspar Quick Drying Enamel is furnished in a variety of colors especially suitable for interior wood trim with Wallhide color combinations for ceilings and walls.*

## 31 WALLBOARD and ACOUSTICAL BOARD, FLAT or SEMI-GLOSS FINISH

Plasco Primer Sealer was developed to give satisfactory results as a primer and sealer on various types of Wallboard and Acoustical Board. It primes and seals spongy, porous surfaces without raising the grain of the fibre.

**Two Coat Work**

1st. Reduce Plasco Primer Sealer with one quart of Leptyne or Turpentine and add one quart of Wallhide Interior Flat or Wallhide Interior Semi-Gloss of color selected for finish coat.

2nd. Wallhide Interior Flat or Wallhide Interior Semi-Gloss of color selected for finish coat.

**Three Coat Work**

1st. Plasco Primer Sealer, each gallon reduced with one quart of Leptyne or Turpentine.

2nd. Reduce Plasco Primer Sealer with one pint of Leptyne or Turpentine to each gallon and mix with an equal part of Wallhide Interior Flat or Wallhide Interior Semi-Gloss of color selected for finish coat.

3rd. Wallhide Interior Flat or Wallhide Interior Semi-Gloss of color selected for finish coat, used from the package.

## 32 PLASTIC PAINT for PLASTER, CEMENT, BRICK and WOOD

1st. Wallhide Interior First Coater, each gallon reduced with Leptyne or Turpentine.

2nd. Plastic Velumina applied with a well-worn flat wall paint brush or plasterer's trowel. See detailed directions in Plastic Velumina section of Architectural Specification Book for various effects and methods of decorating them.

*Note: On Keene's Cement Plaster apply an additional coat of Wallhide First Coater the same as directed in first coat.*

## 33 TIFFANY, GLAZED or MULTITONE EFFECTS

1st. Reduce one gallon of Wallhide Interior First Coater with one quart of Leptyne or Turpentine and apply untinted. Allow overnight drying.

2nd. Apply 26-29 Wallhide Glazing Undercoat tinted to desired shade with Pittsburgh Fluid Oil Colors. No reduction necessary. Allow to dry overnight.

3rd. Use a mixture of Wallhide Finishing Coat of selected color (different from but harmonizing with the color used in the second coat) and 26-28 Wallhide Blending and Glazing Liquid. This mixture must be left to the judgment of the person doing the work and may be as much as equal parts, depending on color or effect desired. The less color coat added to Blending and Glazing Liquid the more delicate or transparent the final result. If deeper effects are required more color coat should be added.

Immediately following final coat surface should be rolled with a carelessly crumpled chamois, light weight paper or tool selected for the purpose. This operation should not be performed too uniformly but should be varied crossways from corner to corner and from top to bottom, to avoid formation of repeated patterns and produce most pleasing effects.

*Note: Other effects may be secured by substituting mixtures of Pittsburgh Fluid Oil Colors and Blending and Glazing Liquid (ordinarily from ¼ to ½ pint of color to the gallon of liquid) for final coat.*

## 34 COLD WATER PAINT—PLASTER and WALLBOARD

1st. Kalkomo Wall Size as directed.

2nd. Kalkomo Wall Finish as directed.

*Note: For acoustical surfaces or surfaces designed for sound deadening, Kalkomo is an ideal product.*

## 35 ENAMEL for INTERIOR PLASTER, CEMENT and BRICK WALLS

1st. Wallhide Interior First Coater, each gallon reduced with one quart of Leptyne or Turpentine.

2nd. Banzai Quick Drying Double Cover Undercoater from package.

3rd. Banzai Quick Drying Gloss White or Eggshell Enamel.

*Note: Banzai Enamel or Double Cover Undercoater may be tinted with Pittsburgh Fluid Oil Colors, if desired.*

## 36 INTERIOR INDUSTRIAL WALL PAINT for PLASTER, CEMENT, and WOOD

1st. Alba-Lux Flat, each gallon reduced with one quart of Boiled Linseed Oil. Allow to dry twenty-four hours.

2nd. Apply Alba-Lux Gloss White or Eggshell from package.

## 37 INTERIOR FLOORS, WOOD, STONE, CONCRETE, BRICK

Same as Specification No. 16.

## 38 ALUMINUM PAINT for INTERIOR and EXTERIOR WOOD SURFACES

1st. Metaleaf Aluminum Paint used according to directions.

2nd. Same.

*Note: See note on Metaleaf Aluminum Paint at end of Specification No. 4.*

# INTERIOR VARNISHING OF STANDING SURFACES

## 39 INTERIOR NATURAL VARNISH FINISH, WOOD TRIM, OPEN GRAIN

1st. Pittsburgh Natural Paste Wood Filler reduced to brushing consistency with Benzine and rubbed across grain well into pores of wood. Dry overnight. Sand smooth with fine sandpaper.

2nd. Pitcairn Finishing Spar reduced at rate of one quart of Leptyne or Turpentine per gallon. Allow to dry twenty-four hours.

3rd. and 4th. Pitcairn Finishing Spar. Allow to dry twenty-four hours between coats.

5th. (Optional)—Pitcairn Finishing Spar. Sand lightly between coats.

*Note: If dull finish is required, last coat should be rubbed with pumice stone and rubbing oil. Dull finish may also be secured by using Pitcairn Dull Finish or Satin Finish in place of last coat as specified above.*

## 40 INTERIOR NATURAL VARNISH FINISH, WOOD TRIM, CLOSE GRAIN

1st. Pitcairn Finishing Spar reduced at rate of one quart of Leptyne or Turpentine per gallon. Dry twenty-four hours.

2nd. and 3rd. Pitcairn Finishing Spar. Allow to dry twenty-four hours between coats.

4th. (Optional)—Pitcairn Finishing Spar.

*Note: If dull finish is required, follow recommendations in note at end of Specification No. 39.*

## 41 INTERIOR NATURAL WAX FINISH, WOOD TRIM, OPEN GRAIN

1st. Pittsburgh Natural Paste Wood Filler reduced to brushing consistency with Benzine and rubbed across grain well into pores of wood. Allow to dry overnight. Sand smooth with fine sandpaper.

2nd. Pitcairn Finishing Spar reduced at rate of one quart of Leptyne or Turpentine per gallon. Dry twenty-four hours.

3rd. Waterspar (Paste) Polishing Wax or Waterspar Liquid Wax.

4th. (Optional)—Same as third coat.

*Note: Secure final luster by polishing with dry woolen cloth.*

## 42 INTERIOR NATURAL WAX FINISH, WOOD TRIM, CLOSE GRAIN

1st. Pitcairn Finishing Spar reduced at rate of one quart of Leptyne or Turpentine per gallon. Dry twenty-four hours.

2nd. Waterspar (Paste) Polishing Wax or Waterspar Liquid Wax.

3rd. (Optional)—Same as second coat.

*Note: Secure final luster by polishing with a dry woolen cloth.*

## 43 INTERIOR STAINED and VARNISHED SURFACES, WOOD TRIM, OPEN GRAIN

1st. Pitcairn Wood Stain, shade as selected. Apply with brush or lintless rag. Remove surplus by wiping with lintless rag with grain of wood before it sets. Dry four hours.

2nd. Thin wash coat of Pitcairn Spirit Lacquer or Pure Shellac.
3rd. Pittsburgh Paste Wood Filler of shade selected reduced to brushing consistency with benzine. Allow to set, wipe clean across grain of wood. Dry overnight.
4th. and 5th. Pitcairn Finishing Spar. Allow twenty-four hours between coats.
6th. (Optional)—Pitcairn Finishing Spar.

*Note: If dull finish is required, follow recommendations in note at end of Specification No. 39.*

## 44 INTERIOR STAINED and VARNISHED SURFACES, WOOD TRIM, CLOSE GRAIN

1st. Pitcairn Wood Stain, shade as selected. Apply with brush or lintless rag. Remove surplus by wiping with lintless rag with grain of wood before it sets. Dry four hours.
2nd. Thin wash coat of Pitcairn Spirit Lacquer or pure Shellac.
3rd. and 4th. Pitcairn Finishing Spar. Allow to dry twenty-four hours between coats.
5th. (Optional)—Pitcairn Finishing Spar.

*Note: If dull finish is required, follow recommendations in note at end of Specification No. 39.*

## 45 INTERIOR STAIN and WAX, WOOD TRIM, OPEN GRAIN

1st. Pitcairn Wood Stain, shade as selected. Apply with brush or lintless rag. Remove surplus by wiping with lintless rag with grain of wood before it sets. Dry four hours.
2nd. Thin wash coat of Pitcairn Spirit Lacquer or Pure Shellac.
3rd. Pittsburgh Paste Wood Filler of shade selected, reduced to brushing consistency with Benzine. Allow to set, remove excess by wiping across grain of wood. Dry overnight.
4th. Waterspar (Paste) Polishing Wax or Waterspar Liquid Wax.
5th. (Optional)—Same as fourth coat.

*Note: Secure final luster by polishing with dry woolen cloth.*

## 46 INTERIOR STAIN and WAX, WOOD TRIM, CLOSE GRAIN

1st. Pitcairn Wood Stain, shade as selected. Apply with brush or lintless rag. Remove surplus by wiping with lintless rag with grain of wood before it sets. Dry four hours.
2nd. Thin wash coat of Pitcairn Spirit Lacquer or Pure Shellac.
3rd. Waterspar (Paste) Polishing Wax or Waterspar Liquid Wax.
4th. (Optional)—Same as third coat.

*Note: Secure final luster by polishing with dry woolen cloth.*

# INTERIOR VARNISHING OF WOOD FLOORS

## 47 INTERIOR FLOORS, NATURAL VARNISH FINISH, HARDWOOD, OPEN GRAIN

1st. Pittsburgh Natural Paste Wood Filler reduced to brushing consistency with Benzine. Allow to set, remove excess by wiping across grain of wood. Dry overnight. Sand smooth.
2nd. and 3rd. Pitcairn Aged Floor Spar or 83-400 Waterspar Floor Varnish. Allow to dry overnight between coats.
4th. (Optional)—Same as second and third coats.

*Note: If dull finish is required, follow recommendations in note at end of Specification No. 39.*

## 48 INTERIOR FLOORS, NATURAL VARNISH FINISH, HARD and SOFTWOOD, CLOSE GRAIN

1st. Pitcairn Aged Floor Spar or 83-400 Waterspar Floor Varnish reduced one quart of Leptyne or Turpentine to each gallon. Allow to dry overnight. Sand lightly.
2nd. and 3rd. Pitcairn Aged Floor Spar or 83-400 Waterspar Floor Varnish. Allow to dry overnight between coats.
4th. (Optional)—Same as third coat.

*Note: If dull finish is required, follow recommendations in note at end of Specification No. 39.*

## 49 INTERIOR FLOORS, NATURAL WAX FINISH, HARDWOOD, OPEN GRAIN

1st. Pittsburgh Natural Paste Wood Filler, reduced to brushing consistency with Benzine. Allow to set, remove excess by wiping across grain of wood. Dry overnight. Sand smooth.
2nd. Pitcairn Aged Floor Spar or 83-400 Waterspar Floor Varnish reduced a quart of Leptyne or Turpentine to each gallon. Allow to dry overnight.
3rd. Waterspar (Paste) Polishing Wax or Waterspar Liquid Wax.
4th. (Optional)—Same as third coat.

*Note: Secure final luster by polishing with weighted brush or polishing machine.*

## 50 INTERIOR FLOORS, NATURAL WAX FINISH, HARD or SOFTWOOD, CLOSE GRAIN

1st. Pitcairn Aged Floor Spar or 83-400 Waterspar Floor Varnish reduced a quart of Leptyne or Turpentine to each gallon. Allow to dry overnight.
2nd. and 3rd. Waterspar (Paste) Polishing Wax or Waterspar Liquid Wax.

*Note: Secure final luster by polishing with weighted brush or polishing machine.*

## 51 INTERIOR FLOORS, STAINED and VARNISHED, HARD and SOFTWOOD, OPEN GRAIN

1st. Pitcairn Wood Stain shade as selected. Apply with brush or lintless rag. Remove surplus by wiping with lintless rag with grain of wood before it sets. Dry four hours.
2nd. Thin wash coat of Pitcairn Spirit Lacquer or Pure Shellac.
3rd. Pittsburgh Paste Wood Filler of shade selected, reduced to brushing consistency with Benzine. Allow to set, wipe clean across the grain of the wood. Allow to dry overnight.
4th. and 5th. Pitcairn Aged Floor Spar or 83-400 Waterspar Floor Varnish. Allow to dry overnight between coats.

*Note: If dull finish is required, follow recommendations in note at end of Specification No. 39.*

## 52 INTERIOR FLOORS, STAINED and VARNISHED, HARD and SOFTWOOD, CLOSE GRAIN

1st. Same as Specification No. 51.
2nd. A thin wash coat of Pitcairn Spirit Lacquer or Pure Shellac.
3rd. and 4th. Pitcairn Aged Floor Spar or 83-400 Waterspar Floor Varnish. Allow to dry overnight between coats.

*Note: If dull finish is required, follow recommendations in note at end of Specification No. 39.*

## 53 INTERIOR FLOORS, STAIN and WAX, HARDWOOD, OPEN GRAIN

1st. Same as Specification No. 51.
2nd. A thin wash coat of Pitcairn Spirit Lacquer or Shellac.
3rd. Pittsburgh Paste Wood Filler of shade selected, reduced to brushing consistency with benzine. Allow to set. Remove excess by wiping across grain of wood. Dry over night.
4th. Waterspar (Paste) Polishing Wax or Waterspar Liquid Wax.
5th. (Optional)—Same as fourth coat.

*Note: Secure final luster by polishing with weighted brush or polishing machine.*

## 54 INTERIOR FLOORS, STAIN and WAX, HARD and SOFTWOOD, CLOSE GRAIN

1st. Same as Specification No. 51.
2nd. A thin wash coat of Pitcairn Spirit Lacquer or Pure Shellac.
3rd. and 4th. Waterspar (Paste) Polishing Wax or Waterspar Liquid Wax.

*Note: Secure final luster by polishing with weighted brush or polishing machine.*

## 55 INTERIOR FLOORS, such as GYMNASIUMS, BASKETBALL COURTS, PUBLIC BUILDINGS

**New Work**

Where a finish with considerable depth is desired, apply one coat of Pitcairn Gym Spar as received in the package by mop or brush. After eight hours sand first coat enough to cut gloss and follow with a second coat.

In many instances, for this type of floor finishing a thick film is not desired but only a sufficient coating to seal the wood fibres against an accumulation of dirt and to penetrate to the proper degree to cause a hardening action. In such instances apply a coat of Gym Spar reduced at rate of one quart of Leptyne or Turpentine to the gallon by mopping or brushing. After six or eight hours follow with a second coat same as first coat.

**Old Work**

Use same system as for New Work, except that in most cases only one coat will be necessary.

*Note: In instances where the sealing type of finish only is desired, floors may be maintained in excellent condition by recoating with one coat once a year with Gym Spar reduced as directed above.*

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## PLATE GLASS COMPANY

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# F. O. PIERCE COMPANY

## Manufacturers of Paints, Varnishes, Enamels and Special Finishes

30 Tiffany Place, BROOKLYN, N. Y.

FACTORIES: BROOKLYN, N. Y. and PLAINFIELD, N. J.
WAREHOUSES: BOSTON, MASS., SAVANNAH, GA., TAMPA, FLA., MIAMI, FLA., JACKSONVILLE, FLA., PENSACOLA, FLA.

### Products

Colors in Oil, Colors in Japan, Flat Paints, Gloss Paints, Enamels, Stains, Varnishes, Aluminum Paints, Roof Paints, Floor Paints, Glazetite—a superior substitute for Putty.

### The Company

Since the founding of the F. O. Pierce Company in 1847, every precaution of laboratory control and manufacturing supervision has been exercised to assure the users of Pierce Products that they have the finest products that can be formulated. Every Pierce Product will do the job for which it is made and Pierce makes a product for every painting use.

### Specifications

A registered copy of the Pierce Architectural Specification Book will be sent to any architect, contractor or purchasing agent upon application. This book contains specifications in understandable form covering the protecting and beautifying of any surface. In addition, color charts and detailed literature on Pierce Products described here and on other paints and varnishes may be obtained upon request.

### Pierce Perfect Paint

*The Finest Quality Outside House Paint*

No finer outside paint can be formulated. Perfect White contains 29.9% pigment by volume, which is accepted by the industry as the percentage which gives the longest wear. A pure linseed oil paint containing correct proportions of lead, zinc, titanium dioxide and sufficient inert to best control chemical reactions. There are twenty-one colors in addition to black and white. Perfect Paint will cover approximately 500 sq. ft. of surface, two coats. Recommended for wood, metal, concrete, stucco or brick surfaces.

### Knickerbocker Deck and Floor Paint

*A Tung Oil Floor Paint*

The secret of the life of floor paint lies in the vehicle used. The vehicle in this high quality floor paint makes a waterproof paint with a tough film that will withstand wear and tear. For inside or outside use on wood, metal or cement floors or porches. One gallon will cover approximately 1000 sq. ft., one coat or 600 sq. ft., two coats, on wood. About one-half this coverage on cement. Available in ten colors.

### Super Trim Colors

*Permanent Colors for Outside Trim*

For many years, permanent colors for trim were unknown. Greens turned blue, yellows lost their tone and whites turned yellow. The answer to these problems is Pierce Super Trim Colors. Super Greens have been used extensively on trim, blinds and lattice work and the other colors—Reds, Blues, Yellows,—are now in demand for the new decorative trend. The colors may be intermixed to get individually desired shades. One gallon will cover approximately 900 sq. ft., one coat, or 500 sq. ft., two coats.

### Satinex

Double grinding gives Satintex its smooth, lustrous finish. A manufacturing process not used by other manufacturers, combined with a high content of hiding pigment, makes Satinex a perfect semi-gloss interior paint for walls, woodwork and furniture. The resulting surface is waterproof and Satintex is recommended for hospital walls, kitchens, bath-rooms and other surfaces subjected to frequent washings or exposure to moisture. One gallon will cover approximately 650 sq. ft. one coat, 375 sq. ft. two coats. Available in white and twelve attractive colors.

### Tiffany Flat Paint

The finest quality flat paint, in white and ten colors. This paint gives a lasting flat finish that is smooth and hard to walls, woodwork or metal surfaces. Tiffany Flat is easily applied, leaves no streaks or brush marks, and is washable. It is recommended for all interior surfaces where a superior flat finish is desired. One gallon will cover approximately 600 sq. ft. one coat or 350 sq. ft. two coats.

### Pierce Interior Gloss

A high gloss interior paint for walls or woodwork. Interior Gloss gives a hard, non-absorbent coating, will dry fast, is washable and sanitary. Ease of working and smooth even-tinted surface make this paint an exceptional product for gloss interior work. Available in eight attractive colors and white. One gallon will cover approximately 800 sq. ft. one coat or 500 sq. ft. two coats.

### Other Pierce Products

Among other products now giving superior satisfaction on residential and industrial buildings are:

**Perfect Aluminum Paint**—The finest spar varnish vehicle with the best aluminum paste. Resultant silver surface will not turn black or gray, but will retain the original gloss.

**Dew-All Spar Varnish**—A bakelite gum spar varnish for interior or exterior use on any surface to give a lasting, high varnish lustre. Waterproof and quick drying.

**Timit Enamel**—A long-life high lustre four-hour Tung Oil Enamel made with synthetic resins. Eighteen attractive colors, black and white.

**Pierce Stock White**—A lead, zinc and titanium pigment paste white which is used wherever white lead is used, offering a whiter surface and a longer life than straight lead-in-oil.

**Fume Proof Enamel**—An interior white enamel which will not turn yellow even though exposed to acid fumes.

**Bodiwite**—An exterior paste white which is fume proof. Especially adapted to dairy buildings as it is free from lead.

**Non-Rust**—A clear coating for metal subject to rust which will preserve the metal and keep it rust free.

**Glazetite**—An improvement on putty. Glazetite will remain elastic indefinitely. No crumbling putty. No loss on the job. No bleeding when painted.

**Piertung Oil**—A combination of tung and other oils, used as a mixing oil to render paints waterproof and give them longer life.

**Speed Surfacer and Primer**—A paste surfacer in gray and in white which may be thinned with turpentine to make a superior metal primer. Dries in two hours. Hard, but elastic.

# PRATT & LAMBERT-INC.

Paint & Varnish Makers

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### Experience

In the following condensed specifications this company embodies the fruits of almost a century of experience in studying wood finishing conditions and in working out materials and methods which best fulfill requirements. The attainment of success is evident from the use of Pratt & Lambert Paint and Varnish in and on some of the world's best known buildings.

### Co-operative Service

Sample panels showing standard effects obtainable with Pratt & Lambert stains, fillers, varnishes, enamels and paints will be sent on request. If some distinctive finish is required, specify the wood to be used and the general color desired, and the architect's ideas will be carried out on specially made sample panels. Address your request to the Architectural Service Department at the nearest office. The opportunity to be of service will be welcomed.

### Specification Manual

Most wood finishing problems are solved in the Pratt & Lambert Specification Manual (A. I. A. File No. 25c), which gives complete specifications for every kind of finish. Write for a copy.

## CONDENSED SPECIFICATIONS

### Exterior Work—House Painting

**Siding**—1 coat P&L House Paint Exterior Primer; 2 coats P&L House Paint.

**Trim and Shutters**—1 coat P&L House Paint Exterior Primer; 1 coat P&L House Paint Light Lead or similar color; 1 coat Verdura Trim & Shutter Finish.

**Metal Work**—1 coat P&L Red Lead Metal Primer; 1 coat P&L House Paint.

**Shingles**—2 coats P&L Creosote Shingle Stain.

**Shingles (White)**—2 coats P&L Shingle White.

**Cement and Stucco**—2 coats (3 if desired) P&L Cement & Stucco Paint.

### Exterior Work—Varnish Finish

*Hard Woods—Open Grain*

*(Oak, Mahogany, Walnut, Ash, Chestnut, etc.)*

**Filled, Varnish Finish**—1 coat P&L Paste Filler; 3 coats "61" Quick Drying Spar Varnish.

**Filled, Stained, Varnish Finish**—1 coat P&L Paste Filler; 1 coat P&L Oil Stain; 3 coats "61" Quick Drying Spar Varnish.

*Hard and Soft Woods—Close Grain*

*(Birch, Maple, Beech, Cherry, Pine, Fir, Spruce, Gum, Poplar, etc.)*

**Natural, Varnish Finish**—3 coats "61" Quick Drying Spar Varnish.

**Stained, Varnish Finish**—1 coat P&L Oil Stain; 3 coats "61" Quick Drying Spar Varnish.

### Exterior Work—Enamel Finish

*Wood and Metal*

**Enamel Finish**—1 coat P&L House Paint Exterior Primer; 1 coat Vitralite Enamel Undercoating; 1 coat Vitralite Enamel Gloss or Eggshell.

*Cement, Concrete, Stucco and Brick*

**Enamel Finish**—1 coat Vitralite Cement Coating; 1 coat Vitralite Enamel Gloss; 1 coat Vitralite Enamel Gloss or Eggshell.

**Enamel Finish, Flat**—2 coats Vitralite Cement Coating.

### Interior Wood Floors—Varnish Finish

*Hard Woods—Open Grain*

*(Oak, Mahogany, Walnut, Ash, Chestnut, etc.)*

**Filled, Varnish Finish—Gloss Finish**—1 coat P&L Paste Filler; 3 coats "61" Quick Drying Floor Varnish Clear Gloss.

**Filled, Varnish Finish—Satin Finish**—1 coat P&L Paste Filler; 3 coats "61" Quick Drying Floor Varnish Satin Finish.

**Filled, Stained, Varnish Finish—Gloss Finish**—1 coat P&L Paste Filler; 1 coat P&L Oil Stain; 3 coats "61" Quick Drying Floor Varnish Clear Gloss.

**Filled, Stained, Varnish Finish—Satin Finish**—1 coat P&L Paste Filler; 1 coat P&L Oil Stain; 3 coats "61" Quick Drying Floor Varnish Satin Finish.

*Hard and Soft Woods—Close Grain*

*(Birch, Maple, Beech, Cherry, Pine, Fir, etc.)*

**Natural, Varnish Finish—Gloss Finish**—3 coats "61" Quick Drying Floor Varnish Clear Gloss.

**Natural, Varnish Finish—Satin Finish**—3 coats "61" Quick Drying Floor Varnish Satin Finish.

**Stained, Varnish Finish—Gloss Finish**—1 coat P&L Oil Stain; 3 coats "61" Quick Drying Floor Varnish Clear Gloss.

**Stained, Varnish Finish—Satin Finish**—1 coat P&L Oil Stain; 3 coats "61" Quick Drying Floor Varnish Satin Finish.

### Interior Floors—Preservative Finish

*Hard and Soft Woods—Close Grain; Terrazzo, Magnesite and Cork*

**Preservative Finish**—1 coat Okene Floor Preservative.

### Interior Trim—Varnish Finish

*Hard Woods—Open Grain*

*(Oak, Mahogany, Walnut, Ash, Chestnut, etc.)*

**Filled, Varnish Finish—Gloss or Rubbed**—1 coat P&L Paste Filler; 1 coat shellac; 2 coats "38" Preservative Varnish (specify if to be rubbed).

**Filled, Varnish Finish—Satin Finish**—1 coat P&L Paste Filler; 1 coat shellac; 2 coats "61" Quick Drying Floor Varnish Satin Finish.

**Natural, Varnish Finish—Flat**—1 coat shellac; 1 coat Tonetic Flat Varnish.

**Stained, Filled, Varnish Finish—Gloss or Rubbed**—1 coat P&L Acid Stain; 1 coat P&L Paste Filler; 1 coat shellac; 2 coats "38" Preservative Varnish (specify if to be rubbed).

**Stained, Filled, Varnish Finish—Satin Finish**—1 coat P&L Acid Stain; 1 coat P&L Paste Filler; 1 coat shellac; 2 coats "61" Quick Drying Floor Varnish Satin Finish.

**Stained, Varnish Finish—Flat**—1 coat P&L Acid Stain; 1 coat shellac; 1 coat Tonetic Flat Varnish.

*Hard Woods—Close Grain*

*(Birch, Maple, Beech, Cherry, etc.)*

**Natural, Varnish Finish—Gloss or Rubbed**—1 coat shellac; 2 coats "38" Preservative Varnish (specify if to be rubbed).

**Natural, Varnish Finish—Satin Finish**—1 coat shellac; 2 coats "61" Quick Drying Floor Varnish Satin Finish.

**Stained, Varnish Finish—Gloss or Rubbed**—1 coat P&L Acid Stain; 1 coat shellac; 2 coats "38" Preservative Varnish (specify if to be rubbed).

**Stained, Varnish Finish—Satin Finish**—1 coat P&L Acid Stain; 1 coat shellac; 2 coats "61" Quick Drying Floor Varnish Satin Finish.

*Soft Woods—Close Grain*

*(Pine, Fir, Spruce, Redwood, Gum, Poplar, Cypress, etc.)*

**Natural, Varnish Finish—Gloss or Rubbed**—1 coat Filtex; 2 coats "38" Preservative Varnish (specify if to be rubbed).

**Natural, Varnish Finish—Satin Finish**—1 coat Filtex; 2 coats "61" Quick Drying Floor Varnish Satin Finish.

**Stained, Varnish Finish—Gloss or Rubbed**—1 coat P&L Oil Stain; 1 coat Filtex; 2 coats "38" Preservative Varnish (specify if to be rubbed).

**Stained, Varnish Finish—Satin Finish**—1 coat P&L Oil Stain; 1 coat Filtex; 2 coats "61" Quick Drying Floor Varnish Satin Finish.

## Interior Work—Enamel Finish

*Wood and Metal*

**Enamel Finish—Gloss or Rubbed**—2 coats Vitralite Enamel Undercoating; 2 coats Vitralite Enamel Gloss (specify if to be rubbed).

**Enamel Finish—Eggshell**—2 coats Vitralite Enamel Undercoating; 1 coat Vitralite Enamel Gloss; 1 coat Vitralite Enamel Eggshell.

*Plaster and Keene's Cement*

**Enamel Finish—Gloss**—1 coat Lyt-all Double Duty Primer; 1 coat Vitralite Enamel Wall Undercoating; 1 coat Vitralite Enamel Gloss.

**Enamel Finish—Eggshell**—1 coat Lyt-all Double Duty Primer; 1 coat Vitralite Enamel Wall Undercoating; 1 coat Vitralite Enamel Eggshell.

*Cement, Concrete, Stucco and Brick*

**Enamel Finish—Gloss**—1 coat Vitralite Cement Coating; 2 coats Vitralite Enamel Gloss.

**Enamel Finish—Eggshell**—1 coat Vitralite Cement Coating; 1 coat Vitralite Enamel Gloss; 1 coat Vitralite Enamel Eggshell.

**Enamel Finish—Flat**—2 coats Vitralite Cement Coating.

## Plaster Walls—Wall Coating

**Stippled Finish—Gloss**—1 coat Lyt-all Double Duty Primer; 1 coat Lyt-all Stippling Gloss, stippled.

**Stippled, Glazed, Starched Finish—Eggshell**—1 coat Lyt-all Double Duty Primer; 1 coat Lyt-all Stippling Eggshell, stippled; 1 coat Lyt-all Glazing Liquid (specify tint and treatment); 1 coat starch, stippled.

**Stippled, Starched Finish—Eggshell**—1 coat Lyt-all Double Duty Primer; 1 coat Lyt-all Stippling Eggshell, stippled; 1 coat starch, stippled.

**Stippled Finish—Eggshell**—1 coat Lyt-all Double Duty Primer; 1 coat Lyt-all Stippling Eggshell, stippled.

**Stippled, Glazed, Starched Finish—Flat**—1 coat Lyt-all Double Duty Primer; 1 coat Lyt-all Stippling Flat, stippled; 1 coat Lyt-all Glazing Liquid (specify tint and treatment); 1 coat starch, stippled.

**Stippled, Starched Finish—Flat**—1 coat Lyt-all Double Duty Primer; 1 coat Lyt-all Stippling Flat, stippled; 1 coat starch, stippled.

**Stippled Finish—Flat**—1 coat Lyt-all Double Duty Primer; 1 coat Lyt-all Stippling Flat, stippled.

**Flat**—1 coat Lyt-all Double Duty Primer; 1 coat Lyt-all Flowing Flat.

## Canvased Walls—Wall Coating

**Stippled Finish — Gloss**—2 coats Lyt-all Double Duty Primer; 1 coat Lyt-all Stippling Gloss, stippled.

**Stippled, Glazed, Starched Finish—Eggshell**—2 coats Lyt-all Double Duty Primer; 1 coat Lyt-all Stippling Eggshell, stippled; 1 coat Lyt-all Glazing Liquid (specify tint and treatment); 1 coat starch, stippled.

**Stippled, Starched Finish—Eggshell**—2 coats Lyt-all Double Duty Primer; 1 coat Lyt-all Stippling Eggshell, stippled; 1 coat starch, stippled.

**Stippled Finish—Eggshell**—2 coats Lyt-all Double Duty Primer; 1 coat Lyt-all Stippling Eggshell, stippled.

**Stippled, Glazed, Starched Finish—Flat**—2 coats Lyt-all Double Duty Primer; 1 coat Lyt-all Stippling Flat, stippled; 1 coat Lyt-all Glazing Liquid (specify tint and treatment); 1 coat starch, stippled.

**Stippled, Starched Finish — Flat**—2 coats Lyt-all Double Duty Primer; 1 coat Lyt-all Stippling Flat, stippled; 1 coat starch, stippled.

**Stippled Finish—Flat**—2 coats Lyt-all Double Duty Primer; 1 coat Lyt-all Stippling Flat, stippled.

**Flat**—2 coats Lyt-all Double Duty Primer; 1 coat Lyt-all Flowing Flat.

## Industrial Walls—Wall Coating

*Wood, Plaster, Brick and Tile*

**Gloss**—1 coat Lyt-all Undercoating; 1 coat Lyt-all Gloss.

**Eggshell**—1 coat Lyt-all Undercoating; 1 coat Lyt-all Eggshell.

**Flat**—2 coats Lyt-all Flat.

*Cement and Concrete*

**Gloss**—1 coat Lyt-all Cement Coating; 1 coat Lyt-all Gloss.

**Eggshell**—1 coat Lyt-all Cement Coating; 1 coat Lyt-all Eggshell.

**Flat**—1 coat Lyt-all Cement Coating; 1 coat Lyt-all Flat.

## Industrial Walls—Fume Proof Wall Coating

*Wood, Plaster, Brick and Tile*

**Gloss**—1 coat Lyt-all Undercoating; 1 coat Lyt-all Fume Proof Gloss.

**Flat**—1 coat Lyt-all Undercoating; 1 coat Lyt-all Fume Proof Flat.

*Cement and Concrete*

**Gloss**—1 coat Lyt-all Cement Coating; 1 coat Lyt-all Fume Proof Gloss.

**Flat**—1 coat Lyt-all Cement Coating; 1 coat Lyt-all Fume Proof Flat.

# REYNOLDS METALS COMPANY, INCORPORATED

GENERAL OFFICES
19 Rector Street
NEW YORK, N. Y.

DIVISION SALES OFFICES
CHICAGO, ILL., Wrigley Building
SAN FRANCISCO, CAL., 345 Ninth Street

## ALUMINUM PAINT FOR INDUSTRIAL PURPOSES

### WHY ALUMINUM PAINT IS BETTER

Aluminum Paints have been in use for a number of years, and yet such paints are entirely modern in every respect. So modern, in fact, that in the minds of the uninformed, their usage has been confined to the purely decorative type. Others have learned through experience that aluminum in paints offers greater economy and beauty than can be had through casual selection of ordinary coatings.

A remarkable fact is that a pound or two of carefully manufactured aluminum flake can and does accomplish a result which excels a great number of coatings using from eight to thirty pounds of the more widely known types of pigment. Because of a "leafing" phenomenon, a relatively small amount of aluminum flake in a paint vehicle achieves an astonishingly high degree of opacity, and in turn, greatly increases its durability without dragging weight. It possesses and retains a high reflective value, low emissivity, and, in specific vehicles, it offers the most effective moisture-proofing agent known. When used with properly selected vehicles, it is applied on wood, metal, concrete, stone, and brick with equally marked success and economy. A beautiful top coating and a rugged prime coating for other finishes.

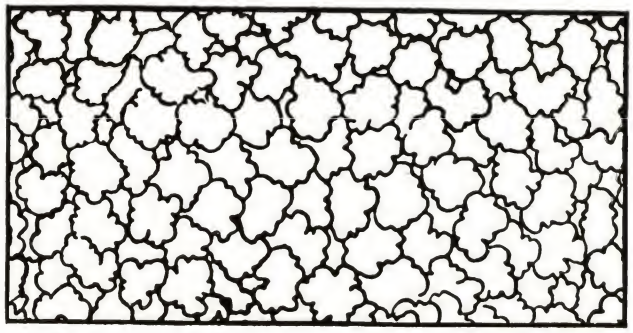
### HOW TO GET THE MOST BENEFIT FROM USING ALUMINUM PAINT

The ultimate life—and cost—of Aluminum Paints depend not only on the quality of the ingredients, but also on the suitability of the liquid for the surface it covers, and the conditions it is expected to meet.

Reynolds Metals Company, Incorporated, the largest manufacturer of metal foils in the world, makes only the Aluminum Powder and Paste which constitute the pigment base of aluminum paints. The liquids or "vehicles" are the specialized products of a number of paint manufacturers.

Reynolds Pigments are produced from pure, highly polished aluminum foil, a product of our several mills. This exclusive feature guarantees control of our raw material, and likewise gives us control of the quality of the finished product, resulting in pigments which satisfy the most exacting requirements as regards color, coverage, leafing power, brilliance, and durability.

The great number of reputable paint manufacturers who use Reynolds Aluminum Powder and Paste can furnish a wide range of liquids to meet varying conditions. When ordering paint, take the precaution not only of specifying Reynolds Aluminum Pigments, but



**A Microscopic Drawing Showing the "Leafing" Action of Aluminum Paint**

Note how the flakes of metal overlap, layer upon layer

also of mentioning where and how the paint is to be used.

Aluminum Paint containing Reynolds Aluminum Pigment in a suitable liquid for the job at hand, properly applied, outlasts other finishes—when used as a priming coat, will definitely prolong the life of ordinary surface coatings of other types.

We will gladly put you in touch with reliable paint manufacturers willing to study your particular problem and requirements. Their recommendations will be valuable, and will involve no obligations. A post card will do.



**The Steel-work of This Famous Bridge Is Guarded Against Rust by Gleaming Aluminum Paint**



**Aluminum Paint Protects the Heavy Investment in These Storage Tanks**

## REYNOLDS ALUMINUM POWDERS AND ALUMINUM PASTES

*For Paint and Industrial Purposes*

### CONSTRUCTION AND MAINTENANCE WORK

*Applied to lumber or wood as a priming coat, Aluminum Paint containing Reynolds Pigment seals the pores. Moisture cannot penetrate the metal coating. Resinous substances cannot bleed through. It retards wood rot or decay. Finish coats of paint last longer.*

Properly applied to metal, Aluminum Paint retards rust formation, and increases the durability of finish coats. It reflects light without glare and brightens dark interiors. It is resistant to sulphur fumes. On tanks exposed to the sun, Aluminum Paint, by reflecting radiant heat, lessens the evaporation loss. On hot pipes, it lessens the heat thrown off because of its low emissivity.

Aluminum Paint's economy is in its longer life, greater durability, and stronger resistance to deterioration and decay. Measure its cost by years—not by gallons. The saving is substantial.

### PROCESSING INDUSTRIES

Many industrial uses require particular grades of pure Aluminum Flake or Powder. We are prepared to supply such grades to meet individual specifications, and our Research Laboratory is always ready to collaborate with any manufacturer in developing special grades.

### COATINGS FOR PAPER, METAL, FABRIC, ETC.

We have developed highly specialized Powders and Pastes for coating purposes, using pyroxylin, casein and varnish vehicles. Our experience in this field is invaluable to anyone faced with a coating problem which involves Aluminum. We invite inquiries.

Specialized Powders and Pastes for ink manufacturers and the printing and lithographic trades constitute, too, an essential part of our varied line.

### PYROTECHNICS AND EXPLOSIVES

We furnish Aluminum Powders to meet all specialized requirements in these fields.

For information and samples address our nearest office: 19 Rector Street, New York City; Wrigley Building, Chicago; or 345 Ninth Street, San Francisco.

# THE REARDON COMPANY

ESTABLISHED 1883

## Water Paint Manufacturers

MAIN OFFICE
Second and Clinton Streets
ST. LOUIS, MISSOURI

FACTORIES
ST. LOUIS, MO., Second and Clinton Sts.
CHICAGO, ILL., 1444 W. 37th St.
LOS ANGELES, CAL., 526 So. Alameda St.

SALES OFFICES AND WAREHOUSES
ATLANTA, GA., 377½ Whitehall St.
DALLAS, TEX., P. O. Box 1271
OAKLAND, CAL., 1848 Campbell St.
ST. PAUL, MINN., 2295 University Ave. (Midway)
WINNIPEG, MAN., 140 Alexander Avenue
SEATTLE, WASH., Port of Seattle, Lander St. Dock
TORONTO, ONT., 23 Hammersmith Ave.

### PRODUCTS

BONDEX WATERPROOF CEMENT PAINT.
MODEX—The Modern Casein Paint.
PLASTEX PLASTIC TEXTURE PAINT.
VENOSTONE PRIMER.

## BONDEX WATERPROOF CEMENT PAINT

### Description

BONDEX is a decorative material designed especially for use on *unpainted* stucco, concrete, cinder block, building tile, brick, stone, hollow tile and other porous masonry wall surfaces. While described as a waterproof cement paint, it is much more than a paint, for its imparts color, waterproofs and preserves in one treatment. BONDEX, as its name implies, *bonds* with the surface and forms an integral part of the wall itself. It has been styled "The Paint Eternal." It comes in the form of a dry powder and is made ready for use by mixing with cold water. It is furnished in white and 16 tints, which may be intermixed to produce an endless variety of shades. BONDEX may be applied with a brush or spray.

Unlike any other paint on the market today, BONDEX has no substitutes. It is protected by United States and foreign patents. Its fame and use has spread to over 100 countries of the world, where it is being used widely for waterproofing, preserving and beautifying the exteriors of homes, apartments, hotels, institutions, office and industrial buildings; for painting and waterproofing swimming pools, aquariums, reservoirs, fish ponds, basements, foundations and retaining walls; and also as an under or preparatory coating on damp or "green" masonry surfaces, preparatory to painting with oil paint, enamel, etc.

For a permanent, efficient basement waterproofing job, two coats of Reardon's BONDEX are required. The paint not only seals all tiny cracks, pores and crevices, but actually becomes a part of the surface itself.

BONDEX is economical to use. Properly mixed, 5 lbs. will cover 100 to 125 sq. ft., one coat, on fairly smooth surfaces—light stucco textures, poured concrete, concrete block, etc. On extremely porous surfaces, like rough stucco or cinder block, 5 lbs. of BONDEX will cover 80 to 100 sq. ft.

In figuring amount needed, all walls should be considered solid to take care of waste and labor required in protecting openings.

Meets the following specifications: U. S. Treasury Department D-49-9—Waterproof Cement Paint; Resettlement Administration—Cement Paint—Water Type; Federal Emergency Administration of Public Works Formula 10A—Cement Water Paint; Home Owners' Loan Corporation Pa. 1311 and 1312—Stucco and Brick Surfaces—Water Paints; U. S. Department of Agriculture—Cement Water Paint.

### Advantages (Summary)

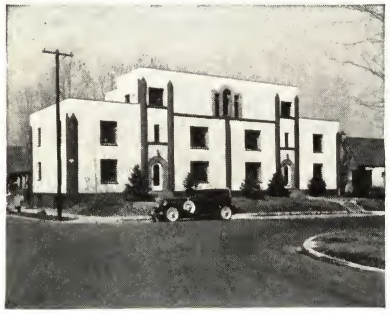
(1) BONDEX eliminates the necessity of neutralizing the alkalinity in masonry surfaces as it is in itself alkaline and compatible with such surfaces.

(2) Requires no sizing or priming coat, therefore, is more economical to use than oil coatings.

(3) Can be applied to perpetually wet or damp surfaces.

(4) Colors are limeproof and alkaliproof, therefore, sunfast and non-fading.

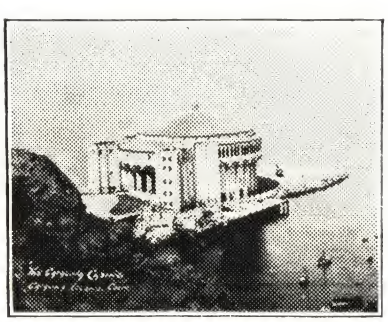
### Typical Applications



Shirley Dee Apartments, Denver



Forest Hills, (L. I.)



Wrigley's Casino, Catalina Island

# PLASTEX PLASTIC TEXTURE PAINT

## Description

PLASTEX is a new and improved development in plastic texture paint. It employs casein as the vehicle and is made on a mica-opaque pigment base and possesses great adhesive, flexible, spreading and covering qualities.

PLASTEX comes in the form of a dry white powder which is made ready for use simply by mixing with cold water at the ratio of 1 lb. of powder to each pint of water. Colors are obtained by tinting with Modex Tempera colors or limeproof dry colors. Solid color, two and three-toned blends and glazed effects are all easily obtained.

The great flexibility of PLASTEX is an important factor. Because it is a paint, not a plaster, it will not crack. A nail driven into a PLASTEX finished wall leaves no mark, except the nailhole itself.

PLASTEX can be used over any interior surface that could be painted, kalsomined or papered, and dries with a moisture-resistant neutral film which is a satisfactory foundation for glazes, oil or water paints or other decorative mediums.

Plastex
PLASTIC TEXTURE
PAINT

## Textures

The range of decorative effects possible with PLASTEX on wall or ceiling surfaces is limited only by the designer's imagination, and the ability of the craftsman who applies it.

Any ancient or modern texture can be produced—Italian, Old English and Gothic Plaster, Spanish, Early Colonial, Travertine, Caen Stone, Modern American textures and a host of others.

PLASTEX is applied with a wide brush to a uniform thickness, ranging from $\frac{1}{32}$ to $\frac{1}{8}$ in., depending on the texture desired. While still wet it is textured with a variety of everyday tools.

We will be glad to advise on method of application for any effect the architect may desire.

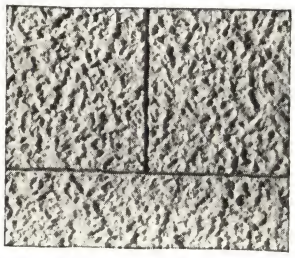
## Advantages (Summary)

(1) High dry bulk and water absorption properties which impart maximum spreading qualities.

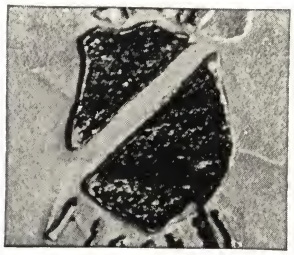
(2) Sets slowly, providing ample time for texturing, which is distinct advantage on one-man jobs.

(3) Being water-resistant in itself, it is unnecessary to apply finish coatings over it to produce a washable surface, and a wide choice of colors are available by incorporating Modex Tempera colors or limeproof tinting colors.

(4) Possesses maximum flexible qualities and will withstand ordinary surface movement without danger of cracking or peeling.



Caen Stone



Old English



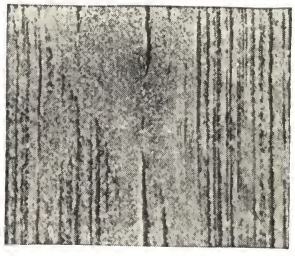
Medici Stone



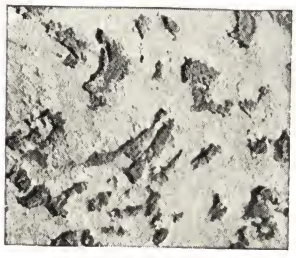
Monastic



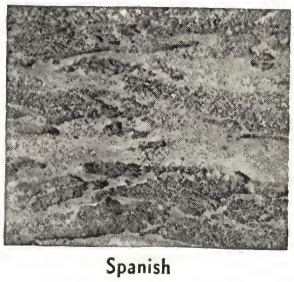
Stephen F. Austin Hotel, Austin, Tex.



Antique Bark



Modern American



Spanish

## Short Form Specification

The following described surfaces shall be coated with (name of product), as manufactured by THE REARDON COMPANY, and be applied in strict accordance with their printed directions, which hereby become a part of this specification, in the colors (and textures) described below:

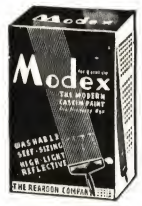
*Note: Architects are invited to communicate with our nearest office for more detailed information, color cards and specification data*

## MODEX—THE MODERN CASEIN PAINT

### Description

MODEX is the latest development in the science of paint manufacture employing a casein vehicle instead of the conventional oil vehicles. MODEX is also marketed in dry powder form, instead of the old-fashioned liquid paste, and is so formulated that it requires only the addition of cold water to make it ready for use.

MODEX is suggested for use on interior (painted or unpainted) sand or lime putty finish plaster, wood, wall board, metal, brick, concrete, stone or tile surfaces. It is self-sizing and gives two-coat hide in one-coat application. MODEX possesses higher light reflection qualities than other types of paint, index factor of white being 89.7%, and the 12 pastel colors in which it is made possess similarly high index factors as compared with other paints of the same shade.




Washable
Self-sizing
High light
Reflective

MODEX is slightly alkaline, a feature which makes it compatible with plaster and concrete and therefore unaffected by the alkali always present in such surfaces.

Another feature—walls finished with MODEX are washable. A sponge, neutral soap and water sponged lightly, not scrubbed, readily remove dirt, dust and smudges.

The light reflection factors of MODEX are as follows:

| | | | |
|---|---|---|---|
| No. 1—Ivory | 77.8% | No. 8—Secreast Green | 43.3% |
| No. 2—Cream | 71.6% | No. 9—Pink | 64.9% |
| No. 3—Buff | 62.9% | No. 10—Gray | 58.2% |
| No. 4—Maple Tan | 50.5% | No. 11—Apricot | 64.4% |
| No. 5—Tan | 46.4% | No. 12—Orchid | 54.1% |
| No. 6—Blue | 54.6% | Black | 2.8% |
| No. 7—Nile Green | 48.5% | White | 89.7% |

MODEX is also made in a range of deep TEMPERA Colors for producing brilliant, vivid color effects in interior decoration. Color charts are available.

Meets the following specifications: U. S. Treasury Department D-49-10—Washable Water Paint (Powder Type); Resettlement Administration Casein Cold Water Paint; National Bureau of Standards Federal TT-P-23, Grade B, Type 1; Federal Emergency Administration of Public Works—Formula 11—Cold Water Paint—Dry Powder Type; Veterans' Administration Washable Cold Water Paint—Dry Powder Type.

### Advantages (Summary)

(1) As MODEX does not seal the surface, thereby permitting it to breathe, it may be applied to "fresh" plaster or "green" masonry surfaces 48 hours after constructed.

(2) Dries within 40 minutes, making possible two-coat application, when necessary, within a few hours.

(3) Being self-sizing, preparatory sizing or priming is unnecessary.

(4) MODEX dries to a velvety flat finish which will not crack, peel or discolor and may be repeatedly cleansed with soap and water or wallpaper cleaner.

(5) Is one of the most satisfactory types of paint known for acoustical operations, and when misted on the surface by spray application it has less effect upon the acoustical qualities of the surface than any other type of coating.



Modex, the Modern Paint for Modern Rooms

## VENOSTONE PRIMER

### Description

VENOSTONE is recommended for one specific use—as a priming coat on cement floors and masonry wall surfaces to prepare them for the application of paint, varnish and enamel. VENOSTONE seals, hardens, neutralizes and arrests moisture in one operation and forms a protective film which alkali and moisture cannot penetrate.

VENOSTONE is compounded of ingredients which are compatible with cement and plaster; no injurious action develops after VENOSTONE is applied. As it dries VENOSTONE gives off its original alkalinity and forms into a very hard, dense, neutral film which is a perfect foundation for any finish coating.

VENOSTONE is supplied in dry powder form and is simply mixed with cold water to make ready for use.

It is manufactured in black and white and 8 standard priming colors.

An ideal cement floor treatment is two coats of VENOSTONE and two coats of clear floor varnish. VENOSTONE provides the proper foundation and color and the varnish imparts the desired glossy, washable, long wearing surface. Wall surfaces are treated in the same manner, except that flat oil paint, enamel or lacquer is employed as a finish coating.

### Advantages (Summary)

As VENOSTONE employs a different principle than any other type of priming or sealing medium, there is nothing comparable to it on the American market and from the foregoing description its advantages over conventional type mediums used for the same purpose will be obvious.

*A*
*Guide*
*to*

# PAINTING VARNISHING *and* FINISHING

THE SHERWIN-WILLIAMS CO.




Cleveland · Ohio

DEPARTMENT *of* ARCHITECTURAL SERVICE

THERE IS A SHERWIN-WILLIAMS FINISH FOR
EVERY SURFACE UNDER EVERY CONDITION

THE SHERWIN-WILLIAMS CO.

*Makers of* PAINTS • VARNISHES • LEAD PRODUCTS • LACQUERS
PIGMENTS • METAL PRIMERS • STAINS • ENAMELS • ETC.

# A 71 YEAR OLD RULE THAT SHERWIN-WILLIAMS CO. STILL PRACTICES

**71 YEARS AGO, WHEN SHERWIN-WILLIAMS WAS YOUNG,** the founders of the company adopted as a general rule the policy best described by the phrase "A Finish for Every Surface," and all the developments of the research and technical departments since that time have been guided and directed with that in mind. The result of this policy is that the complete Sherwin-Williams line is a long one. It embraces not only those types of finishes generally accepted for architectural use, but a complete line of Industrial materials, each designed and manufactured to do a particular job. There is a Sherwin-Williams product for every surface in house, factory, mill, office building, hospital, or any other type of structure. In addition Sherwin-Williams offers to the manufacturer special materials with which to finish the products of his factory. ¶ The development of such an extensive variety of materials has resulted in a fund of knowledge and experience on the part of our Technical Research Department, as to what various types of finishes will do under varying conditions. Almost always, when presented with a particular problem, a regular item in the Sherwin-Williams line can be found to satisfy all the given requirements. When a regular item is not available, the Technical Department is always prepared to develop new materials to meet these specific conditions.

**WHAT THE S-W NAME ON PAINT MEANS** Briefly, the Sherwin-Williams name on a particular paint means that all the Technical Advice, all the practical tests, all the perfection in manufacturing progress, available to the largest makers of paints and varnishes in the world, have been brought to bear upon the development and the manufacture of the product in the can. In other words, that special paint, made for a particular use, and for a particular type of surface, is the best material that it is humanly possible to make for that purpose. ¶ For when Mr. Henry Sherwin and Mr. Edward Williams founded the company years ago, they concluded that their materials would be quality materials—and the best quality materials that they could make, regardless of any other consideration. That original policy has been strictly adhered to by the management of the company ever since. In specifying Sherwin-Williams products the architect may know that he is giving his client the best material that can be obtained for the purpose.

**SHERWIN-WILLIAMS CO.**

101 PROSPECT AVE. N.W., CLEVELAND, OHIO



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# Foreword TO SPECIFICATIONS

The following specifications are intended to cover the entire field of finishing exterior floors, walls, and roofs, and interior floors, walls, and woodwork. For additional information, address THE SHERWIN-WILLIAMS CO., Department of Architectural Service, 101 Prospect Avenue, N.W., Cleveland, or any of the Branches listed on the back cover of this catalogue.

## PAINTING OF STRUCTURAL STEEL

The adequate protection of structural steel requires that the protective coating shall be as completely impermiable as possible, to exclude water, air, or fumes from contact with the metal.

The priming coat must:

1. Provide lasting adhesion or anchorage to the metal.
2. Prevent corrosion by maintaining an inhibitive or chemically basic condition at the metal surface.
3. Provide a hard, impervious film having sufficient elasticity to accommodate itself to contraction and expansion of the metal.

Sherwin-Williams Kromik Metal Primer is a strong drying Linseed Oil Primer, composed of Lead Chromate in combination with substantial amounts of Red Lead, White Lead, Zinc Oxide, and Iron Oxide. Kromik Primer is noticeably easier to apply than Red Lead, is not affected by sulphur fumes, and shows remarkable durability where structural steel is permitted to stand long periods of time before being recoated.

The function of the finishing coat or coats is to protect the priming coat, and the number of coats and nature of material used will depend upon the conditions to which the surface is exposed.

Sherwin-Williams Metalistic is a highly elastic Graphite type of paint which affords excellent protection under the most severe weather conditions. Its quality may be judged by the fact that it has been the standard Sherwin-Williams recommendation for field coats on structural steel for over thirty years.

In the recently-developed Kem-Kromik and Kem-Elastic, Sherwin-Williams has retained the fine qualities associated for many years with regular Kromik and Metalastic, but in addition, by employing the latest developments in Synthetic liquids, it has been possible to obtain faster drying and maximum resistance to weather or to corrosive fumes.

Extreme conditions of fumes and moisture require particular care in selecting the paint to be used. For this reason, where unusual conditions are anticipated, it is suggested that specific recommendations be obtained from the Sherwin-Williams Department of Architectural Service.

### 1 PAINTING STRUCTURAL STEEL & ORNAMENTAL IRON (Exterior and Interior)

*(Fast-drying; maximum resistance to exposure.)*

SHOP OR PRIMING COAT—Kem Kromik Primer, applied full body.
FIRST FIELD COAT—S-W Kemelastic, color as selected, applied full body.
SECOND FIELD COAT—S-W Kemelastic, color as selected, applied full body.

### 1A (Alternate to No. 1) PAINTING STRUCTURAL STEEL & ORNAMENTAL IRON (Exterior and Interior)

*(Slower-drying; slightly less costly.)*

SHOP OR PRIMING COAT—S-W Kromik Metal Primer, applied full body.
FIRST FIELD COAT—S-W Metalastic Brown, applied full body.
SECOND FIELD COAT—S-W Metalastic, color as selected, applied full body.

### 2 PAINTING ORNAMENTAL IRON — VERDE ANTIQUE FINISH (Exterior or Interior)

SHOP OR PRIMING COAT—S-W Kromik Metal Primer, applied full body.
FIRST FIELD COAT—S W P (Sherwin-Williams Paint Prepared) Shade No. 393.
SECOND FIELD COAT—Brush stipple with S W P Shade No. 355 tinted with S-W First Quality Oil Color Verdas Green to Shade approved by architect.

### 3 PAINTING GALVANIZED IRON

*(Fast drying; maximum resistance to exposure.)*

SHOP OR PRIMING COAT—S-W G & G Industrial Primer.
FIRST FIELD COAT—S-W Kemelastic, color as selected, applied full body.
SECOND FIELD COAT—S-W Kemelastic, color as selected, applied full body.

### 3A PAINTING GALVANIZED IRON

*(Slower drying; slightly less costly.)*

SHOP OR FIELD COAT—S-W G & G Industrial Primer.
FIRST FIELD COAT—S-W Metalastic, color as selected, applied full body.
SECOND FIELD COAT—S-W Metalastic, color as selected, applied full body.

### 4 PAINTING HOT SURFACES (Stacks, Flues, Pipes, etc., Exterior and Interior)

FIRST COAT—S-W Salamander Black, applied full body.
SECOND COAT—S-W Salamander Black, applied full body.

### 4A (Alternate to No. 4) PAINTING HOT SURFACES (Stacks, Flues, Pipes, etc., Exterior and Interior)

FIRST COAT — S-W High-Heat-Smokestack-Brilliant Light Gray.
SECOND COAT—S-W High-Heat-Smokestack-Brilliant Light Gray.

## 5 PAINTING METAL ROOFS

*(Fast-drying—maximum resistance to exposure.)*

SHOP OR PRIMING COAT—S-W Kem Kromik Primer, applied full body.
FIRST FIELD COAT—S-W Kemelastic, color as selected, applied full body.
SECOND FIELD COAT—S-W Kemelastic in color selected, applied full body.

(Alternate to No. 5)

## 5 A PAINTING METAL ROOFS

*(Slightly slower drying—slightly less costly)*

SHOP OR PRIMING COAT—S-W Kromik Primer, applied full body.
FIRST FIELD COAT—S-W Metalastic Brown, applied full body.
SECOND FIELD COAT—S-W Metalastic in color selected, applied full body.

(Alternate to Nos. 5 and 5A)

## 5 B PAINTING METAL ROOFS

*(For reasons of strictest economy.)*

SHOP OF FIELD COAT—S-W Kromik Primer, applied full body.
FIRST FIELD COAT — S-W Roof & Bridge Paint, color as selected. Apply full body.
SECOND FIELD COAT — S-W Roof & Bridge Paint, color as selected, apply full body.

# PAINTING EXTERIOR SURFACES

S W P (Sherwin-Williams Prepared Paint) is Sherwin-Williams' highest quality of outside house paint, and represents the best technical knowledge in the production of a paint for exterior wood and metal work. It is a combination of White Lead, Zinc Oxide, Titanium Dioxide, Pure Linseed Oil, and Turpentine in a perfectly balanced formula.

S W P will present a better appearance, and will wear for a longer time than any paint possible to mix by hand. It is a question of mechanical perfection against the human element. Three coats are recommended for new work, and on old work two coats are required to do a first class job.

It is important that the initial coat be reduced with an amount of raw Linseed Oil sufficient to satisfy the absorbtion of the wood. Too much oil, however, produces a gloss finish over which it is difficult to apply succeeding coats. Because of the variety of conditions to be encountered, full thinning instructions are supplied on every package, and the Architect need only specify "Application in accordance with Manufacturer's Instructions".

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## 6 PAINTING EXTERIOR WOODEN SURFACES

*(For maximum service and protection)*

FIRST COAT—S W P, thinned in accordance with directions.
SECOND COAT—S W P, in color selected.
THIRD COAT—S W P, in color selected.

(Alternate to No. 6)

## 6 A PAINTING EXTERIOR WOODEN SURFACES

*(Where Architect desires to leave mixing of paint to discretion of the Painting Contractor.)*

FIRST COAT—S-W Zilo, thinned in accordance with directions.
SECOND COAT—S-W Zilo and pure Linseed Oil.
THIRD COAT—S-W Zilo and pure Linseed Oil.

NOTE: Sherwin-Williams Zilo is a combination of S-W Old Dutch Process White Lead and Zinc Oxide, which adds to the whiteness, reduces chalking, and increases gloss.

(Alternate to No. 6)

## 6 B PAINTING EXTERIOR WOODEN SURFACES

*(Where a straight White Lead Finish is desired.)*

FIRST COAT—S-W Old Dutch Process White Lead, thinned in accordance with instructions.
SECOND COAT—S-W Old Dutch Process White Lead and Linseed Oil.
THIRD COAT—S-W Old Dutch Process White Lead and Linseed Oil.

## 7 PAINTING OF EXTERIOR STUCCO SURFACES

The inherent beauty of a stucco surface is frequently marred by stains caused by moisture which gets into the more porous sections of the surface during severe weather conditions. This same moisture frequently attacks the surface beneath the stucco, causing extensive and sometimes expensive repairs within a short space of time. The Architect is urged to recommend the finishing of stucco surfaces in such a way that they are made "tight" to weather, and thus his client is assured a greater degree of satisfaction, through lack of trouble.

FIRST COAT—S-W Stucco & Concrete Paint in color selected, thinned with S-W Stucco & Concrete Mixing Sealer, in accordance with directions.
SECOND COAT—S-W Stucco & Concrete Paint, color as selected.
THIRD COAT—S-W Stucco & Concrete Paint, color as selected.

## 8 PAINTING EXTERIOR BRICK WALLS

*(Where Flat Finish is desired.)*

FIRST COAT—S-W Stucco & Concrete Paint, in color selected, thinned with S-W Stucco & Concrete Mixing Sealer in accordance with directions.
SECOND COAT—S-W Stucco & Concrete Paint, in color selected.
THIRD COAT—S-W Stucco & Concrete Paint, in color selected.

(Alternate to No. 8)

## 8 A PAINTING EXTERIOR BRICK WALLS

*(Where Gloss Finish is desired.)*

FIRST COAT—S-W Stucco & Concrete Paint in color selected, thinned with S-W Stucco & Concrete Mixing Sealer in accordance with directions.
SECOND COAT—S W P, in color selected.
THIRD COAT—S W P, in color selected.

## 9 PAINTING EXTERIOR SHINGLE WALLS

FIRST COAT—S W P, in color selected, thinned in accordance with directions.
SECOND COAT—S W P
THIRD COAT—S W P

## 10 STAINING EXTERIOR WOODEN SURFACES

*(Where Architect desires a stain that will not hide the grain of the wood.)*

FIRST COAT—S W P in color selected, thinned in accordance with directions.
SECOND COAT—S W P in color selected, thinned in accordance with directions.

## 11 STAINING SHINGLE WALLS AND ROOFS

FIRST COAT—S-W Preservative Shingle Stain in color selected.
SECOND COAT—S-W Preservative Shingle Stain in color selected.

NOTE: It is well for the first coat to be a "dip coat", where the shingles are dipped in the stain for two-thirds of their length before being affixed to the structure, and thrown in loose piles to dry.

## 12 PAINTING PORCH FLOORS

FIRST COAT—S-W Porch & Deck Paint in color selected, thinned with S-W Exolvent or Pure Turpentine in accordance with directions.
SECOND COAT—S-W Porch & Deck Paint in color selected.
THIRD COAT—S-W Porch & Deck Paint in color selected.

## 13 PAINTING CANVAS DECKS

FIRST COAT—S-W Porch & Deck Paint in color selected, thinned with S-W Exolvent or Pure Turpentine in accordance with directions.
SECOND COAT—S-W Porch & Deck Paint in color selected.
THIRD COAT—S-W Porch & Deck Paint in color selected.

## 14 FINISHING PORCH CEILINGS (Natural Finish)

FIRST COAT—S-W Rexpar Varnish, thinned with S-W Exolvent or Pure Turpentine in accordance with directions.
SECOND COAT—S-W Rexpar Varnish.
THIRD COAT—S-W Rexpar Varnish.

## 15 FINISHING EXTERIOR WOOD OR METAL TRIM (Enamel Finish)

FIRST COAT—S W P Flat White, reduced in accordance with directions.
SECOND COAT—S W P Flat White, applied full body.
THIRD COAT—S W P Flat White and S-W Old Dutch Enamel, equal parts.
FOURTH COAT—S-W Old Dutch Enamel, applied full body.

NOTE: Last two coats may be tinted in accordance with Architects desires by using S-W First Quality Colors in Oil.

# VARNISH FINISHES

The majority of hard woods, with the exception of maple, are open-grain. They have fairly prominent open pores, which follow the figures of the grain. A full, smooth varnish finish on such woods requires that these open pores be filled with a paste wood filler to secure a level surface for finishing. Many times, however, the Architect prefers the so called open-pore finish, in which case the filler is omitted, and a special finishing system employed. Inquire of the S-W Representative for details.

Close-grain woods require no filler, and we advise against the use of any so-called soft-wood filler or first-coater.

In order to differentiate readily between the open-grain and close-grain woods, a list of the better-known building woods is given, segregated as to type:

### Open-grain Woods:

| | | | |
|---|---|---|---|
| Ash | Chestnut | Mahogany | Rosewood |
| Butternut | Elm | Oak | Walnut |

### Close-grain Woods:

| | | | |
|---|---|---|---|
| Basswood | Cherry* | Gumwood | Poplar |
| Birch* | Cypress | Maple | Redwood |
| Cedar | Fir | Pine | Whitewood |

*Will permit use of paste filler where it is desired to emphasize the grain.

### Handling of Woodwork Trim

All finishing lumber should be delivered protected from the weather, and stored on the premises in dry warm rooms to prevent the absorption of moisture with the resultant roughening of the wood which would require extra labor to recondition before finishing.

### Preparation of Surfaces

All surfaces must be sanded smooth, rubbing *with* the grain, and never across it. Blemishes should be corrected and the surface, *and the room* cleaned of dust before proceeding with the application of any finishing coats. Each varnish coat should be sanded lightly before applying the succeeding coat, and the surface carefully wiped clean in every case.

### Exterior Varnish

For varnished surfaces exposed to weather, extremes of heat and cold, excessive moisture, or to strong direct sunlight (window-sills, show-windows, etc.) the use of a spar varnish is required. Sherwin-Williams Rexpar is strongly resistant to the conditions enumerated. It is pale in color, and produces an excellent film.

### Floor Varnish

The fundamental requirements for a floor varnish are that it must be dry hard and tough without being brittle. It must be resistant to both water (hot or cold) or ordinary soap solutions. It must be rapid-drying. Sherwin-Williams Mar-Not Varnish fulfills these requirements. It produces a tough, tenacious film, pale in color, and dries to walk on over night.

### Finishes for Interior Woodwork

Two methods are offered for finishing interior wood trim:

1. Full varnish finish with S-W Mar-Not Fast-Dri Varnish in full gloss, giving a polished finish, or a dull-rubbed finish by rubbing the surface with powdered pumice stone and rubbing oil.

2. Satin Varnish finish—a beautiful dull-rubbed finish produced by a finishing coat of S-W Velvet Finish Varnish No. 1044 which dries to a dull finish without the labor or cost of hand-rubbing.

NOTE: Even where a hand rubbed finish is specified, the use of Velvet Finish Varnish is most desirable for mouldings, curved areas, etc., where hand-rubbing is not feasible.

Velvet-Finish Varnish No. 1044 is a finishing varnish only, intended for woodwork trim—not for floors. It is water-resistant, does not spot white, show brush marks, or laps.

### Gymnasium and Heavy Duty Wood Floors

Sherwin-Williams provides S-W Floor Seal, a varnish type of wood-hardner for floors where extra heavy duty is required. Floor Seal penetrates into the wood, leaving very little surface film, dries over night, is not slippery, does not collect dust, does not darken the floor as do ordinary floor oils. It is recommended for new floors, of either hard or soft woods.

## SHERWIN-WILLIAMS S W P PAINT PREPARED

| Suitable Trims | | | Suitable Trims | | | Suitable Trims | | |
|---|---|---|---|---|---|---|---|---|
| Gloss White 353 363 496 | Pearl Gray 479 | | Gloss White 357 363 | Light Lead 353 | | Porch Ceilings, etc. | Blue 369 | |
| Gloss White 357 479 | Slate 363 | | Gloss White 355 353 | Silver Gray 357 | | 355 496 388 382 | Cream Gray 360 | |
| Gloss White 499 461 360 | Canary Yellow 387 | | Gloss White 360 355 393 498 | Ivory 496 | | 485 499 355 470 | Cream 462 | |
| Gloss White 496 388 385 | Colonial Yellow 375 | | Gloss White 462 485 499 | Golden Yellow 470 | | 387 393 496 462 | Golden Brown 486 | |
| Gloss White 360 383 496 | French Cr. Green Medium 362 | | Gloss White 461 496 387 | Apple Green 460 | | 391 385 496 375 | Tobacco Brown 393 | |
| Gloss White 496 354 360 | Willow Green 461 | | Gloss White 351 485 496 | Bottle Green 484 | | Gloss White 360 351 | Red 367 | |

## SHERWIN-WILLIAMS STUCCO AND CONCRETE PAINT

CORAL TINT | CREAM | TAN | CREAM GRAY

CANARY YELLOW | SEA GREEN | TERRA COTTA | GRAY

Complete Color Cards furnished upon request.

Also WHITE

## SHERWIN-WILLIAMS FLAT-TONE

IVORY L. R. V.-79%

CAEN STONE L. R. V.-76%

PALE JADE L. R. V.-47%

IVORY TAN L. R. V.-65%

LIGHT BLUE L. R. V.-58%

WARM BEIGE L. R. V.-59%

SILVER GRAY L. R. V.-46%

BUFF L. R. V.-64%

PLEASE DO NOT DETACH COLOR SAMPLES. COLOR CARDS SENT ON REQUEST.
(L. R. V.—Light Reflection Value.)

## SHERWIN-WILLIAMS SEMI-LUSTRE

CANARY YELLOW L. R. V.-75%

IVORY WHITE L. R. V.-78%

PALE GREEN L. R. V.-58%

CREAM GRAY L. R. V.-63%

POUDRE BLUE L. R. V.-54%

BUFF L. R. V.-67%

BRIGHT SAGE L. R. V.-49%

TAUPE (New) L. R. V.-55%

## SHERWIN-WILLIAMS WOODCRAFT STAINS

(PENETRATING OIL TYPE)

MAPLE

MOSS GREEN

WALNUT

GOLDEN OAK

DARK MAHOGANY

WEATHERED OAK

ADAM BROWN

DARK OAK

## 16 EXTERIOR WOODWORK—STAINED & VARNISHED—OPEN-GRAIN WOODS

FIRST COAT—S-W Woodcraft Stain in color selected.
SECOND COAT—S-W Paste Wood Filler, color to correspond with stain, wiped across grain when partly dry.
THIRD COAT—S-W Rexpar Varnish thinned with S-W Exolvent or Pure Turpentine in accordance with directions.
FOURTH COAT—S-W Rexpar Varnish applied full body.
NOTE: For dull finish, rub to a uniform satin finish with powdered pumice stone and rubbing oil, after varnish has dried for 48 hours.

## 17 EXTERIOR WOODWORK—STAINED & VARNISHED—CLOSE-GRAIN WOODS

FIRST COAT—S-W Woodcraft Stain in color selected.
SECOND COAT—S-W Rexpar Varnish thinned with S-W Exolvent or Pure Turpentine in accordance with directions.
THIRD COAT—S-W Rexpar Varnish applied full body.
NOTE: For dull finish, rub to a uniform satin finish with powdered pumice stone and oil, after the varnish has dried for 48 hours.

## 18 EXTERIOR WOODWORK — NATURAL FINISH—OPEN-GRAIN WOODS

FIRST COAT—S-W Paste Wood Filler, selected shade, wiped across grain when partly dry.
SECOND COAT—S-W Rexpar Varnish thinned with S-W Exolvent or Pure Turpentine in accordance with directions.
THIRD COAT—S-W Rexpar Varnish applied full body.
NOTE: For dull finish, rub to a uniform satin finish with powdered pumice stone and oil, after varnish has dried for 48 hours.

## 19 EXTERIOR WOODWORK — NATURAL FINISH—CLOSE-GRAIN WOODS

FIRST COAT—S-W Rexpar Varnish thinned with S-W Exolvent or Pure Turpentine, in accordance with directions.
SECOND COAT—S-W Rexpar Varnish applied full body.
NOTE: For dull finish, rub to a uniform satin finish with powdered pumice stone and oil, after the varnish has dried for 48 hours.

## 20 FINISHING HARDWOOD FLOORS—STAINED AND VARNISHED—OPEN-GRAIN WOOD

FIRST COAT—S-W Woodcraft Stain in selected color.
SECOND COAT—S-W Paste Wood Filler, color to correspond with stain, wiped across grain when partly dry.
THIRD COAT—S-W Mar-Not Fast-Dri Varnish thinned with S-W Exolvent or pure Turpentine in accordance with instructions.
FOURTH COAT—S-W Mar-Not Fast-Dri Varnish applied full body.
NOTE: Sherwin-Williams Paste Wood Filler Dark has sufficient pigment to darken an oak floor to some extent. If the color produced by the filler alone is satisfactory, the first in the above specification may be omitted.

## 21 FINISHING HARDWOOD FLOORS—STAINED AND VARNISHED—CLOSE-GRAIN WOOD

FIRST COAT—S-W Woodcraft Stain in color selected.
SECOND COAT—S-W Mar-Not Fast-Dri Varnish thinned with S-W Exolvent or Pure Turpentine in accordance with directions.
THIRD COAT—S-W Mar-Not Fast-Dri Varnish applied full body.

## 22 FINISHING HARDWOOD FLOORS—NATURAL FINISH—OPEN-GRAIN WOOD

FIRST COAT—S-W Transparent Paste Wood Filler, wiped across grain when partly dry.
SECOND COAT—S-W Mar-Not Fast-Dri Varnish thinned with S-W Exolvent or Pure Turpentine in accordance with directions.
THIRD COAT—S-W Mar-Not Fast-Dri Varnish applied full body.

## 23 FINISHING HARDWOOD FLOORS—NATURAL FINISH—CLOSE-GRAIN WOOD

FIRST COAT—S-W Mar-Not Fast-Dri Varnish thinned with S-W Exolvent or Pure Turpentine in accordance with directions.
SECOND COAT—S-W Mar-Not Fast-Dri Varnish applied full body.
THIRD COAT—S-W Mar-Not Fast-Dri Varnish applied full body.

## 24 FINISHING NEW SOFTWOOD FLOORS—STAINED & VARNISHED

FIRST COAT—S-W Flo-lac in shade selected, thinned with S-W Exolvent or Pure Turpentine in accordance with directions.
NOTE: If a deeper tone is desired, repeat this operation.
SECOND COAT—S-W Mar-Not Fast-Dri Varnish applied full body.
THIRD COAT—S-W Mar-Not Fast-Dri Varnish applied full body.

## 25 FINISHING NEW SOFTWOOD FLOORS—PAINTED FINISH

FIRST COAT—S-W Floor Enamel in color selected, thinned with S-W Exolvent or Pure Turpentine in accordance with directions.
SECOND COAT—S-W Floor Enamel in selected color, applied full body.
THIRD COAT—S-W Floor Enamel in selected color, applied full body.

## 26 FINISHING NEW CONCRETE FLOORS—PAINTED FINISH

FIRST COAT—S-W Floor Enamel in selected color, thinned with pure Linseed Oil and S-W Exolvent or Pure Turpentine in accordance with directions.
SECOND COAT—S-W Floor Enamel in color selected, applied full body.
THIRD COAT—S-W Floor Enamel in color selected, applied full body.

## 27 FINISHING SCHOOL-ROOM OR GYMNASIUM FLOORS (Stores, Warehouses, etc.)

FIRST COAT—Apply S-W Floor-Seal, full body.
NOTE: Occasionally a second coat may be required to insure service.

## 28 FINISHING BALLROOM FLOORS

FIRST COAT—S-W Floor Seal applied full body.
SECOND COAT—S-W Prepared Wax—rub to hard polished surface with weighted rubbing machine.
THIRD COAT—S-W Prepared Wax—rub to a hard polished surface with a weighted rubbing machine.
NOTE: Before dancing, a small amount of S-W powdered wax may be sprinkled on the surface if desired.

## 29 FINISHING DISCOLORED HARD OR SOFT WOOD FLOORS—STAINED & VARNISHED

FIRST COAT—S-W Flo-lac Ground Color applied full body.
SECOND COAT—Grain floor with S-W Graining Preparation.
THIRD COAT—S-W Flo-lac in shade selected, applied full body.
FOURTH COAT—S-W Mar-Not Fast-Dri Varnish, applied full body.

## 30 INTERIOR WOODWORK—STAINED & VARNISHED—OPEN-GRAIN WOOD

FIRST COAT—S-W Woodcraft Stain, in color selected.
SECOND COAT—S-W Paste Wood Filler in color to correspond with stain, wiped across grain when partly dry.
THIRD COAT—Thin coat of White shellac.
FOURTH COAT—S-W Mar-Not Fast-Dri Varnish applied full body.
FIFTH COAT—S-W Mar-Not Fast-Dri Varnish applied full body.

NOTE: 1. For dull effect, rub to a uniform satin finish with powdered pumice stone and oil after varnish has dried 48 hours.
2. Or, for economy, substitute a coat of Velvet Finish Varnish No. 1044 for the Fifth Coat.

## 31 INTERIOR WOODWORK—STAINED & VARNISHED—CLOSE-GRAIN WOOD

FIRST COAT—S-W Woodcraft Stain in color selected. Wipe with grain to develop high-lights.
SECOND COAT—Thin coat of White Shellac.
THIRD COAT—S-W Mar-Not Fast-Dri Varnish applied full body.
FOURTH COAT—S-W Mar-Not Fast-Dri Varnish applied full body.

NOTE: 1. For dull finish, rub to a uniform satin finish with powdered pumice stone and oil after varnish has dried for 48 hours.
2. Or, for economy, substitute a coat of Velvet Finish Varnish No. 1044 for the Fourth Coat.

## 32 INTERIOR WOODWORK — NATURAL FINISH—OPEN-GRAIN WOOD

FIRST COAT—S-W Transparent Paste Wood Filler, wiped across grain when partly dry.
SECOND COAT—Thin coat White Shellac.
THIRD COAT—S-W Mar-Not Fast-Dri Varnish applied full body.
FOURTH COAT—S-W Mar-Not Fast-Dri Varnish applied full body.

NOTE: 1. For dull finish, rub to a uniform satin finish with powdered pumice stone and oil after varnish has dried for 48 hours.
2. Or, for economy, substitute a coat of Velvet Finish Varnish No. 1044 for the Fourth Coat.

## 33 INTERIOR WOODWORK — NATURAL FINISH—CLOSE-GRAIN WOOD

FIRST COAT—Thin coat White Shellac.
SECOND COAT—S-W Mar-Not Fast-Dri Varnish applied full body.
THIRD COAT—S-W Mar-Not Fast-Dri Varnish applied full body.

NOTE: 1. For dull effect, rub to a uniform satin finish with powdered pumice stone and oil after varnish has dried for 48 hours.
2. Or, for economy, substitute a coat of Velvet Finish Varnish No. 1044 for the Third Coat.

## 34 INTERIOR WOODWORK — STAINED AND WAXED — OPEN-GRAIN WOODS

FIRST COAT—S-W Woodcraft Stain in color selected.
SECOND COAT—S-W Paste Wood Filler in color to correspond with stain, wiped across grain when partly dry.
THIRD COAT—Thin coat White Shellac.
FOURTH COAT—S-W Prepared Wax—wipe off surplus and polish.
FIFTH COAT—S-W Prepared Wax—wipe off surplus and polish.

## 35 INTERIOR WOODWORK — STAINED AND WAXED — CLOSE-GRAIN WOOD

FIRST COAT—S-W Woodcraft Stain in color selected.
SECOND COAT—Thin coat White Shellac.
THIRD COAT—S-W Prepared Wax—wipe off surplus and polish.
FOURTH COAT—S-W Prepared Wax—wipe off surplus and polish.

# PAINTING AND DECORATING INTERIOR WALLS

The Sherwin-Williams Co. has developed a very complete line of interior wall finishes to meet all requirements of gloss, semi-gloss, and flat finishes, textured or otherwise, for walls of plaster, composition board, wood, metal, brick, or concrete. The following brief description of the various items in the line will assist the Architect in writing his specifications, and the Specifications themselves are designed to cover the entire field of interior wall finishing, insofar as the Architect's duties and responsibilities are concerned. If special conditions occur not covered in the following, it is suggested that the Architect apply to the Sherwin-Williams Department of Architectural Service for advice or suggestions.

### S-W Flat Tone

is a flat-finish washable oil wall paint, furnished in a wide selection of shades, both pastel and deep colors, designed for use on walls of plaster, composition, wood, metal, brick or concrete. Apply to the Sherwin-Williams Co. for color chart giving the complete line of shades.

### S-W Wall Paint No. 96

is a heavy-bodied flat finish wall paint, for use over rough surfaces, or where a special textured effect is desired. Furnished in White only, but may be tinted with S-W First Quality Oil Colors to any desired shade.

### S-W Painter Craft Maintenance Wall Paint No. 3

is a beautiful washable wall finish especially designed for maintenance work which dries with an egg-shell finish, between that of S-W Flat-tone and S-W Semi-Lustre. Furnished in white only, but may be tinted to any desired shade with S-W First Quality Oil Colors.

### S-W Semi-Lustre

is a washable oil wall finish, which dries with a soft mellow half-lustre as its name implies. It is recommended for those surfaces where frequent washings make a more durable finish than possible with a strictly flat-finish paint, but where a high-gloss enamel finish is not desired. Furnished in a wide selection of shades. Apply to Sherwin-Williams for complete color chart.

### S-W Painter Craft Enamelastic

is a full enamel which dries to a high-gloss finish, both durable and washable. It is designed for composition or plaster walls, and may be used on interior woodwork as well. Furnished in white, but may be tinted to any desired shade with S-W First Quality Oil Colors.

### S-W Painter Craft Oil Type Enamel No. 35

is an easy-working interior enamel for use where greater economy is desired than available with other types of enamel finish. Designed for plaster or composition walls. Furnished in white, but may be tinted to any desired shade with S-W First Quality Oil Colors.

### S-W Old Dutch Enamel

is the highest quality enamel that Sherwin-Williams can produce. Desirable for interior wood trim, or for interior walls of any nature where the very best quality and type of finish is desired. Furnished in White, Cream and Gray, Gloss or semi-gloss, but may be tinted to any desired shade with S-W First Quality Oil Colors.

### S-W Wall Primer and Sealer

is a penetrating wall sealer containing a percentage of pigment, which is effective in stopping suction on all new wall surfaces except the more porous types of composition board. The pigment by adding to its covering capacity makes its use advisable where two-coat work is desired.

### S-W Tri-Seal

is a pigment penetrating wall sealer for use on exceptionally porous composition boards such as Masonite, Celotex, etc. This material should not be used in brick, tile, or concrete, where S-W Wall Primer and Sealer is recommended.

### S-W XXX Enamel Undercoater

is an enamel undercoater with exceptional covering and hiding capacity, for use beneath an enamel finish. Its use seals the surface tight, preventing suction or spotting of the surface, and makes the ideal base for an enamel finish of any type.

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## 36 SMOOTH, SAND FINISH, OR TEXTURED PLASTER, COMPOSITION BOARD OR CANVAS COVERED WALLS — WASHABLE FLAT FINISH

FIRST COAT—S-W Wall Primer & Sealer applied full body.

NOTE: If porous surface, use S-W Tri-Seal instead.

SECOND COAT—S-W Flat-Tone in color selected, and S-W Wall Primer & Sealer, mixed in accordance with instruction.

THIRD COAT—S-W Flat-Tone in color selected, applied full body.

NOTE: In the interest of economy, the second coat may be omitted if conditions warrant it, in the judgment of the Architect.

## 37 SMOOTH, SAND FINISH, OR TEXTURED PLASTER, COMPOSITION BOARD OR CANVAS COVERED WALLS — WASHABLE EGG-SHELL FINISH

FIRST COAT—S-W Wall Primer & Sealer, applied full body.

NOTE: If porous composition board surface, use Tri-Seal instead.

SECOND COAT—S-W Painter Craft Maintenance Wall Paint No. 3 applied full body.

THIRD COAT—S-W Painter Craft Maintenance Wall Paint No. 3 applied full body.

NOTE: In the interest of economy, the third coat may be omitted if conditions warrant, in the opinion of the Architect.

## 38 SMOOTH, SAND FINISH, OR TEXTURED PLASTER, COMPOSITION BOARD OR CANVAS COVERED WALLS — SEMI-LUSTRE FINISH

FIRST COAT—S-W Wall Primer & Sealer, applied full body.

NOTE: If porous composition board surface, use S-W Tri-Seal instead.

SECOND COAT—S-W Semi-Lustre in color selected, apply full body.

THIRD COAT—S-W Semi-Lustre in color selected, apply full body.

NOTE: In the interest of economy, the third coat may be omitted if conditions warrant, in the opinion of the Architect.

If either a stippled effect, or a glazed finish is desired, same may be obtained in connection with Specifications numbers 36, 37, and 38 in the following manner:

**For Stippled effect:** When last coat is dry, apply brush stipple in color selected, using same material as used for last coat. Either two or three color effects may be obtained by simply repeating operation.

**For Glazed effect:** When last coat is dry, apply S-W Glazing liquid to a portion of wall, tinted with S-W First Quality Oil Colors to color selected. Then stipple with crumpled cloth, twisting cloth slightly after it has been applied to wall surface.

## 39 INTERIOR WALLS, ANY TYPE, HEAVY FLAT WALL PAINT FINISH

FIRST COAT—S-W Wall Primer & Sealer.

NOTE: If porous surface, use S-W Tri-Seal instead.

SECOND COAT—S-W Wall Paint No. 96, applied full body.

NOTE: Due to heavy nature of this material, special textured effects are possible with whisk broom, sponge, cloth, etc., before this last coat has dried. Apply to Sherwin-Williams for directions for special effects.

## 40 HIGHEST QUALITY ENAMEL FINISH FOR WALLS — ANY TYPE

FIRST COAT—S-W Wall Primer & Sealer.

NOTE: If porous surface, use S-W Tri-Seal instead.

SECOND COAT—S-W Painter Craft XXX Undercoater reduced with S-W Exolvent or Pure Turpentine in accordance with directions.

THIRD COAT—S-W Kem-namel Snow White Enamel, reduced with S-W XXX Undercoater and S-W Exolvent or Pure Turpentine in accordance with directions.

FOURTH COAT—S-W Kem-namel Snow White Enamel, applied full body.

## 41 ENAMEL FINISH FOR INTERIOR WALLS — ANY TYPE

FIRST COAT—S-W Wall Primer & Sealer.

NOTE: If porous surface, use S-W Tri-Seal instead.

SECOND COAT—S-W Painter Craft XXX Undercoater, mixed with S-W Exolvent or Pure Turpentine, and S-W Painter Craft Enamelastic in accordance with directions.

THIRD COAT—S-W Painter Craft Enamelastic, reduced with S-W Exolvent or Pure Turpentine in accordance with directions.

NOTE: In the interest of economy, second coat may be omitted when conditions warrant, in the opinion of the Architect.

(Alternate to Specification No. 41 For economy)

### 41 A ENAMEL FINISH FOR INTERIOR WALLS — ANY TYPE

FIRST COAT—S-W Wall Primer & Sealer.

NOTE: If porous surface, use S-W Tri-Seal instead.

SECOND COAT—S-W Painter Craft Oil Type Enamel No. 35 mixed with S-W Painter Craft XXX Undercoater and S-W Exolvent or Pure Turpentine in accordance with directions.

THIRD COAT—S-W Painter Craft Oil Type Enamel No. 35 thinned with S-W Exolvent or Pure Turpentine in accordance with directions.

NOTE: In the interest of economy, second coat may be omitted if conditions warrant, in the opinion of the architect.

### 42 HIGHEST QUALITY ENAMEL FINISH FOR INTERIOR WOOD TRIM

FIRST COAT—S-W Painter Craft XXX Enamel Undercoater, reduced with S-W Exolvent or Pure Turpentine in accordance with directions.

SECOND COAT—S-W Painter Craft XXX Enamel Undercoater, reduced with S-W Exolvent or Pure Turpentine in accordance with directions.

THIRD COAT—S-W Kem-namel Snow White Enamel, mixed with S-W Painter Craft XXX Enamel Undercoater and S-W Exolvent or Pure Turpentine in accordance with directions.

FOURTH COAT—S-W Kem-namel Snow White Enamel applied full body.

### 43 ENAMEL FINISH FOR INTERIOR WOODWORK

FIRST COAT—S-W XXX Painter Craft Enamel Undercoater, reduced with S-W Exolvent or Pure Turpentine in accordance with directions.

SECOND COAT—S-W XXX Painter Craft Enamel Undercoater, reduced with S-W Exolvent or Pure Turpentine in accordance with directions.

THIRD COAT—S-W Painter Craft Enamelastic, mixed with S-W Painter Craft XXX Enamel Undercoater and S-W Exolvent or Pure Turpentine in accordance with directions.

FOURTH COAT—S-W Painter Craft Enamelastic, applied full body.

(Alternate to Specification No. 43—for economy)

### 43 A ENAMEL FINISH FOR INTERIOR WOODWORK

FIRST COAT—S-W Painter Craft Enamel Undercoater No. 45, reduced with pure Linseed Oil according to directions.

SECOND COAT—S-W Painter Craft Oil Type Enamel No. 35, and S-W Painter Craft Enamel Undercoater No. 45, in equal parts, reduced according to directions with S-W Exolvent or Pure Turpentine.

THIRD COAT—S-W Painter Craft Oil Type Enamel No. 35, applied full body.

### 44 PAINTING RADIATORS

FIRST COAT—S-W Metal Primer Gray.

SECOND COAT—S-W Flat-Tone in color selected (for flat finish).
S-W Enameloid in color selected (for Enamel finish).

THIRD COAT—S-W Flat-Tone in color selected (for flat finish).
S-W Semi-Lustre in color selected (for semi-gloss finish).
S-W Enameloid in color selected (for enamel finish).

NOTE: Tests prove that radiators painted with bronze powder materials, radiate 25% less heat than those painted with materials containing zinc oxide or lithopone.

## INDUSTRIAL INTERIORS

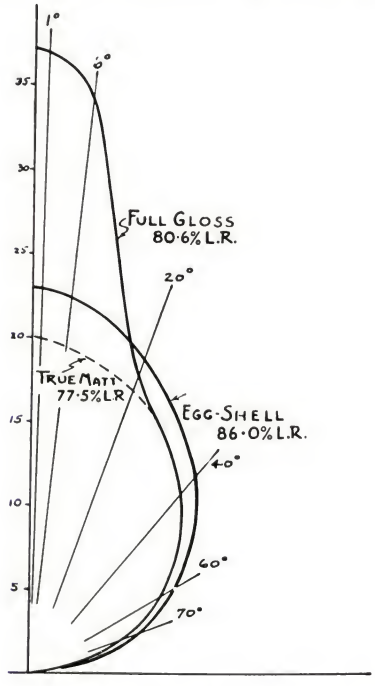
### SAVE-LITE WHITE PAINT FOR INDUSTRIAL INTERIORS

Save-Lite is the name which identifies a complete line of Industrial Interior White Finishes manufactured and offered by Sherwin-Williams for the betterment of industrial lighting. The value of a White finish for the interior of mills and factories is well known. The gain in quality and volume of production, in accuracy, and in the health and improved morale of workmen due to proper lighting has been demonstrated in numerous cases.

Sherwin-Williams Save-Lite is manufactured in three degrees of gloss—Flat, Egg-Shell and Full Gloss. It can be applied to any interior surface — wood, metal, concrete, plaster or composition board. The material is formulated in a consistency suitable for application by either brush or spray. Sherwin-Williams Save-Lite has an unusually high light reflecting value. The light reflection factor for all Save-Lite products has been determined by careful laboratory methods and varies from 84% to 86% of the actual light falling upon the surface. Save-Lite retains its superior light reflection characteristics for a remarkably long period of time after application. Its freedom from yellowing being one of its outstanding features.

### SELECTING THE DEGREE OF GLOSS

There is no manufacturing reason for Sherwin-Williams advocating any one type of Mill White paint. Our sole interest is in supplying an interior finish which will be best adapted to the particular condition involved. Considered solely from the standpoint of light reflection and distribution. Save-Lite Egg-Shell offers some advantage by comparison with either the Flat or the Gloss. The accompanying drawing illustrates the comparative distribution of light from surfaces painted




GLOSS AND EGG-SHELL WHITES

with Save-Lite Egg-Shell and Save-Lite Gloss. The advantage of Save-Lite Egg-Shell in the region of diffuse reflection is apparent.

The Egg-Shell finish combines the strong light diffusing properties of a Flat-White with the superior washability and service of a full gloss. However, for maximum washability and durability, under the most adverse conditions, Full Gloss Save-Lite is recommended.

For ceiling surfaces over indirect lighting equipment, it is important to eliminate high lights, or glare. This is best accomplished by the use of a Flat or Egg-Shell finish. Inasmuch as the efficiency of the indirect lighting unit is almost entirely dependent upon the light reflecting value of the ceiling, the increased light reflection obtained from an Egg-Shell or a Flat finish is an added reason for their selection in this type of work.

Occasionally an interior White having a porous film is required, in order that moisture present in damp walls and ceilings can come through without forcing the paint from the surface. Save-Lite Flat White is material of this nature and finds important use in packing plants, tunnels and other damp surfaces.

### FUME RESISTING MATERIALS

Sherwin-Williams Fume Resisting Save-Lite has been developed to meet special conditions existing in many types of industries. Fume Resisting Save-Lite is manufactured in Gloss, Semi-Gloss and Flat, and is extremely resistant to the ordinary types and concentration of industrial fumes such as: Sulphur, Chlorine, Ammonia, etc. Fume resisting finishes are required under the conditions prevailing in rubber plants, tobacco factories, portions of textile mills, and in the food industries.

One of the latest developments of Sherwin-Williams Research Laboratories has been the application of a synthetic chemistry in the production of Fume Resisting Interior White finishes. Sherwin-Williams Fume Resisting Kem Save-Lite Gloss and Super Fume Resisting Gloss are two remarkable products, without counterpart, in this field at the present time.

The selection of a suitable Fume Resisting Mill White involves technical consideration, which makes it advisable for the architect to obtain suggestions from the paint manufacturer. The Sherwin-Williams Company is glad to cooperate in matters of this kind without obligation in any way.

## SPECIFICATIONS FOR SAVE-LITE INTERIOR WHITE PAINT

### 45 THREE-COAT WORK

For the best possible results on new work, three coats are recommended and surfaces should be dry.

1. Save-Lite Primer and Sealer
2. Save-Lite Undercoater
3. Save-Lite Flat, Egg-Shell or Gloss

### 45 A TWO-COAT WORK

It is recognized that in much industrial construction, two-coat work is used in the interest of economy. Save-Lite materials due to their unusual quality are particularly adapted to this type of work.

On new work and non-porous reasonably dry brick and concrete masonry, Save-Lite Undercoater should be used as the first coat. The superior hiding power of Save-Lite Undercoater and Save-Lite Egg-Shell will materially assist in overcoming the tendency of knots to show through on wood ceilings.

For exceptionally absorbent surfaces such as: Celotex, Masonite and other insulating wall boards, the first coat should be S-W Tri-Seal.

When the job requires painting on new plaster, concrete, or brick work without sufficient time for thorough drying, lime burning becomes an important problem. It is impossible to eliminate completely the hazards of painting under such circumstances. If the wall is not too damp, Save-Lite Primer and Sealer used as the initial coat will reduce the danger of lime burning. A wash coat of Zinc Sulphide solution prior to painting has also been found helpful.

For the final coat, Save-Lite, Egg-Shell, or Gloss may be used.

### MOISTURE CONDITIONS

Save-Lite Flat dries to a porous film and will permit the passage of a certain amount of dampness without lifting the film. It may be applied in one or two coats on concrete or brick walls which are too damp for usual painting procedure, or which later may be subject to moisture from the back of the wall such as: basements and tunnels. No undercoater or size of any kind should be used and both coats of Save-Lite Flat should be reduced from 15 to 25% with Sherwin-Williams No. 74 Reducer.

Roof plank which contains an excessive amount of moisture may be given two coats of Save-Lite Flat, although the normal amount of residual moisture in roof plank will come through Save-Lite Undercoater and Save-Lite Egg-Shell.

### REPAINTING OLD WORK

Best results on previously painted surfaces are obtained with two coats, using Save-Lite Undercoater followed with either Save-Lite Egg-Shell or Save-Lite Gloss. Where the old paint remains reasonably well sealed, one spray coat of either Save-Lite Flat, Egg-Shell, or Gloss will give good results, depending upon the color and condition of the wall over which they are applied. If the old paint is extremely porous, a coat of Save-Lite Primer and Sealer should be used followed with Save-Lite Egg-Shell.

### FUME CONDITIONS

Save-Lite Fume Resisting Flat, Semi-Gloss or Full Gloss are applied over Save-Lite Undercoater and Save-Lite Primer and Sealer in two or three coat work in the same manner as specified above for regular Save-Lite finishes. In all cases involving fume resisting materials, a special investigation by a technical representative of the paint manufacturer is suggested to the end that the materials selected will meet all of the conditions involved.

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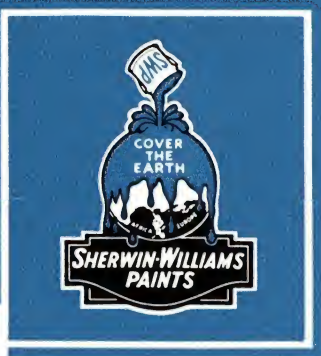
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### Specifications

| To Finish | Use | Specification No. |
|---|---|---|
| Floors—Enamel | | |
| Interior Wood | Koverflor | 1 |
| Interior Concrete or Cement | Koverflor | 1 |
| Exterior Wood | Koverflor | 2 |
| Exterior Concrete or Cement | Koverflor | 1 |
| Floors—Clear Varnish Finish | | |
| Close grain—Natural Finish | Koverflor Clear, Super Elastica or Elastica Q.D. Floor | 3 |
| Close grain—Stain Finish | Koverflor Clear, Super Elastica or Elastica Q.D. Floor | 4 |
| Open grain—Natural Finish | Koverflor Clear, Super Elastica or Elastica Q.D. Floor | 5 |
| Open grain—Stain Finish | Koverflor Clear, Super Elastica or Elastica Q.D. Floor | 6 |
| Wood—Varnish Finish—Surfaces other than Floors | | |
| Interior | Koverflor Clear, Super Elastica or Elastica Q.D. Interior | 3, 4, 5, or 6 |
| Exterior | Koverflor Clear, Super Elastica or Elastica Q.D. Spar | 3 |
| Interior Dull | Elastica Dull | 7 |
| Wood, Plaster, etc.—Enamel Finish | | |
| Wood—Gloss | Satinette, Klean-Kote, S.V.W. All Oyl or Master Painter Long Oil Enamels | 8 |
| Wood—Semi Gloss | Wonder Koat | 8 |
| Plaster, Composition, etc. | | |
| Gloss | Satinette, Klean-Kote, S.V.W. All Oyl or Master Painter Long Oil Enamels | 9 |
| Semi-Gloss | Wonder Koat | 9 |
| Dull | Flattine | 15 |
| Wood—Exterior Paint—House Paint | S.V.W. House Paint and Primarite | 10-11-14 |
| Metal or Wood—Aluminum Finish | Koverflor Aluminum | 12 |
| Stucco, Brick, Concrete or Cement—Exterior of Buildings | S.V.W. Masonry Primer & Finish | 13 |

No. 1—First coat add ¼ gallon turpentine to one gallon. Subsequent coats apply at full body, well brushed out.

No. 2—First coat add ⅛ gallon boiled linseed oil and ⅛ gallon turpentine to one gallon. Subsequent coats apply at full body, well brushed out.

No. 3—Thin first coat slightly with turpentine. Subsequent coats full body.

No. 4—Stain with Kleartone Oil Stain. Apply wash coat of shellac. Thin first coat varnish slightly. Subsequent coats full body.

No. 5—Fill open pores with Kleartone Paste Wood Filler. Apply wash coat of shellac and proceed as in Specification No. 4.

No. 6—Apply Kleartone Oil Stain and then proceed as in Specification No. 5.

No. 7—Follow procedure Specifications Nos. 3, 4, 5 or 6, excepting final coat to be Elastica Dull instead of gloss varnish.

No. 8—Apply a coat of S.V.W. All Oyl or Master Painter Long Oil Enamel Undercoat and then apply enamel selected.

No. 9—Apply a coat of Master Painter Pigmented Wall Sealer and then proceed as in Specification No. 8.

No. 10—For new work, soft wood first coat, add ¼ gallon turpentine and one gallon linseed oil to each gallon of paint, or use S.V.W. Primarite. Second coat add ½ gallon turpentine and ¼ gallon linseed oil to each gallon of paint, or use S.V.W. House Paint without thinning if Primarite is used for first coat. Third coat apply House Paint full body, but third coat is seldom used if Primarite is used for first coat.

No. 11—Old work—apply first coat with ½ gallon turpentine and ¼ gallon linseed oil to each gallon of paint, or use S.V.W. Primarite. Apply second coat of S.V.W. House Paint, at full body.

No. 12—Mix Aluminum Paint from top compartment with vehicle in lower compartment of can. Apply one or two coats.

No. 13—Apply first coat of S.V.W. Masonry Primer and follow by one or two coats of S.V.W. Masonry Finish.

No. 14—For painting resinous wood, such as yellow pine or cypress, add ½ gallon turpentine and ¼ gallon linseed oil to each gallon of paint. Second coat and third coat as in Specification No. 10.

No. 15—Apply a coat of S.V.W. or Master Painter Pigmented Wall Sealer and then one coat of Flattine.

# THE TRUSCON LABORATORIES

## Paints, Varnishes, Enamels and Maintenance Products

## DETROIT, MICH.

For Branch Offices, see our Waterproofing Catalogue
**For Other Truscon Products, see File Index**

### Bar-Ox Inhibitive Steel Paint



TRADE-MARK

For twenty years a leader in steel protection. Bar-Ox is a scientific combination of chromated and inhibitive pigments which prevent corrosion. Even when Bar-Ox coating is accidentally scratched down to bright metal, rusting does not spread underneath the film because of the inhibitive character of the coating. Combined with the well-known Truscon waterproof vehicle—oils which have been specially heat-treated to remove all impurities—Bar-Ox produces a watertight paint film, free from pores and thoroughly resistant to moisture and weathering.

Actual service conditions under severe exposures in damp, tropical countries where paint wear is most severe have definitely proved the superiority of Bar-Ox as a corrosion-protective coating over iron and steel.

Furnished in black and fourteen standard colors. It is suggested that Shop Coat be specified as Bar-Ox KromoKote No. 57, and Field Coat as Bar-Ox Black No. 143 or Dark Green No. 144.

**Specifications for Painting Structural Steel**—Remove all scale, dirt and foreign matter from structural steel before any painting is done in the shop.

Covered surfaces, surfaces in contact and all parts of riveted members shall receive one coat of Bar-Ox (color and number) before assembling. All finished members shall receive 1 coat of Bar-Ox (color and number) before being exposed to the weather. All bolts used in erection and remaining in the structure shall be dipped in Bar-Ox. All surfaces accessible after erection shall have all abraded spots touched up with Bar-Ox followed by a thorough coating over the entire surface, of Truscon Bar-Ox.

### Bar-Ox Formula "97"—"Kills Rust"

A powerful inhibitive treatment combined with very high penetrating qualities, designed for priming rusty surfaces. Particularly recommended for priming around rusted bolts and rivets, overlapping joints, and steel windows embedded in concrete. Entirely stops the development of more rust and makes a good surface for painting.

**Specifications**—Clean off excess rust and scale. Apply Bar-Ox Formula "97" plentifully. Saturate the rust, especially around bolts and overlapping joints. When priming steel windows, use two saturating coats where the base of the window is embedded in the concrete.

Allow 24 hours for hardening—then use Bar-Ox Inhibitive Steel Paint, as per specifications above.

### Other Truscon Bar-Ox Steel Paints

Bar-Ox Smokestack Coating, Boiler Front Coating, Acid Coating, Alkali Coating, Embedded Coating, Conduit Coating, Gas Holder Coating.

### Asepticote—Washable Wall Coating

The real washability test of a wall coating is to use alkaline cleansing compounds. If it withstands repeated scrubbing with these, the wall coating is satisfactory.

Asepticote is used largely in hospitals and schools, because of its exceptional ability to withstand frequent washings. Easy to remove pencil marks, grease, even stains of mercurochrome, iodoform and such chemical germicides from walls coated with Asepticote.

**Specifications for Washable Wall Coating**—Repair all cracks and damaged places. Clean surface from dirt, grease.

*First Coat:* Add 1 qt. Truscon Asepticote of same color as finish coat to each gallon Alkabar (see next column). Mix thoroughly and brush carefully into surface to uniform coating. Allow 24 hours to dry. If flat spots develop, touch up with Alkabar.

*Second Coat:* Apply Asepticote flowed on and brushed out lightly.

### Alkabar—Wall Sealer

A specially-developed alkali resistant wall primer or sealing medium that overcomes the action of free lime and moisture in green plaster. Eliminates many wall painting troubles, such as suction, lime burning, which are frequently caused by the failure of the priming coat. Should be used as a primer under Asepticote.

### Tru-Seal and Tru-Flo—One Day System Interior Painting

**Tru-Seal**—A super-sealer—the latest development in sizes for interior plaster. It has the valuable property of filming over the surface. Tru-Seal is not affected by "hot spots" like ordinary sealers. Also, it "bridges over" hair checks.

**Tru-Flo**—Flat wall finish producing an absolutely uniform effect without laps or brush marks. Self-leveling. When used on new work in conjunction with Tru-Seal as a first coater—a complete, two-coat job of painting may be done in one day.

**Specifications for Two-Coat System**—***General***—Remove all kalsomine, loose paint, grease or dirt. All cracks should be filled with a paste made of plaster of paris and Tru-Seal. Touch up patched spots with Tru-Seal.

***New Work—Two Coat***—*First Coat (Over Smooth, Unfinished Plaster)*—Add 3 pt. turpentine per gallon Tru-Seal.

*Caution:* Do not reduce or mix Tru-Seal with any material except as directed.

*First Coat (Over Rough, Unfinished Plaster)*—Add 1 quart turpentine per gallon Tru-Seal.

*Finish Coat:* One coat Tru-Flo Finish of color selected. Apply without thinning. This finish coat may be applied same day, allowing 4 to 6 hours for drying of Tru-Seal.

***Repainting***—Where old coat of paint is cracked and hair checked, proceed as with "new work" above.

Where old paint is in good condition and color difference is not too great, one coat of Tru-Flo Finish is sufficient.

### Wall-Lite—Mill White Paint

A long oil pure white paint for walls and ceilings of industrial interiors, etc., for light reflection.

Wall-Lite Finishing is furnished in enamel, eggshell and flat. It presents a dense, pure white film that is extremely durable and, when soiled, may be washed and renewed to its original whiteness.

**Specifications for Mill White Paint**—Surface must be free from dust and loosely attached matter. Oil and grease spots shall be removed or touched up with Truscon Bitubar or a thin coat of shellac.

***New Construction:*** *First Coat:* Shall be Wall-Lite Primer applied as received in the package—brushed in thoroughly. Allow 36 to 48 hours for drying.

*Second Coat:* Apply Wall-Lite Undercoater. Allow 36 to 48 hours for drying.

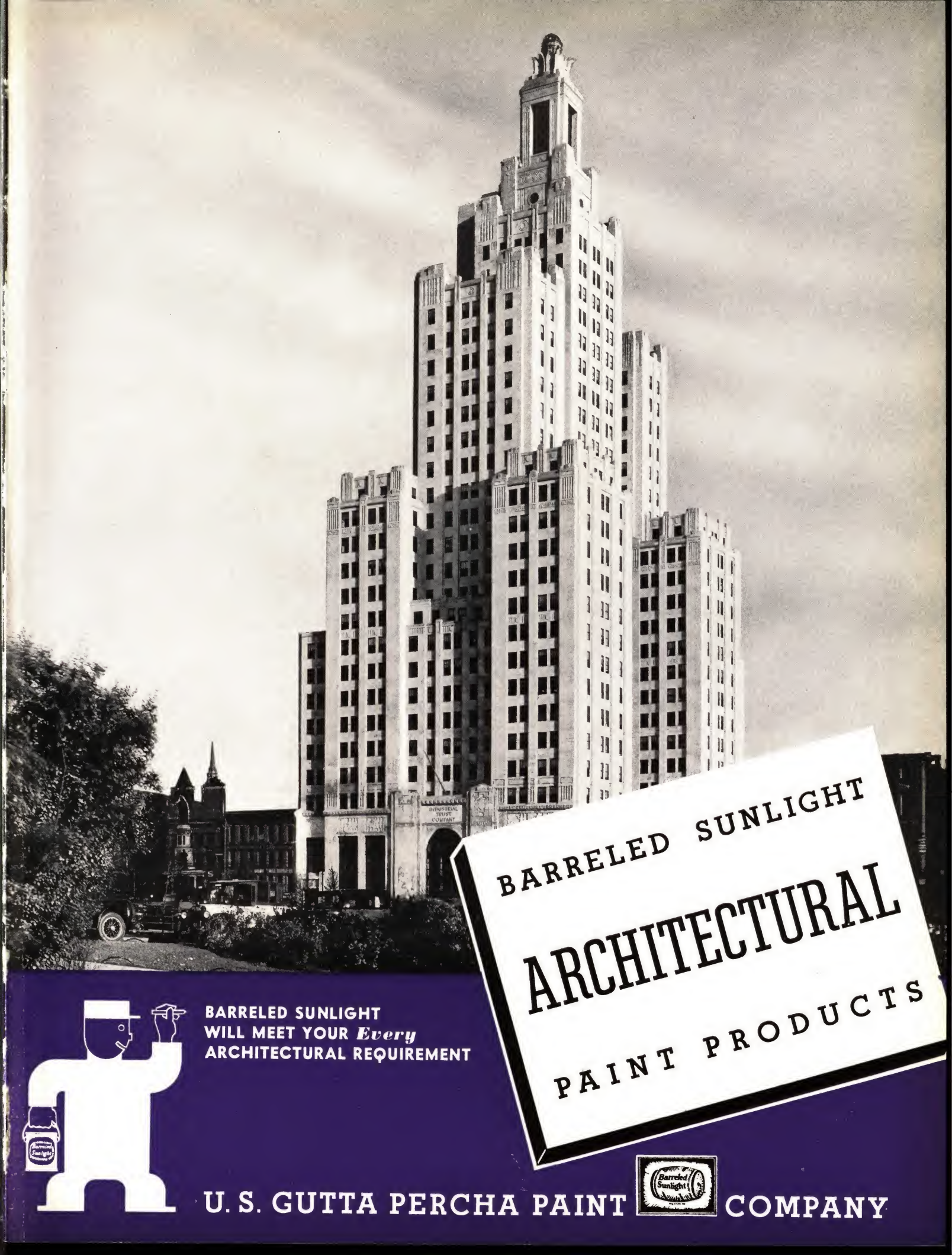
*Third Coat:* Apply Wall-Lite Finishing (Enamel or Eggshell). If Finishing is applied by spray, thin to proper consistency with Wall-Lite Reducer. No thinner is necessary for brush work.

### LumeTex—Aluminum Coating

Truscon LumeTex is packed in a 5-gal., double-compartment container which keeps the aluminum powder separate from the liquid. LumeTex is always freshly mixed for the job, which improves the lustre.

Produced in six types: *LumeTex "A,"* for interior surfaces, walls, ceilings, including radiators; *LumeTex "B"* for exteriors, such as tanks, gas holders; *LumeTex "C"*—heat resisting, for metal smokestacks, and such surfaces where the temperature ranges up to around 300° F.; *LumeTex "D"* for priming and back-priming wood; *LumeTex "E"* special high-heat aluminum (interior), up to 1100° F.; *LumeTex "F"* waterproof asphaltum aluminum.

**Quantity Required**—Metal—600 sq. ft. per gal. 1 coat; 350 sq. ft. per gal. 2 coats. Concrete or brick—400 sq. ft. per gal. 1 coat; 250 sq. ft. per gal. 2 coats.




BARRELED SUNLIGHT

# ARCHITECTURAL

PAINT PRODUCTS



BARRELED SUNLIGHT
WILL MEET YOUR *Every*
ARCHITECTURAL REQUIREMENT

U. S. GUTTA PERCHA PAINT COMPANY

# There is a BARRELED SUNLIGHT Paint for *Every* Type of

HOTELS



OFFICE BUILDINGS



HOSPITALS



## HOTELS — Resorts and Other Like Properties

Variety, a wide color range, and often unusual paint effects are characteristic of hotels and resorts. There is also extreme variety of climatic conditions and harder usage by transient guests to contend with. Wear-resisting, color retaining and washable qualities are of prime importance.

While paint requirements for hotels and resort buildings extend from the needs of a modest small town establishment to the most elaborate metropolitan hotel, Barreled Sunlight Paints will do the job. These paints have been specified for this work again and again, and they always give complete satisfaction.

This fact enables you to specify Barreled Sunlight with full assurance that it will meet every requirement of your job.

## OFFICE BUILDINGS and other Commercial Structures having the Same Requirements

Because painted surfaces are the most conspicuous feature of office and commercial buildings, their appearance and condition play an important part in acquiring new tenants and retaining present ones.

Quick drying advantages, colors that last, illuminating qualities that give maximum reflection without glare, are a few of the demands placed upon a paint for commercial interiors. For many years Barreled Sunlight Paints have been selected for office and commercial buildings. Their full color range pleases the architect and their low comparative cost, through maximum spreading qualities and lower application time, appeals to the owners and operators.

The proof that these products give the service claimed for them is that Barreled Sunlight Paints have been chosen repeatedly for many such buildings throughout the country.

## HOSPITALS — Institutions, Sanitariums, Schools and Similar Buildings

A number of unusual requirements are essential in a paint for hospitals, institutions, schools and similar buildings. Sanitary regulations call for regular and frequent washings. In whites and related colors a high reflection value must be retained. Permanent beauty, under excessive abuse, is a prime factor in a paint for schools.

Architects who have used Barreled Sunlight Paint for these buildings know that it will stand up under the excessive wear and tear of frequent washings. They have proven that it will take the abuse of school conditions.

Of growing importance are the recent researches in the functional and psychological applications of color. In the van of this movement are the hospitals and other curative establishments. Barreled Sunlight, anticipating this need, has developed a wide range of colors specifically adapted to these advanced conditions.

Practical application has substantiated Barreled Sunlight's claims that it will retain its color for long periods, give maximum coverage, and prove wholly satisfactory for hospital and school requirements.

**U. S. GUTTA PERCHA PAINT COMPANY,**

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by U. S. GUTTA PERCHA PAINT CO.

# Interior or Exterior . . . . in a *Full Color Range*

## BARRELED SUNLIGHT *Products*

## FOR INTERIOR AND EXTERIOR PAINTING

APARTMENTS



HOMES



### APARTMENTS — Resident Hotels and the Like

Your apartment house painting contracts have a characteristic feature found in few other jobs. They call for either a large volume of uniform color, or repeated short order jobs, where money and time-saving is of paramount importance. On both occasions, cost is a first consideration.

Washability, life expectation and low maintenance costs are weighed carefully. While color is not necessarily a prime factor here, the one selected must be of guaranteed uniformity.

Architects, through experience, have learned that paints, carrying the same price and claims, do not give equal performance. Satisfaction in use is the only proof. Ranking architects who have chosen Barreled Sunlight Paint for apartments and residential hotels report substantial savings in paint and labor costs.

This is because, in addition to the merits of the paint itself, Barreled Sunlight has adhered closely to the instructions of the architect and delivered paint ideally suited to the specific job requirements.

### HOMES — From the Mansion to the Small Cottage

For several good reasons, the recent acceleration in home building is consuming a great volume of Barreled Sunlight Paints.

Paint for home decoration calls for the same exacting qualities necessary to any other type of building, and the price of the finished job receives the closest possible scrutiny. On this point Barreled Sunlight will meet your needs.

The reason for this is found in a series of impartial tests that have proven themselves in practice. These tests (available on request) demonstrated that Barreled Sunlight Paints averaged 25% greater coverage than three other paints, under the same conditions. Other reasons why you can specify Barreled Sunlight for homes are that you can obtain the fullest color range, special colors at reasonable cost and a list of finishes noted for quick drying and color retention qualities.

**19 DUDLEY ST., PROVIDENCE R. I.**

The day of "One Paint for Everything" is gone. The right paint in the wrong place is no more satisfactory than the wrong paint in the right place.

Below is a list of Barreled Sunlight Products, together with a brief description of each that will enable you to specify the right paint in the right place.

Directions for using Barreled Sunlight Products will be found on individual circulars, and on labels of every package. If you wish to have these, or other product information write:

*Architectural Department*

**U. S. GUTTA PERCHA PAINT COMPANY**
**PROVIDENCE, RHODE ISLAND**

## INTERIOR PAINTS

### PRIMING COATS

**Enamel Undercoat**

For use where extra smoothness is essential on woodwork, trim, etc. Contains extra vehicle to give smooth tight film. Dries hard overnight. In white only but may be tinted on job. Five gallons and over tinted at factory without charge.

**Undercoat**

For first and intermediate coat—new or old work—on wood or metal. This is a rugged heavy duty primer that is thinned as job warrants. White only but may be tinted on job. Five gallons or over tinted at factory without charge.

**Granolith**

An alkali and lime resisting material for first coat work on new or unpainted concrete, brick, cement, plaster and similar porous surfaces. Made heavy and rugged to be mixed on job with No. 65 Reducing Oil. Test areas are recommended. Mixture will bond tightly to surface. Made in white only but may be tinted on job. Five gallons or over tinted at factory without charge.

**No. 65 Reducing Oil**

Used for reducing Granolith (see above). It is a processed suction sealer acting as both binder and sealer to insure uniformity of finish coat.

### Plaster Sealer

A pigmented interior priming and sealing coat essentially for all unpainted plasters. It is as resistant to lime, alkali, and moisture as any sealer can be. Also used with Interior Undercoat on plasters and with Flat Wall Finish for porous surfaces. It covers 700 to 900 square feet per gallon. Made in white only but can be tinted on job. Five gallons and over tinted at factory without charge.

## INTERIOR PAINTS

### FINISHING COATS

### Gloss Enamel

A general purpose high-grade enamel at reasonable cost for surfaces where a smooth, dirt resisting, easily cleaned and durable finish is required. Ideal for large areas. Possesses a spreading capacity of 350 to 500 square feet per gallon. Made in white only but may be tinted on job. Five gallons or over tinted at factory without charge.

### Semi Gloss Enamel

A product similar to Gloss Enamel except that it dries with less sheen.

### Quick Drying Form Gloss Enamel

A finishing coat for use where quick and hard drying is of prime importance. It gives a high gloss tough finish without the brittleness found in most quick drying enamels. This enamel has excellent hiding power and "levels" out smoothly under the brush. Made in ten colors—Ivory, Azure Blue, Tangerine, Colonial Ivory, Tan, Jade Green, Yellow, Light Blue, Nile Green, and Chinese Red.

### Quick Drying Form Eggshell Enamel

A finishing coat for wood or metal trim. Dries to a tough enamel finish. Made in white only. Five gallons or over tinted at factory without charge.

### Chemic Enamel

A special finish designed to resist discoloring action of chemical fumes and dry heat. Produces a smooth, white, non-porous finish. Chemic Enamel is made in gloss, eggshell and flat finish in white only and should not be tinted.

### Extra Heavy Eggshell

An all-oil rugged finish, heavy in body and must be thinned on job, and highly desirable for large areas where full gloss is not required. Speaking conservatively it will cover 400 to 600 square feet per gallon. It can be washed and scrubbed frequently without harm though not, naturally, as much as gloss enamel. Made in white only but may be tinted on job. Five gallons or over tinted at factory without charge.

### Extra Heavy Flat

Similar in form, use and application to Extra Heavy Eggshell except that it dries, with less sheen. Made in white only but may be tinted on job. Five gallons or over tinted at factory without charge.

### Dado Paint

Dado Paint is Barreled Sunlight Interior Gloss Enamel furnished in all standard colors. Five gallons or over will be color matched at factory, from your samples, without charge.

### Partial Gloss Wall Finish

For use where washing is frequent and regular, yet a full gloss paint is not desirable. Finger prints, smudges, stains, pencil marks can be removed again and again without injury to film. Good for large areas as it flows easily and "levels" readily. May be applied as received, though can be thinned. In practice it has a spreading capacity of 500 to 600 square feet per gallon, depending on the surface. Made in eight colors—Old Ivory, Cream, Light Green, Warm Gray, Deep Buff, Buff, Light Gray, Light Blue, and White that may be tinted on job. Five gallons or over, tinted at factory without charge.

### Stippling Gloss Wall Finish

Similar to Partial Gloss Wall Finish in stippling form.

### Flat Wall Finish

A new type of flat finish that produces major savings in paint and labor. It holds a "wet edge" for a surprisingly long time and does away with laps and flashes. An unmatched "slip" speeds the painter without hurrying him. It dries to a smooth satin-like finish which resists dust and dirt. It is as washable as is possible for any flat finish to be.
On a properly sealed surface, it will cover 700 to 900 square feet per gallon without loss of opacity. Made in eight colors—Ivory, Buff, Pale Blue, Caen Stone, Light Cream, Warm Gray, Pale Green, Deep Buff—and white, that may be tinted on the job. Five gallons or over tinted at factory without charge.

### Eggshell Wall Finish

Same as Flat Wall Finish except in degree of sheen.

### Stippling Flat Wall Finish

Barreled Sunlight Flat Wall Finish in stippling form.

## EXTERIOR PAINTS

### PRIMING COATS

### Undercoat

A linseed oil paint made to penetrate and bond to the surface, to be used for all coats except finishing coat on new or old work. Dries nearly flat with ample "tooth." Its heavy pigmentation produces a harder drying film than the more elastic finishing coat. This feature is most important for a long wearing job. Made in white only (but if colored finishing coats are used it should be tinted to same color) but may be tinted on job. Five gallons or over tinted at factory without charge. Also made in green for use under Outside Barreled Sunlight Greens.

## EXTERIOR PAINTS

### FINISHING COATS

### White and Colors

A ready-for-use all-oil vehicle finish combining the three pigments which best withstand outside exposure. It represents the highest quality obtainable and is offered solely on that basis.
It gives the richest durable finish and wears very slowly. This product is easy working, has outstanding hiding qualities and gives a depth of finish that is unequalled. It is made in twelve standard colors—and white that can be tinted on the job. When tinted the colors are sharp and clear. Five gallons and over tinted at factory without charge.

### Greens

Exceptionally high-grade ready-to-use Greens, containing finely ground pigments thoroughly dispersed. These paints have excellent drying qualities, clearness of tone and freedom from tackiness. Specially recommended for all exterior trim. Made in six greens—Chatham, Beverly, Nantucket, Belfast, Pinehurst, and Newport.

### Granolith

Made for exterior painting of stucco, cement, and concrete and brick. It seals the surface against moisture and deterioration, and eliminates the streaking and spotting that disfigure stucco. It will withstand all climatic conditions. Made in white only but can be tinted on job. Five gallons or over tinted at factory without charge.

## VARNISHES

### Floor Varnish

A floor varnish of highest quality, made to withstand hard wear on interior floors.

### Copalite Varnish

The highest grade varnish for all interior work, so tough and durable that it is frequently used on interior floors.

## OTHER PRODUCTS

### Porch and Deck Enamel

Specially prepared to withstand heavy wear and can be washed repeatedly without injury to the finish. Suitable for new or old work and gives a tough, elastic and high lustre finish. Made in eight shades — Battleship Gray, Dark Gray, Tile Red, Indian Red, Spruce, Linoleum Brown, Antique Brown, Green, and Black in full gloss finish only.

### Acoustolight

A decorative and protective finish for acoustical surfaces that scarcely affects their efficiency. Tinted to match any color scheme. Five gallons or over tinted at factory without charge.

### Rice's Red Oxide Anti-Corrosive Primer

For all unpainted iron and steel. It acts as a prevention against corrosion.

### Rice's Machine Paints

### Piping Enamels

# Specifications For Barreled Sunlight Products

**SELECTION OF THE CORRECT BARRELED SUNLIGHT PAINT IS MADE QUICK AND EASY BY USING INDEX AND FOLLOWING SPECIFICATIONS . . .**

## HOW TO USE SPECIFICATION WORKSHEETS

1. Jot down numbers of paragraphs selected from Work Sheets as indicated opposite.

2. Have them copied out in Full as Shown Below—The Result Will be a Complete Specification.

1

Materials
2, 2(a), 2(b), 2(c)
Equipment
3(a), 3(b), 3(d)
Interior Surfaces
14(a), except hallways on first floor
14(d), 14(f)

2

MATERIALS:

Although the honest and capable contractor can produce good results when "semi-paste" paints are mixed on the job,—such procedure necessitates working out exact formulas to fit the conditions of the project in hand, specifying these formulas in detail and closely supervising their compounding and subsequent application. Substitutions, malpractice and dishonest adulteration may not evidence itself until well after the paint job has been entirely completed and the Contractor has left the job.

Ready-mixed paints as manufactured by the U. S. Gutta Percha Paint Company have all the advantages of semi-paste products with none of the disadvantages attending their use on the job.

Barreled Sunlight products, intelligently selected, may be expected to give entire satisfaction, and good results will be further assured if the painting contractor is selected on a basis of craftsmanship and ability to produce satisfactory work rather than on the sole basis of competitive bidding.

All materials used shall be manufactured by the U. S. Gutta Percha Paint Company (Providence, R. I.) or as approved by them for use in connection with their products and shall be delivered in the original containers and packages bearing the manufacturer's name and brand with labels intact and seals unbroken.

All materials shall be ordered sufficiently in advance and shall be delivered in sufficient quantities to be on the job when needed.

No claim by the Contractor concerning the unsuitability of any material specified or his inability to produce first-class work with same will be entertained unless such claim is made in writing to the Architect before the contract is signed.

EQUIPMENT:

Spraying equipment shall be of type and capacity best adapted to the work, subject to the Architect's approval.

## INDEX TO SPECIFICATIONS LISTED BY SURFACES

### INTERIOR SURFACES


| SURFACE | PAINTED | | ENAMELED | |
|---|---|---|---|---|
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| Asbestos Cement | 8 | 14 | 10 | 24 |
| Brick | 8 | 14 | 10 | 24 |
| Canvas (as plaster) | 9 | 17 | 10 | 23 |
| Canvas (see 11-27) | | | | |
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### EXTERIOR SURFACES


| SURFACE | PAINTED | |
|---|---|---|
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| Asbestos Cement | 8 | 13 |
| Brick | 8 | 13 |
| Cement | 8 | 13 |
| Cement Plaster | 8 | 13 |
| Clapboard (wood) | 7 | 8 |
| Doors (metal) | 7 | 10 |
| Fence (wood) | 7 | 8 |
| Flashing (underside) | 8 | 11 |
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| Machine | 7 | 10 |
| Metal | 7 | 10 |
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| Stucco | 8 | 13 |
| Trim (wood) | 7 | 8 |
| Wood (new) | 7 | 8 |
| Wood (unpainted) | 7 | 8 |

# ARCHITECT'S SPECIFICATIONS

It is for our mutual interest that the users of Barreled Sunlight Products obtain satisfactory results, which these products are so easily capable of producing. We submit, therefore, the following recommendations. "Directions for Using" and "Specifications" are offered as helpful recommendations but are not to be construed as guarantees because application, surface and climate conditions are, obviously, beyond the manufacturer's control. **Any surfaces not covered, inquire Architectural Department, U. S. Gutta Percha Paint Co., Providence, R. I.**

**To simplify specification-writing for Barreled Sunlight products, yet insure satisfactory results, data for both new and repainting jobs is included.**

**Items have been grouped in such a manner that any typist may reproduce the complete specification in perfect order after the numbers and letters have been designated. Only such matter as deals specifically with individual jobs need be written out. (See instructions—Page 5.)**

**Notes in italics are added to clarify the brief wording and arrangement, and are not to be included in the finished specification.**

**The following clauses have not been included:**

| | |
|---|---|
| General Conditions | Scaffolds |
| Work Done by Others | Protection of Other Work |
| Work Required | Workmanship |

**It has been assumed that the architect has his own form for these, and suitable to his local conditions. If required the U. S. Gutta Percha Paint Company will supply copies.**

## 1 PREPARATION OF SURFACES

*(Use (a) to (e) for new work and (f) to (r) for modernization work)*

(a) All surfaces before priming or painting shall be thoroughly cleaned of all dirt, oil, grease, rust, scale and other foreign matter. This cleaning shall be done with sandpaper steel scraper or wire brushes as necessary.

(b) All sap wood and knots shall receive a thin coat of shellac before priming and all nail holes and imperfections shall be puttied up as soon as the first priming coat of paint has become hard and dry.

(c) Where new plaster is to be painted and has not been properly aged it shall be treated before priming with a solution of 2 lbs. Zinc Sulphate in one gallon of water, allowed to thoroughly dry and be brushed free of any loose crystals. Before painting all cracks shall be filled with plaster of paris or patching plaster.

(d) New brick work shall have at least a week in dry weather before being painted.

(e) If surfaces are not in proper shape for painting, the Contractor shall notify the Architect before proceeding with the work; otherwise, he will be held responsible for any defect caused by improper surfaces. The application of the first coat of paint by the Contractor shall be construed as an acceptance by him of the responsibility of the base.

*(Use (f) to (r) for modernization work)*

*(The condition of existing paint or finish will determine whether it is a suitable base for the new work or must be completely removed.)*

*(Where existing paint or finish is to be completely removed, (use (f) to (l) and where it is suitable as the base for the new work use (m) to (r).)*

(f) The Contractor shall completely remove, down to the wood, metal or plaster as the case may be, all existing paint or finish on (Specify items, such as,—wood trim, walls, ceilings, floors; etc.)

(g) throughout (Specify rooms and areas.)

*(Use (h) for interior work)*

(h) All finish and paint shall be removed with paint remover, the surface sanded smooth, washed with naphtha and allowed to dry thoroughly.

*(Use (i) for exterior work)*

(i) All paint shall be carefully burned off from all metal and wood without charring, the surfaces sanded smooth and wiped clean of all dust.

*(Use (j) for removing paint from plaster)*

(j) Paint shall be removed from plaster with paint remover and the surfaces allowed to dry thoroughly. All plaster cracks shall then be cut or scored out, completely filled with plaster of paris or prepared patching plaster, finished smooth, sandpapered and given a coat of Barreled Sunlight Plaster Sealer.

*(Use (k) and (l) in applying new paint or enamel over existing wood after the removal of old finish as in (i) above.)*

(k) After existing paint has been completely removed, wood surfaces shall be thoroughly washed with an approved detergent to remove all grease, dirt and wax.

(l) shall be allowed to dry out thoroughly; shall be thoroughly sandpapered to a smooth surface, and wiped clean of all dust.

*(Use (m) to (r) where existing paint or enamel is to be used as a base for new work.)*

(m) All existing paint and finish on (*Specify items, such as,—wood trim, plaster, etc.*)

(n) throughout (*Specify rooms and areas.*)

(o) shall be thoroughly washed with an approved detergent to remove all grease, dirt and wax; shall be allowed to dry out thoroughly and shall be wire-brushed to remove all loose paint.

(p) shall be thoroughly sandpapered to a smooth surface, and wiped clean of all dust.

(q) All abrasions in existing paint and enamel which is to be painted shall be neatly touched up and rubbed smooth.

(r) All cracks in existing painted plaster surfaces which are to be painted shall be cut or scored out, completely filled with plaster of paris or prepared patching plaster, finished smooth and given a coat of Barreled Sunlight Plaster Sealer.

## 2 MATERIALS

*(Ready-mixed paints as manufactured by the U. S. Gutta Percha Paint Company have all the advantages of semi-paste products with none of the disadvantages.*

*Although the capable contractor can produce good results with semi-paste paints, exact formulas, close supervision of mixing and application are needed. Substitution, malpractice and adulteration may not be obvious until after the job is completed.*

*Barreled Sunlight products may be expected to give entire satisfaction if applied as suggested. Good results will be further assured if the contractor is chosen on the basis of ability and craftsmanship.)*

(a) *All materials* used shall be manufactured by the U. S. Gutta Percha Paint Company (Providence, R. I.), or as approved by them for use in connection with their products and shall be delivered in the original containers and packages bearing the manufacturer's name and brand with labels intact and seals unbroken.

(b) All materials shall be ordered sufficiently in advance and shall be delivered in sufficient quantities to be on the job when needed.

(c) No claim by the Contractor concerning the unsuitability of any material specified or his inability to produce first-class work with same will be entertained unless such claim is made in writing to the Architect before the contract is signed.

(d) *Oil* shall be pure thoroughly settled linseed oil, either raw or boiled as required to produce the best results, and shall conform to the Standard Specifications D234-28 and D260-33 respectively of the American Society for Testing Materials.

(e) *Turpentine* shall be the best grade of pure gum spirits of turpentine conforming to Tentative Specifications D-13-33T of the American Society for Testing Materials.

(f) *Driers* shall be the product of an approved manufacturer and shall conform to the Standard Specifications No. 20 of the United States Government.

(g) *Putty* shall be either whiting putty or white lead whiting putty as required to produce the best results and shall conform to Standard Specifications D317-33 of the American Society for Testing Materials.

## 3 EQUIPMENT

(a) Spraying equipment shall be of type and capacity best adapted to the work, subject to the Architect's approval.

(b) Compressors shall be motor driven, shall be set in locations designated by the Architect and temporary rigid piping shall be installed so as not to conflict with the work of other trades.

(c) All paint-carrying flexible hose, nozzles and equipment shall be thoroughly cleaned after each day's work and maintained in first-class working condition.

(d) All brushes shall be new and of the best grade, of sizes and types best adapted for the particular work.

## 4 SAMPLES

(a) Before any materials are ordered or delivered at the building, the Contractor shall submit triplicate panels to the Architect showing all colors, textures and finishes required and obtain his approval of same.

(b) Each panel shall be 8½ by 11 inches in size, shall be clearly marked on the back with the name of the Contractor, the brand names of the paints used on the panel, the name of the building and the date.

(c) One of each of the approved samples will be returned to the Contractor, one sent to the Manufacturer and one filed in the office of the Architect.

(d) All finished work shall match exactly approved samples in color, texture and finish.

## 5 COLORS

*Ready-to-apply-paints of the required color and shade should be used whenever possible; otherwise, paint requiring the least additional pigment should be applied. In this case, to insure uniform results, a sufficient amount of the final coat to cover the room area should be mixed at one time.*

(a) The reflecting surfaces of all metal light reflectors shall be painted white.

(b) Rebates for reception of glass in doors, sash, transoms and mirrors shall be painted black.

(c) The interior of all supply and return ducts which are visible back of register faces shall be painted black.

(d) The colors for all other items shall be as selected by the Architect.

(e) In all cases undercoats shall match finish coats color and shade.

(f) Where paints or enamels are to be tinted on the job, Barreled Sunlight Colors-in-Oil shall be used and, for the final coat, sufficient paint to cover all surfaces within each different room or area shall be made up at one time.

## 6 GUARANTEE

(a) The Contractor, at the completion of his work, shall furnish a written guarantee warranting all work against becoming defective for a period of one year from the date of its acceptance and binding himself to repair or replace without cost to the Owner any defects developing within this time due to failures in materials, workmanship or methods of application.

## 7 PRIMING AND BACKPAINTING WOOD

(a) All door and window frames, wood sash and sills shall be primed all over, upon delivery at the building.

(b) The unexposed back and edges of all interior woodwork coming in contact with plaster or masonry shall be given one coat Interior Barreled Undercoat as soon as delivered on the premises.

(c) The upper and lower edges of all wood doors shall be painted two coats Barreled Sunlight Undercoat as soon as they have been fitted and are ready to be hung.

(d) The back and unexposed edges of all finished wood flooring shall be painted as soon as delivered at the building with one coat Barreled Sunlight Undercoat.

(*Do not use* (*d*) *for floorings set in mastic.*)

# PAINTING EXTERIOR SURFACES

## 8 OVER EXTERIOR NEW OR UNPAINTED WOOD

(*Specify items to be painted as in* (*a*).)

(a) All wood trim, clapboards and other wood work

(b) shall be properly prepared as specified and shall be given (*Specify number of coats*)

(c) one coat

(d) two coats

(e) of Outside Barreled Sunlight Undercoat followed by one coat of Outside Barreled Sunlight Finish Coat in color selected.

(f) All temporary exterior wood work, such as fence, office and similar items (*but not signs*) shall be given one coat of Outside Barreled Sunlight Finish Coat in color selected.

## 9 OVER EXTERIOR EXISTING PAINT

(a) All existing painted surfaces throughout the exterior of the building shall be properly prepared as specified and shall be painted

(For ONE COAT work use (b) )
(For TWO COAT work use (c) )

(b) one coat of Outside Barreled Sunlight Finish Coat in color selected.

(c) one coat of Outside Barreled Sunlight Undercoat followed by one coat of Outside Barreled Sunlight Finish Coat in color selected.

## 10 PAINTING EXTERIOR METAL WORK

(a) All exterior metal surfaces

(b) also including the exterior face and edges of all metal doors

(c) but excepting all (*Specify metals not to be painted, such as,—aluminum, copper, bronze, zinc, lead, etc.*)

(d) shall be properly prepared, painted one coat Rice's Red Oxide Anti-Corrosive Primer and (*Specify number of coats*)

(e) one coat

(f) two coats

(g) of Outside Barreled Sunlight Undercoat followed by one coat of Outside Barreled Sunlight Finish Coat in color selected.

(*Use* (*h*) *for galvanized iron which has not been previously primed or otherwise painted.*)

(h) Galvanized iron shall be treated with a wash coat of 4 ozs. of copper sulphate dissolved in a gallon of water before priming coat is applied.

## 11 PAINTING THE UNDERSIDE OF SHEET METAL FLASHINGS, Etc.

*(The following clauses should be incorporated in their proper place in the specifications for roofing.)*

(a) The underside of all sheet metal (Specify items, such as,—flashings, counter flashings, roofings, etc.)

(b) shall be painted one coat Barreled Sunlight Red Oxide Anti-Corrosive Primer before erection.

## 12 PAINTING STRUCTURAL STEEL

(a) All structural steel after erection

(b) excepting in places where poured concrete comes in direct contact with the metal

(c) shall be given (*Specify number of coats*)

(d) coats of Barreled Red Oxide Anti-Corrosive.

## 13 PAINTING EXTERIOR CEMENT PLASTER, STUCCO, ASBESTOS-CEMENT, CONCRETE AND BRICK:

(a) All exterior
(b) cement plaster
(c) stucco
(d) asbestos-cement
(e) concrete
(f) brick
*(New and unpainted concrete, brick, cement-plaster, stucco, asbestos-cement and similar surfaces are porous and must be properly sealed to insure the uniform appearance of the finish coat. Because such surfaces vary so widely in the degree of porosity, it is impractical to put out in "ready-for-use" form one material to care for all conditions. (Use g where required to neutralize the alkali in mortars)*

(g) and the entire Surface shall be washed with a Zinc Sulphate solution (*2 lbs. Zinc Sulphate crystals per gallon of water) and allowed to dry out thoroughly.*

(h) shall be painted with a mixture of Outside Barreled Sunlight Granolith and Rice's No. 65 Reducing Oil in the proportions that shall be decided by painting several small test areas of different mixtures of Granolith and Reducing Oil and adopting the mixture which gives the best results.

(i) This priming coat shall be painted with (*use either (j) or (k).*)
*(In the case of extreme porosity another coat of Granolith mixed with Reducing Oil should be applied as in (j). Under average normal conditions the first priming coat of this mixture can be followed with one coat of the finish material as in (k).)*

(j) a coat of Outside Barreled Sunlight Granolith reduced with one quart of Rice's No. 65 Reducing Oil to each gallon of paint and then to proper application consistency with turpentine or pure mineral spirits; and this, when dry, shall be painted with (use (k) )

(k) one coat Outside Barreled Sunlight Granolith in color selected.

(j) Prior to the application of the priming coat on brickwork, all cracks in mortar joints shall be pointed up.

# PAINTING INTERIOR SURFACES

## 14 PAINTING INTERIOR CEMENT PLASTER, ASBESTOS-CEMENT, CONCRETE AND BRICK:

(For hard or smooth finish plaster see Section 17)

(a) All interior
(b) cement plaster
(c) asbestos-cement
(d) concrete
(e) brick
*(New or unpainted cement plaster, asbestos-cement, concrete, brick and similar surfaces are porous and must be properly sealed to insure the uniform appearance of the finish coat. Because such surfaces vary so widely in the degree of their porosity, it is impractical to put out in "ready-for-use" form one material which will take care of all conditions)*

(f) shall be primed with a mixture of Interior Barreled Sunlight Granolith and Rice's No. 65 Reducing Oil in the proportions that shall be decided by painting several small test areas of different mixtures of Granolith and Reducing Oil and adopting the mixture which will give the best results.

(g) This priming coat shall be painted with (*use either (h) or (i).*)
*(In the case of extreme porosity another coat of Granolith mixed with Reducing Oil should be applied as in (h). Under average normal conditions the first priming coat of this mixture can be followed with one coat of the finish material as in (i).)*

(h) one coat of Interior Barreled Sunlight Granolith reduced with one quart of Rice's No. 65 Reducing Oil to each gallon of paint and then to proper application consistency with turpentine or pure mineral spirits; and this, when dry, shall be painted with (*use (i)* ).

(i) one coat Interior Barreled Sunlight (*Specify kind selected from (j) to (q).*)

(j) Interior Gloss.

(k) Quick Drying Form Gloss.

(l) Semi-Gloss.

(m) Extra Heavy Eggshell.

(n) Extra Heavy Flat.
*(Use the following for decorative purposes requiring lighter duty paints.)*

(o) Flat Wall Finish.

(p) Eggshell Wall Finish.

(q) Partial Gloss Wall Finish.
*(Use Chemic Enamel for finishing coat where the paint must resist heat and fumes.)*

(r) Chemic Enamel Gloss.

(s) Chemic Enamel Eggshell.

(t) Chemic Enamel Flat.

(u) Prior to the application of the priming coat on brickwork, all cracks in mortar joints shall be pointed up.
*(Use (v) where required to neutralize the alkali in mortars)*

(v) and the entire surface shall be washed with a Zinc Sulphate. (*2 lbs. Zinc Sulphate Crystals per gallon of water*)

## 15 PAINTING INTERIOR METAL

*(Give a complete list of all metal items which are to be painted or specify "all metal surfaces" as in (a) and list exceptions.)*
*(Include here painting inside of metal sash if required.)*

(a) All metal surfaces throughout the interior of the building except (*Specify attics, basements. boiler rooms, etc., exceptions by locations, such as,— or by items, such as,—pipes, copper, nickel plate, aluminum, medicine cabinets, etc.*)
*(Omit (b) if metal has been primed before shipment and the priming coat is satisfactory.)*

(b) shall be primed with one coat Rice's Red Oxide Anti-Corrosive Primer and

(c) shall be painted with
*(For TWO COAT work use (d) )*
*(For THREE COAT work use (e) )*

(d) one coat of Barreled Sunlight (*Specify kind of undercoat selected from (f) or (g)*, followed by one coat of Interior Barreled Sunlight selected from (h) to (r) in color selected.)

(e) two coats of Barreled Sunlight (*Specify kind of undercoat selected from (f) or (g)*, followed by one coat of Interior Barreled Sunlight selected from (h) to (r) in color selected.)

(f) Interior Undercoat
*(Use (g) where smoothness of finish and entire absence of brush marks are of utmost importance.)*

(g) Enamel Undercoat.

(h) Interior Gloss.

(i) Quick Drying Form Gloss.

(j) Semi-Gloss.

(k) Extra Heavy Eggshell.

(l) Extra Heavy Flat.
*(Use the following for decorative purposes requiring lighter duty paints:)*

(m) Flat Wall Finish.

(n) Eggshell Wall Finish.

(o) Partial Gloss Wall Finish.
*(Use Chemic Enamel for finishing coat where the paint must resist heat and fumes.)*

(p) Chemic Enamel Gloss.

(q) Chemic Enamel Eggshell.

(r) Chemic Enamel Flat

(s) Galvanized iron shall be treated with a wash coat of 1 lb. of copper sulphate dissolved in a gallon of water before priming coat is applied.

## 16 PAINTING INTERIOR WOOD WORK

*(Give a complete list of all wood items to be painted or specify "all surfaces" as in (a) and list exceptions.)*

(a) The exposed surfaces of all wood work in all rooms and occupied areas in the building except (*Specify exceptions or where wood is to be enameled, etc.*)

(b) shall be painted (*Specify number of coats*)
(*For TWO COAT work use* (c) )
(*For THREE COAT work use* (d) )

(c) one coat of Barreled Sunlight (*Specify kind of Undercoat from* (e) *or* (f) ), followed by one coat of Interior Barreled Sunlight from (g) to (n) in color selected.

(d) two coats of Barreled Sunlight (*Specify kind of Undercoat selected from* (e) *or* (f) ) followed by one coat of Interior Barreled Sunlight selected from (g) to (n) in color selected.

(e) Barreled Sunlight Undercoat
(*Use* (f) *where smoothness of finish and entire absence of brush marks are of utmost importance.*)

(f) Barreled Sunlight Enamel Undercoat.

(g) Interior Gloss.

(h) Quick Drying Form Gloss.

(i) Semi-Gloss.

(j) Extra Heavy Flat.

(k) Extra Heavy Eggshell.
(*Use chemic enamel for finishing coat where paint must resist heat and fumes*)

(l) Chemic Enamel Gloss.

(m) Chemic Enamel Eggshell.

(n) Chemic Enamel Flat.
(*For decorative use requiring Flat Wall Finish* (s), *Partial Gloss Wall Finish* (t), *or Eggshell Wall Finish* (u) *use* (o) *or* (p) )
(*For TWO COAT work use* (o) )
(*For THREE COAT work use* (p) )

(o) One coat of a mixture of two quarts of Barreled Sunlight Plaster Sealer to each gallon of Barreled Sunlight Flat Wall Finish (s) or Eggshell Wall Finish (u) thinned to brushing consistency with turpentine or mineral spirits and one coat of Barreled Sunlight Flat Wall Finish (s) or Eggshell Wall Finish (u) in color selected.

(p) Two coats of a mixture of two quarts of Barreled Sunlight Plaster Sealer to each gallon of Barreled Sunlight Flat Wall Finish (s) or Eggshell Wall Finish (u) thinned to brushing consistency with turpentine or mineral spirits, followed by one coat of Barreled Sunlight Flat Wall Finish (s) or Eggshell Wall Finish (u) in color selected.
(*For decorative use requiring Partial Gloss Wall Finish* (t) *use* (q) *or* (r) )
(*For TWO COAT work use* (q) )
(*For THREE COAT work use* (r) )

(q) One coat of Barreled Sunlight Partial Gloss Wall Finish (t) thinned with at least ½ pint of turpentine or mineral spirits per gallon of paint, followed by one coat of Barreled Sunlight Partial Gloss Wall Finish (t) thinned with mineral spirits to brushing consistency, in color selected.

(r) One coat of Barreled Sunlight Enamel Undercoat thinned with one pint of turpentine or mineral spirits per gallon of paint and one coat of Barreled Sunlight Partial Gloss Wall Finish (t) thinned with at least ½ pint of turpentine or mineral spirits, per gallon of paint, followed by one coat of Barreled Sunlight Partial Gloss Wall Finish in color selected.

(s) Flat Wall Finish.

(t) Partial Gloss Wall Finish.

(u) Eggshell Wall Finish.

## 17 PAINTING INTERIOR HARD OR SMOOTH FINISH PLASTER

(*For Interior Cement Plaster see Section* 14)

(a) Throughout all rooms and areas of the building except (*Specify exceptions*)
(*In the application of finish on plaster surfaces, the finished results depend on the foundation coat which must definitely stop the suction.*)

(b) the Contractor shall properly prepare all plaster surfaces as specified and shall apply one uniform coat of Barreled Sunlight Plaster Sealer, tinted to match the shade of the finishing coat, and
(*Omit* (c) *for two coat work*)

(c) one coat of a mixture of two parts Barreled Sunlight Undercoat and one part Barreled Sunlight Plaster Sealer which mixture shall be thinned to proper application consistency with turpentine or mineral spirits; and the surface shall be then painted with

(d) one coat of Barreled Sunlight (*Specify kind of finish coat selected from* (i) *to* (m) ).
(*For decorative use requiring* (n), (o), (q), (r), *use* (e) *or* (f) )
(*For TWO COAT work use* (e) )
(*For THREE COAT work use* (f) )

(e) one coat of Barreled Sunlight Plaster Sealer, tinted to match shade of finishing coat, and one coat of (n), (o), (q) or (r), in color selected.

(f) one coat of Barreled Sunlight Plaster Sealer tinted to match shade of finishing coat and one coat of a mixture of 2 quarts of Barreled Sunlight Plaster Sealer to each gallon of Barreled Sunlight Flat Wall Finish (n) or Eggshell Wall Finish (o) thinned to brushing consistency with turpentine or mineral spirits, followed by one coat of (n), (o), (q), or (r) in color selected.
(*For decorative use requiring Partial Gloss Wall Finish* (p) *use* (g) *or* (h) )
(*For TWO Coat work use* (g) )
(*For THREE COAT work use* (h) )

(g) one coat of Barreled Sunlight Plaster Sealer tinted to match shade of finishing coat and one coat of Barreled Sunlight Partial Gloss Wall Finish (p) in color selected.

(h) one coat of Barreled Sunlight Plaster Sealer tinted to match shade of finishing coat and one coat of Barreled Sunlight Partial Gloss Wall Finish (p) thinned with one pint of turpentine or mineral spirits per gallon of paint, followed by one coat of Barreled Sunlight Partial Gloss Wall Finish (p) in color selected.

(i) Interior Gloss.

(j) Quick Drying Form Gloss.

(k) Semi-Gloss.

(l) Extra Heavy Eggshell.

(m) Extra Heavy Flat.

(n) Flat Wall Finish.

(o) Eggshell Wall Finish.

(p) Partial Gloss Wall Finish.

(q) Stippling Flat Wall Finish.

(r) Stippling Gloss Wall Finish.
(*Use Chemic Enamel for finishing coat where the paint must resist heat or fumes.*)

(s) Chemic Enamel Gloss.

(t) Chemic Enamel Eggshell.

(u) Chemic Enamel Flat.

## 18 PAINTING WALL BOARDS

(a) Throughout (*Specify locations*)

(b) the exposed surfaces of all wall boards except (*state exceptions*)
(*For Hard Finish Pressed Wood Fibre Board, use Section* (17) )
(*For Porous Pressed Wood and Cane Fibre types use* (c), (i) *or* (j) )
(*For Gloss, Semi-Gloss, Extra Heavy Flat or Extra Heavy Eggshell Finish use* (c)

(c) Barreled Sunlight Undercoat thinned slightly with mineral spirits and one coat of Barreled Sunlight Undercoat thinned with one quart of No. 65 Reducing Oil per gallon of paint and one coat of (*Specify kind of finish selected from* (d) *to* (h) )

(d) Interior Gloss.

(e) Quick Drying Form Gloss.

(f) Semi-Gloss.

(g) Extra Heavy Flat.

(h) Extra Heavy Eggshell.
(*For Partial Gloss Wall Finish use* (i) )

(i) Barreled Sunlight Undercoat thinned slightly with mineral spirits and two coats of Barreled Sunlight Partial Gloss Wall Finish in color selected.
(*For Flat Wall Finish use* (j) )

(j) Barreled Sunlight Flat Wall Finish thinned slightly with mineral spirits and one coat of a mixture of two quarts of Barreled Sunlight Plaster Sealer to each gallon of Barreled Sunlight Flat Wall Finish, followed by one coat of Barreled Sunlight Flat Wall Finish in color selected.
(*For Eggshell Wall Finish use* (k) )

(k) Barreled Sunlight Eggshell Wall Finish thinned slightly with mineral spirits and one coat of a mixture of two quarts of Barreled Sunlight Plaster sealer to each gallon of Barreled Sunlight Eggshell Wall Finish, followed by one coat of Barreled Sunlight Eggshell Finish in color selected.

## 19 PAINTING ACOUSTICAL MATERIALS

*(Acoustical materials of perforated type can be painted without loss of efficiency with any standard Barreled Sunlight Product.)*
*(In order to permit decoration of the other types of acoustical materials and particularly in such buildings as schools, hospitals, offices, restaurants, stores, etc., the U. S. Gutta Percha Paint Company has developed Acoustolight. This material is of such a nature that it does not seal the surface pores of the material on which it is applied and can be used without appreciably lessening the efficiency of the sound absorbing material.)*

*(For painting acoustical materials of the perforated type use specifications for the application of paints over similar materials, such as—metal, wall boards, etc. Use (a) to (c) for the other types only.)*

(a) Throughout *(Specify rooms and areas)*
(b) the acoustical material on *(Specify location)*
(c) shall be painted one coat Barreled Sunlight Acoustolight.

## 20 PAINTING EXISTING INTERIOR PAINT OR ENAMEL

*(For clauses covering preparation of surfaces use Section 1.)*
(a) Throughout *(Specify rooms and areas as in (b) )*
(b) all rooms and occupied areas in the building
(c) the Contractor shall properly prepare all existing painted surfaces as specified and shall paint same with one coat of Barreled Sunlight *(Specify kind selected from)*—
*(For ONE COAT work use (i) to (r) )*
*(Do not use one coat work over surfaces which have been painted with cold water paint or whitewash—use (h) )*
*(For TWO COAT work use (d) or (e) )*
(d) Undercoat and one coat of Barreled Sunlight *(Specify kind selected from (i) to (m) )*
*(Use (e) where smoothness of finish and entire absence of brush marks are of utmost importance.)*
(e) Enamel Undercoat and one coat of Barreled Sunlight *(Specify kind selected from (i) to (m) )*
*(For Decorative use requiring (n), (o), (q), (r), use (f) )*
(f) one coat of a mixture of two quarts of Barreled Sunlight Plaster Sealer to each gallon of Barreled Sunlight Flat Wall Finish tinted to match shade of finishing coat and thinned to brushing consistency with turpentine or mineral spirits, followed by one coat of (n), (o), (q), or (r) in color selected.
*(For decorative use requiring (p) use (g) )*
(g) one coat of Barreled Sunlight Partial Gloss Wall Finish (p) thinned with one pint of turpentine or mineral spirits per gallon of paint, and one coat of Barreled Sunlight Partial Gloss Wall Finish (p) in color selected.
*(For use over cold water paint—surfaces shall be thoroughly wire-brushed to remove all loose paint)*
*(For TWO COAT work use (h) )*
(h) One coat of Interior Barreled Sunlight Undercoat and boiled linseed oil mixed in strict accordance with the manufacturer's directions and one coat of Barreled Sunlight *(Specify kind selected from (i) to (r) in color selected)*.
(i) Interior Gloss.
(j) Quick Drying Form Gloss.
(k) Semi-Gloss.
(l) Extra Heavy Eggshell.
(m) Extra Heavy Flat.
(n) Flat Wall Finish.
(o) Eggshell Wall Finish.
(p) Partial Gloss Wall Finish.
(q) Stippling Gloss Wall Finish.
(r) Stippling Flat Wall Finish.

## 21 ENAMELING OVER INTERIOR WOOD

(a) Throughout *(Specify rooms and areas)*
(b) the Contractor shall prepare the surfaces as specified and shall enamel all *(Specify as in (c).)*
(c) wood trim, doors and wood sash.
(d) as follows:—
*(For THREE COAT work use (e) )*
*(For TWO COAT work omit intermediate coat in (e) )*
(e) Two coats of Barreled Sunlight Enamel Undercoat, thinned to proper consistency with turpentine or mineral spirits and one coat of Barreled Sunlight.
*(Specify from (f) to (h) with thinning as above in color selected.)*
(f) Interior Gloss Enamel.
(g) Quick Drying Form Gloss Enamel.
(h) Quick Drying Form Eggshell Enamel.

## 22 ENAMELING OVER INTERIOR METAL

(a) All metal surfaces throughout *(Specify rooms and areas)*
(b) shall be properly prepared as specified and shall be painted one uniform coat of Rice's Red Oxide Anti-Corrosive Primer, if not primed in shop, and then enameled as follows:—
*(Specify same as for over wood, use Section 21.)*

## 23 ENAMELING OVER INTERIOR PLASTER

*(Except Interior Cement Plaster)*
(a) All plaster surfaces throughout *(Specify locations)*
(b) shall be prepared as specified, primed with one coat Barreled Sunlight Plaster Sealer and enameled as follows:—
*(For THREE COAT work use (c) )*
*(For TWO COAT work omit intermediate coat in (c) )*
(c) one coat of Barreled Sunlight Enamel Undercoat, thinned to proper consistency with turpentine or mineral spirits and one coat of Barreled Sunlight *(Specify from (d) or (e) in color selected.*
(d) Interior Gloss Enamel.
(e) Quick Drying Form Gloss Enamel.

## 24 ENAMELING OVER INTERIOR CONCRETE, ASBESTOS-CEMENT, BRICK AND CEMENT-PLASTER

*(For hard or smooth finish plaster see Section 23.)*
(a) All interior
(b) cement plaster
(c) asbestos-cement
(d) concrete
(e) brick
*(New or unpainted cement plaster, asbestos-cement, concrete, brick and similar surfaces are porous and must be properly sealed to insure the uniform appearance of the finish coat. Because such surfaces vary so widely in the degree of the porosity, it is impractical to put out in "ready-for-use" form one material which will take care of all conditions.)*
(f) shall be primed with a mixture of Interior Barreled Sunlight Granolith and Rice's No. 65 Reducing Oil in the proportions that shall be decided by painting several small test areas of different mixtures of Granolith and Reducing Oil and adopting the mixture which gives the best results.
(g) This priming coat shall be painted with
*(In the case of extreme porosity another coat of Granolith mixed with Reducing Oil should be applied as in (h). Under average normal conditions the first priming coat of this mixture can be followed with one coat of the finish material as in (i) or (j).)*
(h) one coat of Interior Barreled Sunlight Granolith reduced with one quart of Rice's No. 65 Reducing Oil to each gallon and then to proper application consistency with turpentine or pure mineral spirits; and this, when dry, shall be painted with
(i) Interior Gloss Enamel.
(j) Quick Drying Form Gloss Enamel.

## 25 ENAMELING OVER INTERIOR WALL BOARDS

(a) Throughout (*Specify locations*)
(b) all exposed surfaces shall be enameled with
(*For THREE COAT work use* (c) )
(c) Barreled Sunlight Undercoat thinned slightly with mineral spirits and one coat of Barreled Sunlight Undercoat thinned with one quart of No. 65 Reducing Oil per gallon of paint and one coat of Barreled Sunlight (*Specify kind selected from* (d) *or* (e) ) *in color selected.*)
(d) Interior Gloss Enamel.
(e) Quick Drying Form Gloss Enamel.

## 26 PAINTING INTERIOR FLOOR SURFACES

### Over Unpainted Wood Floors

(a) All floors throughout (*Specify locations*)
(b) shall be properly prepared as specified and the surface painted with
(c) one coat
(d) two coats
(e) of Barreled Sunlight Porch and Deck Enamel thinned with at least ½ pint of turpentine or mineral spirits per gallon of paint used, followed by one coat of Barreled Sunlight Porch and Deck Enamel thinned to brushing consistency in color selected.

### Over Existing Paint

(a) Existing paint on all floors throughout (*Specify locations*)
(b) shall be properly prepared as specified and the surface painted with one coat of Barreled Sunlight Porch and Deck Enamel in color selected.
(*For two coat work use* (c) )
(c) one coat of Barreled Sunlight Porch and Deck Enamel thinned with at least ½ pint of turpentine or mineral spirits per gallon of paint used, followed by one coat of Barreled Sunlight Porch and Deck Enamel thinned to brushing consistency in color selected.

### Over Cement

(a) All cement finish floors throughout (*Specify locations*)
(b) shall be properly prepared and painted one coat of Barreled Sunlight Floor Granolith thinned with at least ½ pint of turpentine or mineral spirits per gallon of paint used.
(c) This priming coat shall then be painted with (*Specify number of coats*)
(d) one coat
(e) two coats
(f) Barreled Sunlight Floor Granolith, thinned with mineral spirits or turpentine to brushing consistency.

## 27 CANVASING

(a) Throughout (*Specify locations*)
(b) walls and ceilings
(c) shall be given one coat of an approved glue size and shall then be covered with heavy white muslin, thoroughly pasted on, free from wrinkles, laps or blisters. Care shall be taken to remove all pimples or other projections on plastered surfaces before the muslin is applied.
(d) Joints shall not occur except at angles, corners, trim, mouldings, etc., and the muslin shall extend back of all trim at least ½ inch.
(e) Where joints are unavoidable they shall be made inconspicuous with Swedish putty.
(*Specifications for painting on canvased walls will be similar to those for plaster Section* 17 *except that the plaster sealer may be omitted.*)

## 28 GLAZING

(a) Painted wall surfaces throughout (*Specify locations*)
(b) shall be given one coat of a high-grade glaze in color selected.
(c) Glaze shall be (*Specify finish, such as—brushed, stippled with cloth, stippled with sponge, etc.*)

## 29 PAINTING INTERIOR PIPES

(a) All exposed piping throughout the entire building
(b) and in boiler room
(c) except (Specify exceptions, such as—copper, nickel-plated, etc.)
(d) shall be painted (Specify number of coats)
(e) one coat
(f) two coats
(g) Barreled Sunlight Piping Enamel.
(h) follow the system recommended by the A. S. M. E. National Safety Council or I. C. C. Standards.

## 30 PAINTING INTERIOR RADIATORS

(a) All radiators shall be thoroughly cleaned as soon as delivered at the building and shall be painted with one coat Barreled Sunlight Interior Aluminum Paint.
(b) After erection, radiators shall be painted on all surfaces, both exposed and concealed, with two coats of Barreled Sunlight Flat Wall Finish in color selected.

## 31 PAINTING MACHINES AND EQUIPMENT

(a) All machines throughout
(b) shall have their surfaces prepared and shall be painted (Specify number of coats)
(c) one coat
(d) two coats
(e) Rice's Oxidized Machine Enamel.
(This is the highest grade air-drying machinery enamel—very tough and withstands the action of lubricating oil. Recommended for use on electrical and other high-grade machinery.)
(f) Rice's One coat Enamel
(A quick drying enamel for use on machinery where the oil proof properties and durability of the Oxidized Machine Enamel are not required to the same extent.)

## 32 VARNISHING

### UNPAINTED INTERIOR WOOD FLOORS

(Open grain wood shall be filled with a high-grade paste wood filler)
(In close grain wood, filler may be omitted)
(a) Shall be varnished with
(b) one coat of Barreled Sunlight Floor Varnish thinned with one pint of turpentine or mineral spirits per gallon of varnish and
(c) one coat
(d) two coats
(e) Barreled Sunlight Floor Varnish as supplied by manufacturer
(f) sand lightly between coats.

### Unpainted Wood Trim

(*Open grain wood shall be filled with a high-grade paste wood filler*)
(*In close grain wood, filler may be omitted*)
(g) Shall be varnished with
(h) one coat of Barreled Sunlight Copalite Varnish thinned with one pint of turpentine or mineral spirits per gallon of varnish and
(i) one coat
(j) two coats
(k) Barreled Sunlight Copalite Varnish as supplied by manufacturer
(l) Sand lightly between coats.



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# U. S. GUTTA PERCHA PAINT COMPANY

# SECTION 17

CONTINUED ⟶

# UNITED STATES GYPSUM COMPANY

Paint Products

300 West Adams Street, CHICAGO, ILL.

SEE FILE INDEX FOR OTHER USG CATALOGS CONTAINING LIST OF SALES OFFICES

## TEXOLITE CASEIN WALL PAINT—DESCRIPTION

Texolite is a casein wall paint for the painting of all types of interior walls and ceilings. The vehicle in Texolite is casein, a water-clear material, which allows all the light which strikes a Texolite painted wall to be reflected from the wall in the true, clear color of the pigment. The pigment in Texolite is specially processed lithophone with exceptionally high hiding power.

The quality of these two principal constituents of Texolite—casein vehicle and lithophone pigment—are of the highest obtainable.

**COMES IN PASTE FORM**—Texolite comes as a paste and is thinned on the job with water.

**HIDING**—One coat of Texolite hides average surfaces completely. Saves both time and material.

**APPLICATION**—Texolite is applied with either brush or spray gun. It flows easily under the brush. A 6- or 8-inch Baby Dutch brush is recommended. A good quality calcimine brush can also be used.

**NON-INFLAMMABLE** — Texolite contains no ingredients which can create fire hazards. It can be applied even where there are open flames. There is no fire hazard from Texolite soaked rags.

**CLEANING OF TOOLS**—Water is used to clean tools, brushes, utensils. Maintenance costs are cut; equipment has longer life.

**HIGH LIGHT REFLECTION**—White Texolite reflects over 84 per cent of the light which strikes it. It provides higher light levels; saves eyesight; increases worker efficiency; cuts lighting costs.

**WIDE COLOR RANGE**—Texolite comes in ten pastel shades and white. Intermixes of colors provide many additional shades. Can be tinted with Texolite Deep Colors (see heading Texolite Deep Colors) to provide unlimited range of tints, shades, or blends.

**STABILITY**—Texolite does not yellow or fade. Colors remain bright and true indefinitely.

**QUICK DRYING**—Texolite dries under average conditions in one hour or less. Decorating time is reduced to a minimum. Occupancy of interiors can be resumed within an hour after painting is completed.

**USED OVER ANY SOLID SURFACE**—Texolite can be applied over new or old plastered walls, fiber, gypsum or insulating wallboards, brick, tile, concrete, cement, primed or painted wood or metal surfaces.

**PRIMER**—It is good practice to apply a prime coat of K-Cemo Primer over most surfaces, new or old, because it evens up suction, provides an ideal surface to paint over, makes Texolite spread farther, and will assure a more uniform, better looking job. (For full description of K-Cemo Primer, see below.)

**SANITARY**—Because Texolite dries quickly to a hard, dry film without tackiness, dust does not accumulate as quickly as upon ordinary paint surfaces.

**NO PAINT ODOR**—Permits occupation of interiors in less time after painting is completed.

**HIGH COVERAGE**—Following are the approximate coverages per gallon of Texolite paste.

| | |
|---|---|
| Smooth primed or painted surfaces | 600 to 800 sq. ft. |
| Smooth finished plaster surfaces | 500 to 700 sq. ft. |
| Textured surfaces | 400 to 600 sq. ft. |
| Insulating Board, fiber wallboard | 350 to 500 sq. ft. |
| Cinder blocks, concrete | 300 to 450 sq. ft. |

**PACKAGING**—Texolite comes in quart, gallon, and 5-gallon cans and in 30-gallon drums.

### K-CEMO (Lime-Locking) PRIMER

K-Cemo Primer is particularly useful for priming porous surfaces over which Texolite Casein Wall Paint is to be applied. It effectively seals porous surfaces, keeping the paint vehicle from striking into the pores of the surface.

The use of K-Cemo as a prime coat is recommended when Texolite is to be applied over extremely porous surfaces or surfaces of greatly varying suctions. Its use is also recommended as a primer when Texolite Deep Colors are applied over porous surfaces.

A coat of K-Cemo Primer over high gloss surfaces prevents brushing through or sagging of the paint finish. Such gloss surfaces should be washed thoroughly before applying K-Cemo.

### TEXOLITE DEEP COLORS

Texolite Deep Colors are made to the same formula as Texolite Casein Wall Paint. Deep Colors have the same characteristics and the same advantages as Texolite Casein Wall Paint.

Texolite Deep Colors come in eight deep brilliant colors and black. They are used either full strength as deep, brilliant paint or as tinting colors for tinting white Texolite or varying the color tones of the standard Texolite pastel shades.

# TEXOLITE SPECIFICATIONS

## (1) WORK INCLUDED

***Note:*** *Here list in detail the surfaces to be painted with Texolite.*

## (2) CONDITION OF SURFACES

**(2a) General**—All surfaces to be finished with Texolite Casein Wall Paint shall be clean and dry.

Any surfaces not in suitable condition to receive the finish shall be reported to the architect or his authorized agent for correction before work is commenced.

**(2b) Plaster Work—**

***(2b1) New Work***—Remove all dust and sand particles adhering to the surface by scraping, sandpapering, and dusting.

***(2b2) Old Work***—Remove dust, loose dirt, or scaling material adhering to the surface.

***(2b3)*** All calcimine must be removed by thorough washing.

***(2b4)*** Remove existing finish *(specify kind).*

***(2b5) Both New and Old Work***—Cut out all cracks, holes, and indentations in plaster surface and scrape clean. Cracks, holes, and indentations shall then be wet down and patched with *(USG Red Top Patching Plaster) (specify other suitable patching plaster).* After patching plaster has dried thoroughly, patches shall be sanded level with the rest of the surface.

***(2b6) Caution***—Do not fill cracks, nail holes, etc. with regular oil putty. To do so will cause oil spots to appear in finished paint job.

**(2c) Sheetrock Gypsum Wallboard**—Remove dust and dirt adhering to the surface.

Finish all joints with *(Perf-A-Tape Reinforced Joint System) (USG Sheetrock Metal "A" Joint System) (USG Reinforced Joint System) (USG Sheetrock Finisher) (specify other suitable joint cement).* Sand joints smooth when dry.

Spot all intermediate nailheads and abrasions in the surface with *(USG Sheetrock Metal "A" Joint System Cement) (USG Reinforced Joint System Cement) (USG Sheetrock Finisher) (specify other suitable cement).* Sand smooth when dry.

**(2d) Insulating Board, Fiber Wallboard**—Remove all loose dust and dirt adhering to the surface.

**(2e) Concrete and Cement**—Remove all loose and scaly material, rust spots, etc.

Remove grease, oil, etc, from surface by washing with gasoline or a dilute muriatic acid solution.

**(2f) Brick, Tile, and Stone**—Remove all loose dirt, scaling material adhering to the surface.

**(2g) Wood Surfaces**—Wood surfaces are presumed to be clean and sanded smooth, free from surface defects, and in suitable condition for painting.

Remove all loose dust and dirt adhering to the surface.

Coat all knots or pitch streaks with white shellac to which has been added a little pumice or whiting.

**(2h) Metal Surfaces—**

***Note:*** *Metal surfaces must be primed before applying Texolite, see paragraph (5g).*

***(2h1) New***—Remove all dirt, grease, and rust spots with benzine. Use sandpaper or a wire brush if necessary.

Galvanized work shall be thoroughly washed with acetic acid (vinegar).

***(2h2) Old***—Remove dirt and grease by washing thoroughly with benzine.

## (3) MATERIALS

**(3a) General**—Where specific brands are not mentioned, materials shall be the best of their respective kinds.

All materials shall be delivered to the building in the original containers with seals unbroken and labels attached.

Materials shall be reduced only in accordance with the manufacturer's directions.

All paint shall be of the color selected by the architect. Only where specifically so instructed by the architect shall materials be purchased in the white for subsequent tinting.

**(3b) Primer**—Primer shall be K-Cemo (Lime-Locking) Primer as made by the United States Gypsum Company.

**(3c) Wall Paint**—Wall paint shall be Texolite Casein (Paste) Wall Paint as made by the United States Gypsum Company.

Tinting colors shall be Texolite Deep Colors used in accordance with the manufacturer's directions.

Texolite shall be stored in rooms of moderate temperature, protected from freezing.

**(3d) Brushes**—All brushes shall be new and of the best grade, of sizes and types best adapted for the particular work.

For wall and ceiling work, brushes shall be *(six or eight-inch Baby Dutch Brush) (first quality calcimine brush).*

***Note:*** *Baby Dutch type of brush is recommended.*

**(3e) Spraying Equipment**—Spraying equipment shall be of the type and capacity best adapted to the work, subject to the architect's approval.

Compressors shall be motor-driven set in the location designated by the architect with temporary rigid piping installed so as not to conflict with the work of other trades.

All paint-carrying flexible hose, nozzles, and equipment shall be thoroughly cleaned after each day's work and maintained in first class working condition.

## (4) MIXING

**(4a) K-Cemo Primer**—Reduce K-Cemo Primer in accordance with the directions given on the original container.

**(4b) Texolite**—Reduce Texolite in accordance with the directions given on the original container.

***(4b1)*** To obtain shades other than standard, follow complete directions given on the original container.

***(4b2) Addition of Linseed Oil—***

***Note:*** *A slight sheen or gloss finish can be given to Texolite by adding one-half pint of boiled linseed oil to each gallon of Texolite.*

Add oil in the following manner: First thin Texolite paste to even consistency by adding one pint of water to each gallon of Texolite. Then add one-half pint of boiled linseed oil for each gallon of Texolite paste. After stirring thoroughly, add sufficient water to reduce the paste to proper painting consistency.

## (5) APPLICATION

**(5a) New or Old Plaster Surfaces—**

***(5a1) Priming—***

***Note:*** *Select the type of priming best suited to the particular work. They are listed on page 3 in the order of their preference.*

***Note:*** *If plaster surface is smooth and hard of uniform suction and has little porosity, pastel shades of Texolite can be applied without priming surface. If plaster surface is extremely porous, differs in suction, or a deep shade of Texolite or Texolite Deep Colors is to be applied, specify priming as in clauses on page 3.*

***Note:*** *On badly water-stained surfaces, more satisfactory paint job will be obtained by priming surfaces with K-Cemo Primer. Specify as in paragraph (1), page 3.*

***Note:*** *Extreme suction in porous surfaces can also be reduced by painting the surface with plain water immediately before applying Texolite. Increased coverage and easier application are afforded. Use paragraph (4), page 3 to specify water priming.*

*(1)* Prime surface with one coat of K-Cemo Primer. Use a Baby Dutch or a calcimine type brush. Apply primer freely and uniformly to the surface. Over rough surfaces, stipple the primer to assure a complete coverage over pits and rough spots.

*(2)* Prime surface with one coat of Texolite thinned to more than painting consistency (of shade to be used in painting).

*(3)* Prime surface with one coat of *(specify brand)* pigmented oil primer.

*(4)* Prime surface with plain water immediately before applying paint.

***(5a2) Texolite***—Apply *(one) (two)* coat *(s)* of Texolite with *(brush) (spray).*

**(5b) Gypsum Wallboard**—

***(5b1) Priming***—Specify clause (1) or (3) of (5a1) above (clause (1) preferred).

***(5b2) Texolite***—Apply *(one) (two)* coat *(s)* of Texolite with *(brush) (spray).*

**(5c) Insulating Wallboard**—

***(5c1) Priming***—

***Note:*** *Ordinarily no prime coat is necessary before applying Texolite. However, insulating board made of cooked pine fiber sometimes will cause bleeding into the first coat of paint, and in such case, specify clause (3) of (5a1) above.*

***(5c2) Texolite***—Apply *(one) (two)* coat *(s)* of Texolite with *(brush) (spray).*

**(5d) Fiber Wallboard**—

***(5d1) Priming***—Specify priming as in clause (3) of (5a1) above.

***Note:*** *Ordinarily no prime coat is necessary before applying Texolite. However, when fiber wallboard is used for finished panel work, specify priming as in (5d1) above.*

***(5d2) Texolite***—Apply *(one) (two)* coat *(s)* of Texolite with *(brush) (spray).*

**(5e) Concrete, Cement, Brick, Tile, or Stone**

***(5e1) Priming***—

***Note:*** *Over smooth concrete and cement surfaces, no prime coat is necessary before applying Texolite. If surface varies in suction or is extremely porous, specify priming as in clause (1) of (5a1) above.*

***(5e2) Texolite***—Apply *(one) (two)* coat *(s)* of Texolite with *(brush) (spray).*

**(5f) Wood Surfaces**—

***(5f1) Priming***—

***Note:*** *Over wood finish, such as doors or trim, specify priming as in (5a1) above using clause (3).*

***Note:*** *For mill or factory painting, spot all knots and pitch streaks with pigmented white shellac. Ordinarily in such interiors no further priming is needed.*

***(5f2) Texolite***—Apply *(one) (two)* coat *(s)* of Texolite with *(brush) (spray).*

**(5g) Metal Surfaces**—

***(5g1) Priming***—

***Note:*** *Factory prime coat on metal is often scratched or chipped in shipment and erection allowing rust spots to develop. For this reason, specify a priming coat as in clause (3) of (5a1) above.*

***(5g2) Texolite***—Apply *(one) (two)* coat *(s)* of Texolite with *(brush) (spray).*

**(5h) Flat Paint Surfaces**—

***(5h1) Texolite***—Apply one coat of Texolite with *(brush) (spray).*

**(5i) Enamel and Gloss Surfaces**—

***(5i1) Priming or Preparation***—Dull the gloss of enamel or gloss paint surfaces by thoroughly washing the surface with a solution of washing soda and hot water followed by a clean water rinse.

***Note:*** *If such surfaces are free from dirt and grease, they may be dulled by the application of one coat of K-Cemo Primer which produces tooth to prevent brushing through or sagging. Specify priming as in clause (1) of (5a1) above.*

***(5i2) Texolite***—Apply *(one) (two)* coat *(s)* of Texolite with *(brush) (spray).*

# OTHER USG PAINT PRODUCTS

## DURACAL

A washable calcimine that is composed of highest quality calcimine pigments well formulated and bound with casein instead of glue. Can be applied over fresh or untreated plaster. Mixes easily and spreads well. Mix five pounds of Duracal with four pints of lukewarm water, stir thoroughly, let stand for 30 minutes, and thin by the addition of ½ to 1 pint of water. Five pounds of Duracal will cover one coat of from 200 to 300 sq. ft. over primed or painted surfaces—over porous surfaces, slightly less. Made in white and 8 standard colors. Packed in 5 and 25-lb. packages, 100-lb. drums, and 325-lb. (net weight) barrels.

## USG CALCIMINE

USG Calcimine is of the cold water type which eliminates the need of boiling water and the necessary time required to prepare hot water materials.

Made in white and 10 standard colors. Packed in 5-lb. packages, 25-lb. bags and 325-lb. barrels.

## KAL

A high grade hot water calcimine.

Made in white and 10 standard colors. Packed in 5-lb. packages, 25-lb. bags and 325-lb. barrels.

## USG INTERIOR COLD WATER PAINT

A material giving better results than ordinary whitewash but affording equal economy. It is ideal for factories, warehouses, farm buildings, and other structures requiring periodic cleaning and reconditioning.

Made in white only. Packed in 25-lb. bags and 350-lb. barrels.

## USG EXTERIOR COLD WATER PAINT

An economical reconditioning paint for general outside utility work applied over practically any type of clean, firm surface. Forms an unusually smooth, tight film which remains much cleaner for this reason than the rough surface of the usual exterior wall coating.

Made in white only. Packed in 25-lb. bags and 325-lb. barrels.

# USG MASONRY PAINT

## CEMENTICO

Cementico is a cold-water, weatherproof, insoluble, hydraulic cement paint for use over such surfaces as unpainted stucco, porous concrete, brick, tile, and stone. It is not intended for use on floors, wood or non-porous surfaces such as smooth plaster, terra cotta, and enameled brick or on greasy surfaces.

It is in the form of a powder to be mixed with water.

An outstanding and almost exclusive advantage is the readiness with which Cementico mixes with water. Because of the absence of "sludge" in the mixture, the usual tedious straining operation is materially lessened. Due to its smoothness and uniform consistency, Cementico is admirably adapted to application by spray gun as well as by brush.

Again and quite important, the tendency to "bloom" inherent in most cement-and-lime mixtures, in Cementico has been practically eliminated.

When white Cementico is to be tinted, the most lasting results are obtained by the use of USG Limeproof Colors.

One (1) pound of Cementico, applied in one (1) coat, will cover 16 to 25 sq. ft. depending upon the texture of the surface to be covered and heaviness of the application required.

Made in white and 10 standard colors. Packed in 5, 25, and 100-lb. packages and 325-lb. barrels.

# USG PLASTIC PAINTS

## TEXTONE

Textone is a quality texture paint for application over walls and ceilings to produce beautiful and enduring texture effects. It comes in white powder form, is easily mixed with water to prepare it for application. Textures are obtained with tools employed in everyday use—whiskbroom, stippling brush, sponge, wadded paper, crumpled cloth, or the palm of the hand.

With these various tools, and others, many types of textures can be easily worked out to suit almost any architectural design. Attractive caenstone and travertine effects can be achieved.

A new method of low cost texture decoration employing Textone and Texolite which cuts materially the cost of texture work has been developed by the United States Gypsum Co. Briefly, the new method is this—One extremely thin coat of Textone in its natural white color is applied to the wall. As soon as the Textone is dry, one coat of Texolite Casein Wall Paint in the desired shade is applied. The result is a colorful, durable, textured finish of outstanding beauty. It's a job that has been done more simply, in less time, and at lower material cost than was ever before possible.

Heavier texture effects can be obtained by working with Textone at a heavier consistency and applying it to a greater thickness. Coloring can be applied by painting the textured surface with Texolite Casein Wall Paint; or dry pigment colors may be mixed with the prepared Textone before application. Other methods of coloring include blowing in colored sands after the Textone is on the wall by water glazing with tinted Textone Sealer or by applying a coat of Textone Glaze which has been tinted with colors ground in oil. Wiping the glaze coat brings out the high-lights and produces two-toned effects.

One pound of Textone should cover approximately from one to three square yards of surface for a medium texture; slightly more with finer textures.

Made in white only but is easily tinted with USG lime proof colors. Packed in 25 and 100-lb. moisture-proof fiber boxes and 325-lb. (300-lb. net) barrels.

## USG TEXTURE PAINT

USG Texture Paint is a dry, white, powdered plastic paint, very similar to Textone in working qualities and in texturing possibilities. It is priced less than Textone, and although it necessarily lacks some of the quality of the latter, particularly the long-storing feature, yet it is far superior to most plastic paints on the market.

One pound will cover about one square yard. Packed in 25 and 100-lb. packages and 300-lb. (net) barrels.

## EM-BEL-LO

Em-Bel-Lo is a dry, white powder, texture-yielding paint, economical to buy and apply. The addition of water makes it ready for application. It is particularly adaptable to the production of water-floated textures. Colors are added and the textures produced as with other plastic paints. Application is with a brush. It is not self-sizing.

Any surface can be prepared to receive Em-Bel-Lo. Map cracks do not appear in it; neither does it shrink. It is free from lumps, has no alkaline action, and does not damage woodwork or paint with which it may come in contact.

Ordinarily it is ready to be worked over within 24 hours. Within from 48 to 72 hours it attains rocklike hardness.

One pound of Em-Bel-Lo covers from ¾ to 1 sq. yd., medium texture.

Em-Bel-Lo can be satisfactorily tinted, before application, to any desired shade through the introduction of dry limeproof color.

Made in white and 7 standard colors. Packed in 25 and 100-lb. packages and 325-lb. barrels.

# USG PAINTING ACCESSORIES

## TEXTONE SEALER

A casein water clear sealer for application to textured surfaces before glazing; also gives excellent results when used with dry limeproof colors as an economical glazing vehicle.

## TEXTONE GLAZE

Textone Glaze is used as a carrier in applying color glazing over textured surfaces. It dries flat to a soft sheen and produces a durable, waterproof finish.

## RED TOP PATCHING PLASTER

Red Top Patching Plaster contains no lime. It is non-shrinking, very white, and specially formulated to assure easy workability.

## RED TOP PAINTERS' PLASTER

A general purpose painters' material. Red Top Painters' Plaster is produced from selected white gypsum rock especially treated to afford easy mixing. When set, it is unusually dense and strong.

## USG COLD WATER PUTTY

USG Cold Water Putty is indispensable to painters and unexcelled for general household utility repairs. It is excellent for spackling and as a base for Swedish putty. It adheres firmly to any firm, clean surface—even to glass and steel. Dries stone hard without shrinking or cracking, thus furnishing a perfect surface for redecorating.

## USG LIMEPROOF COLORS

The same concentrated limeproof colors that USG uses in all quality paint products, so many of which are in actual combination with formulas containing lime. These colors have been USG's standard for years. Their strength and stability have been proven. There may be less expensive limeproof colors, but none better than these are available at any price.

Colors are packed in air-tight containers of convenient size, thus reaching the job as fresh and strong as when they were manufactured. Standard colors include raw sienna, burnt sienna, yellow, raw umber, burnt umber, green, blue, red, and black. They are used for tinting, texture paints, Texolite (Powder), Calcimines, Cement Paints, and other interior water-mixed products.

# THE WILBUR & WILLIAMS COMPANY

## Manufacturers of Penetrating Protective Paints for Every Purpose

Park Square Building, BOSTON, MASS.

BRANCH OFFICES

NEW YORK, N. Y., 101 Park Avenue SAN FRANCISCO, CAL., 32 Page Street

Direct Factory Representatives and Jobbers in Principal Cities

THE WILBUR & WILLIAMS COMPANY has specialized for years in Industrial Paints and pioneered production of modern Casein Paste Paints and Penetrating Protective Paints. Chemical engineers and special field representatives are employed to help solve difficult painting problems. There is no obligation in having a field representative call.

### FOR INTERIOR WALLS AND CEILINGS

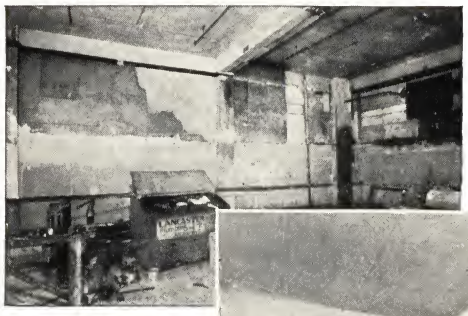
#### Bondlite, Interior Paste Paint

**A Free Flowing, Penetrating, Bonding Oil Paint**—Bondlite has been developed through experience in the manufacture of penetrating rust-preventive paints. Note diagram showing its unique penetration through a soft wall surface, such as calcimine or white wash. It is similar to high grade linseed oil paint, with the exception of the binder which is a specially processed vegetable oil, that penetrates before it hardens, and thus makes the paint film part of wall.

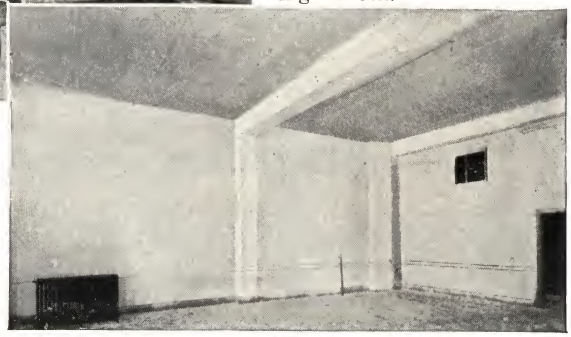



Diagram shows how Bondlite bonds into a soft surface compared to usual paints

**Features of Bondlite Mixed for Flat Finish**—(1) Paints safely over solid calcimine or other water soluble paints, sealing them on to the surface. (2) One coat usually hides, even over dead water stains or porous surfaces because of its combination of pigments. (3) Paints safely over damp surfaces, such as new plaster, because it is a breathing paint. (4) Flows easily with a wide brush, it has no drag. (5) Dries in about an hour; it dries by setting, not by evaporation. (6) No yellowing tendency, even in the presence of usual chemical fumes, because there is no linseed oil present to yellow. (7) Easily tinted with oil colors, or can be purchased in white or 9 standard tints. (8) Any degree of gloss finish can be obtained from the paste by mixing with it proper quantities of Bondlite Mixing Varnish.



Before



After Application of One Coat of Bondlite

#### Totalbrite Casein Paste Paint

**Made to Meet U. S. Government Specifications**—Wherever casein paints are recommended, Totalbrite will be found exceptionally pleasing to the painter, as it mixes easily, keeps in suspension, and hardens quickly to form a lasting coating on interior walls and ceilings. It has no appreciable detrimental effect on sound absorbing qualities of acoustical materials.

**Features**—(1) Supplies over 90% light reflection in white. (2) Cost per finished square yard is less than cost of calcimine. (3) Supplied in white and nine attractive tints.

#### Totaltints

Totaltints, tinting color for Totalbrite or other water color, is put up in 12 attractive deep shades and black.

### FOR EXTERIOR SURFACES

#### Exterior Bondlite Paste

**A Flowing, Penetrating Exterior Paint**—Exterior Bondlite is a unique paste paint which, when mixed with linseed oil, provides a highly bonding, exterior white paint. It is specially recommended for masonry, due to its free flowing qualities, which enable it to spread easily over rough surfaces. Also recommended for wood surfaces.

**Features**—(1) Free flowing and self-leveling. (2) Exceptionally strong bond on masonry surfaces. (3) Penetration and preservation of wood fibres. (4) Considerable saving on cost of material and labor.

### FOR PROTECTION OF METALS AGAINST CORROSION

#### Totrust or Totalume

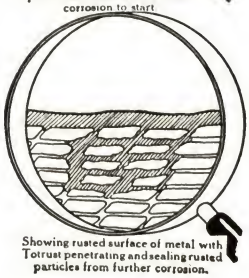
The vehicle of these products is a highly penetrating binder which has greater capillary attraction for metal than does water. It therefore penetrates any rusted pits and pinholes, expels any drops of moisture, and seals in and around the rusted particles, forming a hard, solid surface. See attached diagram.

**Features**—(1) May be applied directly over rusted surfaces, thus saving the cost of wire brushing or sandblasting. (2) May be applied over damp metal surfaces, as this vehicle expels moisture from the surface. (3) It is not affected by heat up to 600° F. (4) Saves nearly 80% of the usual sandblast linseed-oil coat protection of a rusting surface.

(5) Totrust is supplied in clear, black, olive green or red. (6) Totalume is an aluminum paint of exceptionally high sheen.



Showing surface of metal where oil paint has cracked and allowed corrosion to start



Showing rusted surface of metal with Totrust penetrating and sealing rusted particles from further corrosion.

#### Bondlite Water Tank and Swimming Pool Paint

This paint is unaffected by immersion in water, and will protect metal from corrosion without any chance of harming the purity of the water supply.

### FOR TERMITE-FUNGUS PREVENTION

One-half pint of Bondlite Termite and Fungus Preventive added to a gallon of Bondlite or any linseed-oil paint, will stop fungus growth on the paint film and prevent termites boring through. Used as a dip, this also prevents termites boring through wood beams and joists. A highly penetrating preventive.

### FOR PAINTING FACTORY WINDOWS

Bondlite Factory Window Glass Paint flows easily on smooth glass, and gives a white or blue coating which keeps out heat and glare without interfering unduly with light.

*Write Boston Office for Field Representative to Call Regarding Your Paint Problems*

# SECTION 17

CONTINUED ⟶

# THE AMERICAN CRAYON COMPANY

## Manufacturers of a Quality Line of Floor Finishes

SANDUSKY, OHIO

BRANCH OFFICES

NEW YORK, N. Y., 200 Fifth Avenue — DALLAS, TEX., Santa Fe Building — SAN FRANCISCO, CALIF., 116 New Montgomery Street

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***OLD FAITHFUL PRODUCTS**
**Backed by 103 Years of Successful, Expert Manufacturing Experience**
**1835 ● 1938**



KAYSAN—The modern Wood Sealer and Finish for floors, trim and furniture.

FILTITE—Sealer and Finish for cement and similar surfaces.

KAY-WAX (liquid) and KAY-WAX Paste—Floor waxes.

TRAZATITE—A terrazzo sealer and finish.

CRAYONS, WATER COLORS, PENCILS, INKS, PASTES and other OLD FAITHFUL PRODUCTS.

## *KAYSAN—THE PERFECT FINISH FOR EVERY HARD-SERVICE CONDITION

KAYSAN is manufactured by the makers of the first emulsified, penetrating varnish developed for heavy-duty, hard-service floors.

### Kaysan Has All These Remarkable Qualities

*Brings out the full beauty of the grain* to a remarkable degree.

*Needs never be refinished,* but can be repolished with one application of KAYSAN as often as wear requires.

*Will not show laps* but can be applied to traffic lanes without resanding and refinishing the entire floor.

*Dries bone dry* and may be polished by friction.

*Withstanas the hardest usage.*

*Easily cleaned*—reduces maintenance to a minimum.

*Reduces time and labor* to minimum as it sets up quickly enough so *second application can be put on about two hours after the first.* In the case of a third application, *this third application can also be put on about two hours after the second.*




It is a very durable finish which does not *water spot, crack or scale off, gather dirt like oil, scratch or mar, need wet scrubbing, nor increase the fire hazard.* It *applies easily, seals the wood, prevents slipping, gives a lustrous finish* and *takes hard wear.*

### Cost of Application

The use of KAYSAN does away with the necessity of a stain coat and a shellac coat. This, plus its ease of application and minimum cost of maintenance, makes cost of finishing with KAYSAN very economical.

### Covering Capacity

Under average conditions, 1 gallon of KAYSAN finishes on oak, approximately 300 sq. ft. with three applications; on maple, 400 sq. ft. with two applications.

### Important Institutions Endorse Kaysan

The Maple Flooring Manufacturers Association has reported that, after complete tests, KAYSAN meets every requirement of their November 16, 1936, specifications as a finish for maple flooring. The Masonite Corporation recommends KAYSAN for Masonite cushion flooring.

## EASE OF MAINTENANCE—AN IMPORTANT KAYSAN FEATURE

**General**—The wood may be cleaned with a damp cloth and, after it is dry, be given a light polish application of KAYSAN. Allow to dry thoroughly. Then polish.

**Residence**—Floors not receiving hard wear may be easily maintained by regular sweepings with a stiff broom and an occasional mopping with a dustless mop. Do not use such a mop without afterwards using the broom.

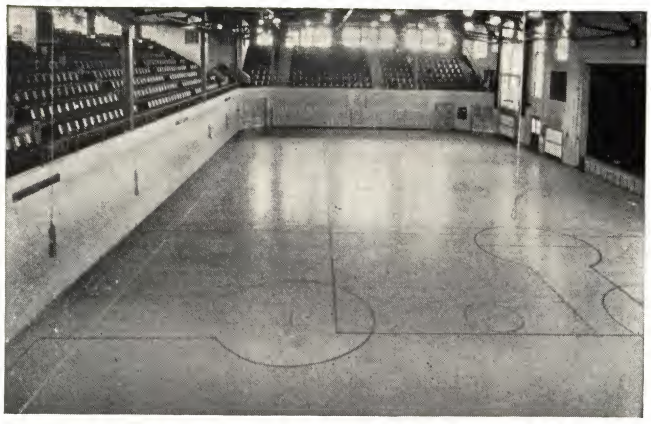
**Housecleaning Time**—It is well to give the floors an additional application of KAYSAN, using the material as a polish and applying with a cloth and wiping dry with the grain at once.

**Traffic Lanes and Worn Spots**—Buff the spots with No. 1 or No. 2 steel wool until the wood is smooth and then apply KAYSAN as a polish with a cloth.

**Hard Service Floors**—*Such as gymnasiums, etc.*—Hard service floors should be kept clean by the use of a stiff broom. Dustless mops may be used and the weekly use of sweeping compounds has been found advantageous. After the use of either the dustless mop or the sweeping compound, the floor should be swept with a broom. Do not scrub these floors with water and scrubbing compounds. When scrubbing seems necessary, scrub with steel wool under a weighted mop. Water is very injurious to wood floors of any kind or any finish.

Floors receiving hard wear should have a vigorous buffing with steel wool and an additional application of KAYSAN once or twice a year, according to the amount of wear or the appearance desired. When only spots or traffic lanes show wear, these spots alone will need treatment.

**Woodwork**—Water is not needed or advised for cleaning the trim. Use a very light application of KAYSAN as a polish.



*A typical High School Gym Floor finished and maintained year after year with Kaysan*



*A beautiful Block-on-End Indianapolis Bakery Floor recently finished with Kaysan (Indianapolis)*

## *KAYSAN IS RECOMMENDED BY ITS MAKERS WITHOUT RESERVATION

KAYSAN is widely used for schools, stores, factories, offices, clubs, hotels, public buildings, apartment houses and similar types of buildings where floors receive excessive wear but must be attractive in appearance.

## SPECIFICATIONS

**(1) Trim**—*Paneling, Fixtures and Furniture*—Three applications (or two, depending on the type of wood to be finished) of KAYSAN, made by THE AMERICAN CRAYON COMPANY of Sandusky, Ohio, shall be made two hours apart as directed by the manufacturer. Second and third applications shall be buffed smooth and all residue removed by the use of fine steel wool (No. 1 or No. 0). KAYSAN for the first application may be tinted as selected by the architect, using only colors ground in pure linseed oil. If water or acid stains are used, they should be applied separately and allowed to thoroughly dry before the KAYSAN is applied. Finished sample shall be submitted and approved by the architect before proceeding with the work.

**(2) Floors**—*Dance, Residence, Office, Auditorium, Department Store, Dormitory Floors and, in general, where a Smooth, Waxlike Finish is Desired*—Three applications (or two, depending on the type of wood to be finished) of KAYSAN, made by THE AMERICAN CRAYON COMPANY of Sandusky, Ohio, shall be made two hours apart as directed by the manufacturer. Second and third applicatitotns shall be buffed smooth and all residue removed by the use of No. 1 steel wool and a weighted mop. KAYSAN for the first application may be tinted as selected by the architect, using only colors ground in pure linseed oil. If water or acid stains are used, they should be applied separately and allowed to thoroughly dry before the KAYSAN is applied. Finished sample shall be submitted and approved by the architect before proceeding with the work.

**(3) Floors**—*School, Gymnasium, Armory or Other Hard Service Floors where Beauty is not the First Requisite*—Three applications (or two, depending on the type of wood to be finished) of KAYSAN, made by THE AMERICAN CRAYON COMPANY of Sandusky, Ohio, shall be made two hours apart as directed by the manufacturer. Second and third applications shall be buffed smooth and all residue removed by the use of No. 2 steel wool and a weighted mop. KAYSAN for the first application may be tinted as selected by the architect, using only colors ground in pure linseed oil. If water or acid stains are used, they should be applied separately and allowed to thoroughly dry before the KAYSAN is applied. Finished sample shall be submitted and approved by the architect before proceeding with the work.

**(4) Backcoating**—*Trim or Flooring*—One application of KAYSAN, made by THE AMERICAN CRAYON COMPANY of Sandusky, Ohio, shall be flowed on all unexposed back surfaces of trim and floors.

**(5) Undercoating**—*For Paint, Varnish or Other Finishes*—Two (or one) applications of KAYSAN, made by THE AMERICAN CRAYON COMPANY of Sandusky, Ohio, are to be made to all wood work to be finished with paint, enamel or varnish, as hereinafter directed. Before applying the finishing coat of paint, enamel or varnish, the wood is to be buffed with steel wool or sandpaper.

## *FILTITE—A SEALER AND FINISH FOR CEMENT AND SIMILAR SURFACES

Filtite does not enter into the structure of the cement, but into the pores. It fills the pores, binds the integral parts of the cement together, preserves, toughens and prevents dusting, improves the appearance and at the same time seals the cement against the penetration of grease, oils and many stains. It is easily, quickly and economically applied.

FILTITE works splendidly not only as a sealer of cement, but the second application acts as a finish. However, if a painted surface is desired, a good cement paint may be used over one application of FILTITE and found to wear much longer than if applied on an untreated cement surface.




Concrete floors are by nature porous. The friction of traffic breaks down the pores of the surface, causing a fine dust and gradual disintegration. The problem of overcoming this condition is met by Filtite.

### Covering Capacity

The amount of Filtite needed to thoroughly fill and finish a concrete floor is dependent upon the condition of the floor itself. If the cement is new and well-troweled, a gallon of Filtite will cover approximately 250 sq. ft. with one application and proportionately more according to the condition of work; on old and very porous cement, about 150 to 200 sq. ft. per gallon.

## *PAYONS—PAINTING CRAYONS

Draw with PAYONS—then brush clear water over portions for quick mass effects. For outline work also and brilliant coloring in preliminary sketches, architectural renderings, and final presentations.

*Reg. U. S. Pat. Off.

*Write for full factual folders*

# E. L. BRUCE CO.

## Manufacturers of Special Finishes for Hardwood Floors

EXECUTIVE OFFICES AND CHEMICAL PLANT

MEMPHIS, TENN.

(For Complete Catalog on Bruce Hardwood Floorings and Lumber Products, see File Index)

### EXPERIENCE

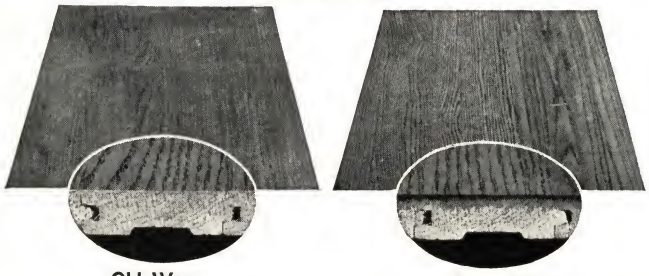
The beauty and durability of floors depends on the method of finishing as well as on the quality of the flooring. Therefore, one of the world's largest makers of hardwood floorings, E. L. Bruce Co., has a natural interest in the proper finishing of floors.

Bruce FLOOR FINISHES Approved by NOFMA and MFMA

After years of research, experimentation and observation, this company has developed the Bruce Penetrating Seal Method of finishing wood floors. This superior method has now been successfully used and tested for over five years on floors of all types throughout the country. The materials involved are the same that have proved so satisfactory in the prefinishing of Bruce Finished Hardwood Blocks (see File Index).

"Bruce-Way" Floor Finishing has been approved by the National Oak Flooring Manufacturers' Association and the Maple Flooring Manufacturers' Association. Neither of these associations approve any type of finish other than a penetrating seal.

### ADVANTAGES



**Old Way**

Varnish, lacquer or shellac form a film or surface coat on top the wood. Friction causes this to scratch, scale, dust and wear off—leaving the floor unprotected. Dirt, stains, etc., get into the wood and floor cannot be kept in good condition. Worn spots necessitate complete refinishing, or laps will show. A surface finish is hard and slippery.

**Bruce Way**

Bruce Floor Finish penetrates the wood and sets up a tough, flexible seal which resists scratching and marring. The surface is sealed, and dirt, stains, etc., can easily be removed from floor. Spots worn where traffic is unusually heavy can be retouched without showing laps. This type of finishing preserves the wood and enhances its natural beauty.

### BRIEF SPECIFICATIONS

#### Materials and Work Included

The floors in the following areas shall be finished with Bruce Floor Finish (and Bruce Tuf-Lustre) as manufactured by E. L. Bruce Co., Memphis, Tenn., in strict accordance with their directions: *(Here list and locate areas.)*

#### Preparatory

Sanding, filling and other preparatory work is so important to the success of the subsequent finishing that no attempt should be made to summarize these operations. "How to Finish and Maintain Wood Floors," available from E. L. Bruce Co., Memphis, Tenn., contains detailed recommendations applying to various types of floors.

#### Application

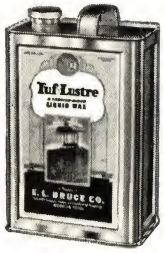
On floors in large areas—such as stores, schools, ballrooms, gymnasiums, public buildings, etc.—where a waxed surface is not desired, instruct that floors be finished with Bruce Floor Finish in strict accordance with manufacturers' detailed directions applying to the particular type of floor. In the case of residence, office or apartment floors, instruct that floor be finished with Bruce Floor Finish and afterwards waxed with Bruce Tuf-Lustre—according to manufacturers' instructions.

### BRUCE FLOOR FINISH




A combination of vegetable oils, varnish gums, and quick-acting solvents which give penetration, durability and resistance to moisture. Does not darken the wood and forms a non-slippery surface. Covers approximately 800 sq. ft. per gallon one coat, and only one coat is needed in most instances.

### BRUCE TUF-LUSTRE




A varnish-aided liquid wax which acts as a preservative and polish when applied over floor finish or varnish. It dries quickly, does not become brittle and tests show that it has three times the durability of regular floor wax. Gives a non-slippery surface which may be readily cleaned by dry sweeping. Covers 1,000 sq. ft. per gallon first coat and 2000 sq. ft. for second coat.

### BRUCE FLOOR POLISH




A self-polishing liquid emulsion of Carnauba Wax. It is impervious to oil and grease and emphasizes the color and grain in the finished floor. Requires no polishing to produce a lustre; dries hard in twenty minutes. Recommended also for linoleum, asphalt tile, and other composition floorings. Covers 1000 sq. ft. per gallon.

### BRUCE FLOOR CLEANER




A liquid cleaner which will remove wax and dirt on a floor without injuring the finish beneath. Dries rapidly and leaves an extremely thin film of wax on the surface. To be used on wood surfaces only, and not on rubber tile, linoleum, etc. Easy to use. Covers 1500 sq. ft. per gallon.



*In the Chicago Post Office over 2,000,000 sq. ft. of Oak and Maple Flooring (in offices and working areas) were finished with Bruce Floor Finishes.*

# THE C. B. DOLGE CO.

Manufacturers of Floor Maintenance Products

MAIN OFFICE AND LABORATORIES

WESTPORT, CONN.

## DOLCOROCK

*A Finish for Wood, Concrete and Composition Floors*




Dolcorock is used in thousands of buildings on wood, concrete and various types of composition floors on account of its toughness, extreme resistance to heat generated by friction and its fine appearance.

Dolcorock is unaffected by water, oil, alkali and ordinary acid, and is recommended for its ability to withstand the grinding action of soles and heels.

In gymnasiums, the sudden start-stop-start comes continuously, punishing friction. Particles of rubber are fused into the ordinary finish, causing those black smudges known as rubber burns. Dolcorock will show no rubber burns.

It is also unaffected by hot or cold water and can be used for shower rooms or where water is apt to accumulate.

**Color**—The material color of Dolcorock is pale amber. This can be modified to any desired shade of any standard color by adding Dolco Pigment Base.

**How to Apply**—Dolcorock is easy to apply with lamb-wool applicator, fibre mop, cheesecloth pad or brush. On new wood floors 1 gal. covers on an average of 650 sq. ft.—more on maple, less on open grained wood. On troweled cement, coverage averages 450 sq. ft. to the gallon—two coats being sufficient.

**Package**—Shipped in 55, 30, 15, 5 and 1-gal. containers.

**Dolco Pigment Base**—Shipped in 5-gal. drums and 1-gal. cans.

## DOLCOVAR

*A Concrete, Wood or Magnesite Floor Seal that Prevents Dusting or Discoloration*




Dolcovar is an attractive floor finish, that penetrates the pores of concrete, wood, and magnesite floors and seals them, and prevents formation of this dust. Dolcovar is easily applied with lamb-wool applicator, fibre mop, cheesecloth pad, or brush.

Being extremely porous, unsealed concrete and magnesite floors readily absorb grease, ink and other discoloring substances. If neglected, they soon become soiled all the way through.

Dolcovar helps prevent such substances from discoloring floors. This surface is easily kept clean.

Dolcovar also helps protect the traffic lanes from wear.

Wherever traffic and moisture conditions are normal — wherever a high surface coat is inadvisable—this elastic, durable finish is recommended. Dolcovar is ideal for floors of maple, pine, oak and other woods. It far outlasts varnishes.

Dolcovar is highly recommended for sealing cork prior to waxing. It forms a base which grips the wax and makes subsequent maintenance easier.

**Package**—Shipped in 55, 30, 15, 10 and 5-gal. drums.

## DOLCOWAX

*For Linoleum, Cork, Rubber, Mastic, Composition and Wood Floors*




Dolcowax is recommended for all floors where a lustrous, easy-to-maintain wax surface is wanted. It contains no turpentine, benzine, or other solvent which might injure rubber floors. It contains no oily float, unemulsified wax or sediment. Will not streak white and the tendency to solidify in containers which have been left open, (typical of water-bound wax), is very much mitigated in this product.

**How to Apply** — Dolcowax is not slippery. Spread it on with the lamb-wool applicator which we supply. Do not polish. In twenty minutes the floor is ready for traffic.

**On Linoleum**—New linoleum and cork floors should be cleaned with Dolco Pine Cleaner or Briteway Liquid Cleaner, promptly on installation. The Dolcowax should be spread on. Usually, it will be ready for traffic in twenty minutes. Where the floor is very porous, a second coat of Dolcowax should go on 24 hours after the first.

While Dolcowax may be put directly on linoleum, it is best to seal with Dolcovar directly after cleaning. This finish penetrates the pores, grips the wax, makes subsequent maintenance easier.

**On Wood**—Dolcowax is ideal for wood floors, but all traces of solvent (old-type) wax should first be removed by scrubbing with naphtha, followed by Ban, and a rinse with plain water.

**On Rubber**—Ban-X or Ban, Dolge cleaning materials are recommended for cleaning on rubber floors.

Then, Dolcowax should be applied for a glossy, non-skid surface. One gallon of this material, put on with a lamb-wool applicator, will cover 800 sq. ft. of rubber on the average—will dry in twenty minutes.

To restore old rubber floors, treat with Ban according to instructions which will be sent on request; then apply Dolcowax.

**Package**—Shipped in 55, 30, 15, 10 and 5-gal. drums. Lamb-wool applicator is supplied free.

*Write for Specifications on Different Types of Flooring*

MEMORANDA

ESTABLISHED 1906

# FINNELL SYSTEM, INCORPORATED

## Manufacturers of Waxing, Polishing and Scrubbing Machinery

ELKHART, INDIANA

BRANCH OFFICES

AKRON, OHIO
ATLANTA, GA.
BALTIMORE, MD.
BATON ROUGE, LA.
BOSTON, MASS.
BUFFALO, N. Y.
CHARLOTTE, N. C.
CHICAGO, ILL.
CINCINNATI, OHIO
CLEVELAND, OHIO
CUMBERLAND, MD.
DALLAS, TEX.
DENVER, COLO.
DES MOINES, IOWA
DETROIT, MICH.
DOWAGIAC, MICH.
ELKHART, IND.
EL PASO, TEX.
EVANSVILLE, IND.
HANNIBAL, MO.
HOUSTON, TEX.
HUTCHINSON, KAN.
INDIANAPOLIS, IND.
IRVINGTON, N. J.
KANSAS CITY, MO.
KNOXVILLE, TENN.
LOS ANGELES, CALIF.
MILWAUKEE, WIS.
MINNEAPOLIS, MINN.
NEWARK, N. J.
NEW ORLEANS, LA.
NEW YORK, N. Y.
PALO ALTO, CALIF.
PEORIA, ILL.
PHILADELPHIA, PA.
PITTSBURGH, PA.
PROVIDENCE, R. I.
RICHMOND, VA.
SAN FRANCISCO, CALIF.
SCRANTON, PA.
SEATTLE, WASH.
SPOKANE, WASH.
SPRINGFIELD, MASS.
STAMFORD, CONN.
ST. LOUIS, MO.
TROY, N. Y.
TULSA, OKLA.
WASHINGTON, D. C.

## FINNELL MACHINES

FINNELL SYSTEM, INCORPORATED, offers, we believe, the only complete line of Electric Floor Machines, Mop Trucks, Sealers, Waxes and Cleaners for effectively and economically maintaining and treating all kinds and types of floors and floor coverings in all classes of buildings.

Floors are subjected to more use and abuse than any other part of a building. Representing large investments, they are expected to serve satisfactorily for a varying period of years. So, their preservation, sanitation and maintenance is a problem worth careful consideration.

The return on the investment in any floor will depend to a large extent upon the way it is maintained. The selection and use of proper materials and equipment is of paramount importance. A new floor can be ruined easily by employing the wrong method of cleaning and subsequent treatment.

This company and its personnel have been associated with floor care and floor treatments for thirty-one years. The many Finnell products developed during this period meet all traffic requirements. They provide the right cleaning and protection facilities for each individual job. The Finnell System of maintenance restores worn, dingy floors to their original clean and attractive appearance. New floors treated and cared for in the Finnell way, will endure almost indefinitely.



213 Power

There are no two floors or traffic problems exactly alike. The same conditions applying to an office building will not be the same in a school or hospital. Therefore, each area requires a specific method of treatment and maintenance.

Architects are invited to take advantage of the distinctive and personal service offered through Finnell branch offices and representatives. A Finnell Engineer nearby or the Factory Staff at Elkhart is always available for service and will gladly render assistance in preparation of details, completing surveys, submitting recommendations and samples, etc. Thirty-one years' accumulated experience in treating and maintaining floors is at the disposal of all upon inquiry.

## FINNELL 200 SERIES

In skyscraper office buildings where corridors must be scrubbed on definite schedules to maintain the interior cleanliness so vital to management and rentals; in department stores where thousands of square feet of floors must be kept scrupulously clean to display merchandise to discriminating buyers; in factories and textile mills with acres of floor space to maintain, to prevent soilage to manufactured goods, to increase production and create better working conditions, the 200 and 90 Series Finnell machines are unsurpassed.

These large type units automatically distribute the proper amount of scouring powder, scrub clean and at the same time remove the dirty water and emulsion from the floor. One operator will cover from 25,000 square feet to 60,000 square feet in 8 hours; twenty times faster than hand scrubbing.

For large areas, specify Finnell. For the proper size machine, consult with the Finnell Engineer or write this office.

Write for 12-page catalogue.

## 100 SERIES

For conditioning, treatment and maintenance work on floors where areas are cut up or congested, or where equipment must be readily portable and flexible in operation—the intermediate types and sizes are used to better advantage.

Such are the requirements of schools, hospitals, banks, bakeries, retail stores and hundreds of other establishments and institutions. The 100 Series Finnell machine is particularly suitable for schools and institutions with permanently fastened seats and desks. This type unit, in the proper size, works around and beneath low set furnishings and fixtures. Then too, it handles as easily as an electric vacuum cleaner and is designed for an interchangeable brush reducing the larger models into small units. Two machines for one—a truly great advantage.



100 Series

## FINNELL WAXES

**Finnell Kote**—A solid wax; produces best wax film possible. Applied hot.

**Liquid Kote**—This product is Finnell Kote in liquid form.

**Cream Kote**—Manufactured from same high quality materials that characterize Finnell Kote and Finnell Liquid Kote.

**Liquid Wax**—Recommended where conditions are such that frequent applications must be made regardless of the wax content.

**Aqua Wax**—A water emulsion carrying an unusually high percentage of genuine No. 1 carnauba.

## FINNELL SEALERS

**Gloss Seal No. 1**—A special finish for gymnasiums, school furniture, desks, seats, church pews, bars, etc.

**Gloss Seal No. 7**—Same as Gloss Seal No. 1 but penetrates more deeply.

**Gloss Seal No. 9**—An ideal preservative and finish for wood, cement, cork, magnesite and linoleum floors.

**Traffic Seal**—This material is a strictly penetrating sealer; excellent for school traffic lanes.

**Finnell Fulfil**—A filler and sealer of the oil and wax type. Recommended for porous wood floors; rejuvenating old linoleums; treating magnesite floors.

## FINNELL CLEANSERS

**Finola**—The original scouring powder; unsurpassed as a scrubbing compound.

**Century Scouring Powder**—A new Finnell product developed to meet the demand for a mild abrasive cleanser.

**Solar Soap Powder**—Leaves less soap deposit than cheaper products containing animal fats. No disagreeable odor.

**Finnell Rubber Cleanser**—Has been endorsed by the Flooring Division of the Rubber Association of America.

## MOP TRUCKS

From the complete line of Finnell Mop Trucks, the proper size and model for each area can be selected. The Finnell Mop Truck furnishes an abundant supply of clean waater at the place where the mopping is in progress and furnishes a means for quickly wringing the mop. A mop shield prevents the mop from dropping into the dirty water when it is being wrung dry.

## 300 SERIES

In the Finnell 300 Series, for use in open areas is a motor weighted brush especially adapted to polishing. Proper weight distribution in relation to thrust and brush ring speed gives a balanced operation—virtually a fingertip control. All machines are equipped with heavy rubber bumpers for protection of interior trim and are built to render many years of exacting service.



300 Series

| Machine No. | 100 SERIES | | | | 300 SERIES | |
|---|---|---|---|---|---|---|
| | 111 | 113 | 115 | 118 | 315 | 319 |
| Brush Ring Diameter | 11 in. | 13 in. | 15 in. | 18 in. | 13 in. | 17½ in. |
| Brush Spread | 11 in. | 14 in. | 16 in. | 19½ in. | 15 in. | 19½ in. |
| Brushes per Set | 3 | 4 | 4 | 5 | ..... | ..... |
| Brush Ring Speed | 230 r.p.m. | 230 r.p.m. | 237 r.p.m. | 237 r.p.m. | 200 r.p.m. | 160 r.p.m. |
| Motor G-E | ¼ hp. | ⅓ hp. | ½ hp. | ¾ hp. | ½ hp. | ¾ hp. |
| Cable B&S Gauge | No. 16 | No. 16 | No. 15 | No. 14 | No. 15 | No. 14 |
| Length | 40 ft. | 40 ft. | 50 ft. | 50 ft. | 50 ft. | 50 ft. |
| Wheels, diameter | 3¾ in. | 3¾ in. | 4¾ in. | 4¾ in. | ..... | ..... |
| Wheels, swing up | ..... | ..... | ..... | ..... | 3¾ in. diam. | 3¾ in. diam. |
| Tires, rubber | Detachable | Detachable | Detachable | Detachable | ..... | ..... |
| Water Tank on handle | 1¾ gals. | 1¾ gals. | 1¾ gals. | 1¾ gals. | ..... | ..... |
| Water Tank on machine | ..... | ..... | 3½ gals. | 3½ gals. | ..... | ..... |
| Handle | ..... | ..... | ..... | ..... | Adjustable | Adjustable |
| Net Weight with Water Tank | 1¾ gal. tank 59½ lbs. | 1¾ gal. tank 66½ lbs. | 1¾ gal. tank 95½ lbs. 3½ gal. tank 98 lbs. | 1¾ gal. tank 112½ lbs. 3½ gal. tank 115 lbs. | ..... ..... ..... ..... | ..... ..... ..... ..... |
| Net Weight without Tank | 55 lbs. | 62 lbs. | 91 lbs. | 108 lbs. | 95 lbs. | 130 lbs. |

# HUNTINGTON LABORATORIES, INC.

DENVER, COLO.,
999 So. Logan Street

GENERAL OFFICES AND FACTORY
HUNTINGTON, INDIANA

TORONTO, ONT.,
72-76 Duchess Street

## A NON-SLIPPERY SEAL AND FINISH MADE EXPRESSLY FOR GYMNASIUM FLOORS

### The Product

Seal-O-San is a penetrating liquid sealer, especially designed for gymnasium floors. The free-flowing compound fills and hardens the wood fibers at the surface of the floor — completely sealing all the cells. This sealing action prevents grease, dirt, stains or rubber burns from penetrating.

A Seal-O-San finished floor can be used within 12 hours after application. The surface produced is not only beautiful and long-wearing, but also absolutely slip-proof. No other floor finish offers a more practical, more economical method for finishing the gymnasium floor.

**SEAL-O-SAN**
**PRODUCES THE PERFECT PLAYING SURFACE**

### Its Acceptance

Since its perfection and introduction more than 12 years ago, Seal-O-San has been tested and approved on more than 4,000 gymnasium floors, squash courts, and handball courts. Today, it receives the unqualified endorsement of coaches, physical instructors and players. In every state in the union, in schools and universities both large and small, Seal-O-San floors are proving their fitness to withstand hard usage. In Indiana alone—where basketball has long been the leading sport—more than 90% of all gymnasium floors are finished with Seal-O-San.

## SIX REASONS WHY YOU SHOULD SPECIFY PENETRATING SEAL-O-SAN

**Positively Non-slippery**—Seal-O-San's unique feature is its ability to make gymnasium floors non-slippery. The permanent, penetrating seal is flexible without tackiness, making the grip between floor and shoe positive. Quick stops and sudden turns are permitted without danger of skid or fall.

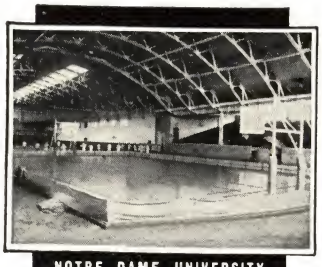
**Economically Applied**—Lower decorating bids are certain when you specify Seal-O-San. Applied with a lamb's wool mop, Seal-O-San offers tremendous labor savings over costly hand brushed finishes. Seal-O-San's coverage is generous, a two-coat job covers approximately 250 sq. ft. to the gallon.

**Easily Maintained**—To keep a Seal-O-San floor in perfect condition, an occasional dry cleaning with a heavy dustless mop is all that is needed. Because dirt and rubber burns remain on the surface, costly scrubbing is never necessary.

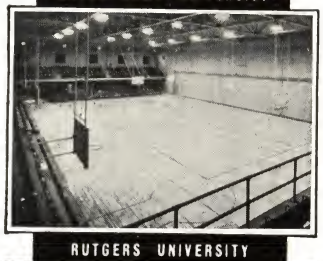
**A Beautiful Finish**—When you specify Seal-O-San, you get a satiny, non-glare finish, as smooth and beautiful as a fine table top. Its natural golden sheen brings out the full beauty of the wood and harmonizes with any color scheme.

**Longer Wearing**—When Seal-O-San penetrates the wood, it forms a wear-resisting seal that withstands the punishment of countless gymnasium activities. This seal is flexible; it will not chip or crack, or soften under friction; a sprinkling of flaked borax makes it quickly ready for dancing.

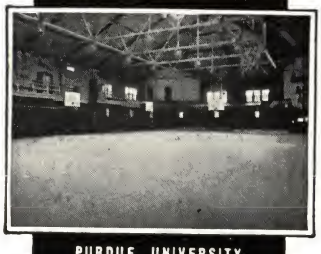
**An Ideal Reconditioner for Old Floors**—Old or worn floors can be made to look like new with a Seal-O-San finish. Even oil soaked floors respond to its treatment. Simply sand the dirty surface, then apply Seal-O-San. The oil will be locked in for all time and can never rise to the surface.



NOTRE DAME UNIVERSITY



RUTGERS UNIVERSITY



PURDUE UNIVERSITY

## OUTLINE SPECIFICATIONS

### Materials and Workmanship

All gymnasium floors, hand-ball court and squash-court floors shall be finished with Seal-O-San Non-slippery Gymnasium Floor Finish as manufactured by the HUNTINGTON LABORATORIES, INC., of Huntington, Indiana, and shall be applied strictly in accordance with their directions.

### Preparation

Sanding of a new wood floor that is to be treated with Seal-O-San Floor Finish shall begin with No. 3 sandpaper, going over the entire floor. Finish with a fine grade of sandpaper. The sanding machine shall have a felt drum covering to prevent "washing out" or dishing of the floor boards.

Floors previously fiinished with varnish or seal shall first be sanded with No. 3 Open Coat paper, then finished with No. ½ paper.

All wood dust shall be removed from the floor before applying Seal-O-San.

### Application

Immediately after sanding, spread Seal-O-San over the floor, along the grain of the wood, in a thin uniform coat. Allow first coat to dry then burnish lightly with No. 2 steel wool. Basketball court lines shall be painted when first coat is dry. Then apply second coat of Seal-O-San and burnish. When applying Seal-O-San in cold or damp weather, keep doors and windows of the gymnasium closed and heat turned on.

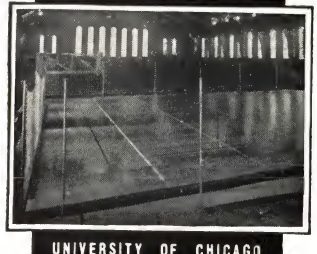
*Prices, samples, and a complete list of installations will be furnished on request. Our trained consultants, strategically located in all sections of the country, are at your service.*



UNIVERSITY OF MICHIGAN



UNIVERSITY OF ILLINOIS



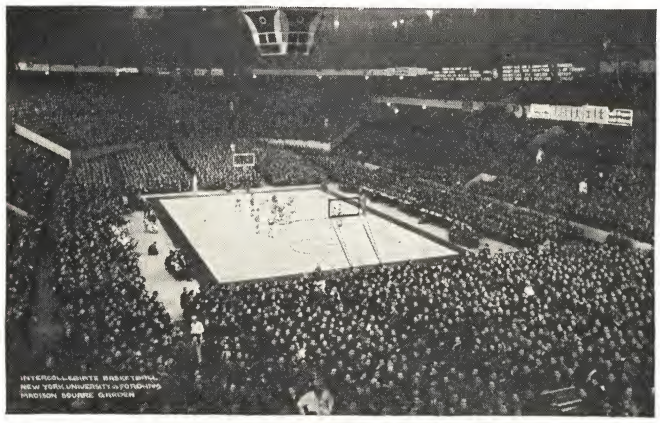
UNIVERSITY OF CHICAGO

# HILLYARD SALES COMPANY

DISTRIBUTORS—HILLYARD CHEMICAL CO.

CABLE ADDRESS
"Hilco"

EXECUTIVE OFFICES
ST. JOSEPH, MO.
BRANCH OFFICES AND WAREHOUSES IN PRINCIPAL CITIES



Madison Square Garden—Hillyard's Wood Seal Primer and Super Gym Finish

## WOOD FLOORS

*Classrooms, Corridors, Dance Floors, Etc.*

### Treatment with Penetrating Seal and Wax

**Penetrating Seal No. 21**—Thoroughly fills and seals wood floors against damage by stains, grease or dirt. It fills the pores of the wood to a depth of ¼ in., and does not build up a surface gloss, but leaves a dull, flat finish which does not show traffic marks.

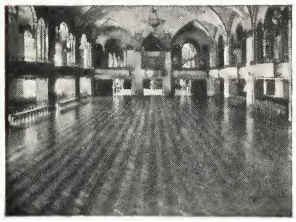
Two coats of Seal and two coats of *Hil-Brite Self-Polishing Wax* produce an ideal floor for classrooms.

### Specification No. 1—Treatment for Classrooms, Corridors, Dance Floors, etc.

**(1) Close Grained Woods**—After floor has been sanded to proper smoothness, the surface shall be swept clean and then rubbed with cloths wrung out of naphtha and fastened on the block of a large push broom to remove all dust, sand and grease. Immediately on clean, dry floor apply two coats of *Hillyard's Penetrating Seal No. 21,* allowing at least 24 hours to elapse between coats. Each coat of Penetrating Seal No. 21, when dry, shall be steel-wooled, using No. 3 steel-wool brushes on an electric polishing machine (such as Hillyard's Scrubbing and Polishing Machine).

**(2) Open Grained Woods—*Oak***—Immediately after sanding and cleaning, floor shall be filled with *Hillyard's Paste Wood Filler,* after which one coat of *Penetrating Seal No.* 21 shall be applied and steel-wooled after drying 24 hours.

**(3) Wax Finish**—All areas shall be swept free of dust and dirt, and two coats of *Hil-Brite Self-Polishing Wax* shall be applied according to directions to be furnished by the manufacturer, HILLYARD CHEMICAL COMPANY, St. Joseph, Missouri.



Ball Room, Statler Hotel, Boston, Mass.

### Free—New Catalog

A New Catalog and Maintenance Manual will be sent on request, containing valuable information and suggestions regarding Floor Finishes and Building Maintenance.

## GYMNASIUM FLOORS—(WOOD)

### Treatment with Super Gym Finish

Hillyard's Floor Finishes enjoy a nationwide popularity backed by more than a quarter century of practical experience. Thousands of gymnasiums throughout the United States are using *Hillyard's Super Gym Finish*—a high quality bakelite finish that is lustrous, long wearing, elastic and non-skid.

The price of a gymnasium floor is measured not by first cost, but by average expense over a period of years.

### Specification No. 2—Treatment for Gym Floors

Floor shall be sanded to a smooth surface, using No. ½ or No. 0 sandpaper for finishing. Immediately after sanding, floors shall be swept clean, removing all dust and dirt before application of the floor finish.

*First Coat*: *Hillyard's Wood Primer,* spread evenly and rubbed or brushed thoroughly. All markings for athletic games shall be painted on top of this prime coat (the layout to be exact and to be approved by architect or proper school authority).

*Second and Third Coats: Hillyard's Super Gym Finish.* Twenty-four hours shall be allowed for all coats to dry properly. (The Primer coat and first coat of Finish shall be steel-wooled.) Also, before the application of Primer and Finish the surface shall be rubbed with naphtha cloths as in Specification No. 1.

*Note:* A diagram of official gymnasium markings will be furnished on request by HILLYARD SALES COMPANY, St. Joseph, Mo.

## TERRAZZO

### Treatment with Terrazzine Process

Endorsed by the National Terrazzo and Mosaic Association, and recommended by prominent architects and terrazzo contractors. A terrazzo floor properly installed requires slow curing.

*Terrazzine*—by sealing the moisture into the floor—retards the curing process from 15 to 20 days, thus insuring uniform and thorough hardening.

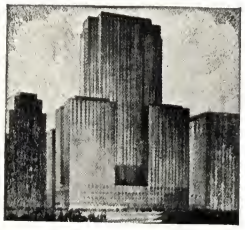
*Terrazzine* prevents pitting, dusting and checking, brings out the rich colors in the floor, seals against stains, produces a brilliant non-slippery finish when polished.

### Specification No. 3—Terrazzine Treatment

Immediately after the Terrazzo has been "rough stoned," apply a liberal coating of *Terrazzine* according to directions furnished by the manufacturer, HILLYARD CHEMICAL COMPANY, St. Joseph, Mo.

This treatment shall be allowed to remain on the floor for at least 15 days and until other trades have completed their work. The surplus Terrazzine shall then be removed by "fine stoning" the floor until a smooth, finished surface is produced.

All grinding dust and dirt shall be removed by the contractor by thorough washing with such cleaning agents as are recommended by the manufacturer. In no case shall harsh abrasives or caustic soap powder be used in cleaning this terrazzo floor.



New Marshall Field Building, Chicago, Ill.
Treated with Terrazzine Process

*An Operating Nation-wide Service of Floor Maintenance Engineers*

# HIGHEST QUALITY FLOOR FINISHES AND TREATMENTS

## Thirty Years of Dependable Service

*A nation-wide organization that provides personal supervision of the new job, also proper schooling in correct maintenance of the finished job*

## TILE

### Treatment with Shine-All and Onex-Seal

*Shine-All* (a neutral Chemical Cleaner) not only thoroughly cleans all ceramic, faience and vitreous tile, but leaves a light, protective film which serves to protect the face of the tile and produces a brilliant sheen.

Shine-All contains no abrasives nor caustic chemicals; hence does not injure nor discolor tile surfaces, nor cause pitting or checking. Regular use of Shine-All simplifies the cleaning process, cuts cleaning costs and insures lasting beauty of tile floors.

### Specification No. 4—Treatment for Tile

**Quarry Tile**—Just before final inspection, Quarry Tile floor shall be thoroughly cleaned with steel wool, using a solution consisting of 1 part *Shine-All neutral Chemical Cleaner* to 7 parts warm water. After floor becomes thoroughly dry, a treatment of *Hillyard's Onex-Seal Finish* shall be applied, strictly according to directions as furnished by the manufacturer, HILLYARD CHEMICAL COMPANY, St. Joseph, Mo.

**Ceramic, Faience and Vitreous Tile**—Just prior to final inspection, all ceramic, faience and vitreous tile areas shall be cleaned by scrubbing with a solution consisting of 1 part *Shine-All neutral Chemical Cleaner* and 7 parts water. (This strong solution for first cleaning only.) Do not rinse after scrubbing. When floor becomes thoroughly dry, buff with electric polishing machine.

## ASPHALT TILE

### Treatment with Hil-Brite Self-Polishing Wax

Recommended by foremost asphalt tile manufacturers. *Hil-Brite* penetrates and seals the floor against grease and dirt, forms a tough, protective coating, provides a brilliant finish without buffing, dries bright in 20 to 30 minutes, does not water spot, is not slippery.

### Specification No. 5—Treatment for Asphalt Tile

(1) Immediately after Asphalt Tile floor has been laid, and prior to any traffic, all excess cement shall be removed and floor swept clean. A solution consisting of equal parts of warm water and *Shine-All neutral Cleaner* shall then be spread on floor and allowed to dry.

(2) Just before occupancy of building, floor shall be scrubbed with a solution of 7 parts warm water and 1 part *Shine-All.* Then rinse thoroughly with clear water.

(3) When floor is completely dry, apply two coats of *Hil-Brite Self-Polishing Wax* according to directions to be furnished by the manufacturer, HILLYARD CHEMICAL COMPANY, St. Joseph, Mo.

(4) If wax finish is not desired, apply evenly on clean, dry floor after operation 2 a solution of 40% *Shine-All* and 60% water, and allow to dry. Then buff with electric polishing machine.

## LINOLEUM, LINOTILE AND RUBBER TILE

### Treatment with Hil-Brite Self-Polishing Wax

Leading manufacturers of linoleum, linotile and rubber tile have endorsed *Hil-Brite* because it is easily applied, dries quickly, produces a beautiful finish without buffing, withstands traffic to a remarkable degree and seals the floor. It does not water spot.

### Specification No. 6—Treatment for Linoleum, Etc.

(1) Immediately after completion of floor thoroughly clean with *Shine-All neutral Cleaner* (1 part Shine-All to 7 parts warm water). Then rinse and allow to dry.

(2) On the clean, dry floor apply two coats of *Hil-Brite Self-Polishing Wax* according to directions to be furnished by manufacturer, HILLYARD CHEMICAL COMPANY, St. Joseph, Mo.

## "HILTONIAN" STEEL-WOOLING MACHINE



This powerful, high speed (drum-type) Steel Wooling Machine fully meets needs of schools, stores, bakeries, hospitals and public buildings where traffic conditions are most severe. Correct mechanical principles and rugged construction fit the Hiltonian Steel Wooling Machine for heaviest work or for fine polishing.

**Special Features**—¾ hp. G-E motor (developing 2 hp.). Buffing drum—10-in. width—speed 950 r.p.m. Lubricated for life of machine. Frame—welded steel, one piece. Built-in dust collector.

*Full particulars sent on request.*

---

## "HILTONIAN 8" FLOOR SANDING MACHINE

With its ease of operation and handling, the *"Hiltonian 8"* stands "out in front" in the field of high production sanders. It is compact and light in weight, yet nothing is sacrificed in cutting efficiency. The sanding drum, driven by the 1-hp. heavy duty motor, travels at a surface speed of 3534 r.p.m.




The mechanical principle of the "Hiltonian 8" is unique and proven correct by rigid tests—while the improved spiral wrap of the sandpaper is a decided advantage. There is only one fair test of floor sander efficiency, i.e., *the weight of material removed in a given length of time.* Tests of the "Hiltonian 8" against others have shown as follows:

*40% less investment*
*60% less weight*
*33⅓% less current*
*20% more production*

Write for particulars.

## "HILTONIAN LOWBOY" SCRUBBING AND WAXING MACHINES

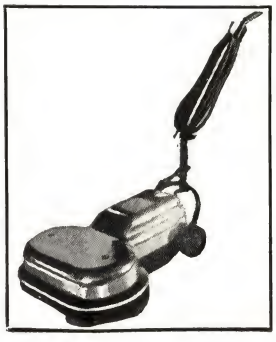
Leading the field in utility, efficiency and economy, the *"Hiltonian Lowboy"* is a favorite with all users. Speed, power and weight are co-ordinated to produce the utmost in service at a minimum of expense and effort. Correct mechanical principles and low, compact construction combine to produce a machine that is silent in operation, perfectly balanced, easy to handle, steady and straight running.

The "Hiltonian Lowboy," being a "multiple" brush machine, does a thorough job of scrubbing, waxing or polishing in less than ordinary time.

Furnished in four sizes: 21-in. Lowboy for heavy duty, 16- and 15-in. Lowboys for medium work, and 12-in. Lowboy for small jobs.

"Hiltonian Lowboys" *sell for less* and *do more.*

Write for descriptive literature and specifications.



# S. C. JOHNSON & SON, INC.

MAIN OFFICE AND FACTORY
RACINE, WISCONSIN

BRANCHES CARRYING COMPLETE STOCKS

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| ATLANTA | CLEVELAND | KANSAS CITY | NEW YORK CITY | SAN FRANCISCO |
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| CINCINNATI | DETROIT | MILWAUKEE | PITTSBURGH | SEATTLE |

## JOHNSON'S FLOOR FINISHES

### For Schools, Hospitals, Apartments, Office Buildings, Stores, Etc.

### For Durability—Ease of Maintenance—Maximum Beauty

JOHNSON'S QUICK DRYING PASTE WOOD FILLER—To fill the myriad pores of oak or other open-grain wood to give a smooth, even foundation for the finish.

JOHNSON'S PENETRATING FLOOR SEALER—Seals the surface and supplies the necessary body for the finish coats. Gives the greatest amount of protection without a thick, scratchable body. The protective film lies in the wood or linoleum flooring, not *on* it.

JOHNSON'S TRAFFIC WAX (Paste)—Imparts maximum beauty. Nothing approaches the exquisite lustre of polished wax which stays beautiful because unsightly scratches and heel marks rub out. It makes cleaning easy. Dust simply wipes off the waxed surface—eliminates practically all scrubbing. To simplify upkeep, traffic spots can be polished or re-waxed as needed without going over entire floor. Protects finish and greatly reduces costly refinishing.

JOHNSON'S NO-BUFF FLOOR FINISH—A liquid finish which requires no buffing or polishing.

## APPLICATION SPECIFICATIONS—WOOD AND LINOLEUM

#### (1) OAK (OR OTHER OPEN-GRAIN WOODS) FILLER

Fill wood with No. 15 Johnson's Quick Drying Paste Wood Filler. Allow the filler to set, but before it has hardened, wipe off (across the grain) any surplus from the surface. Filler shall be of such color as to produce the effect required to match the approved samples. Allow filler to dry 24 hours before sealer is applied.

#### (2) CLEANING OLD LINOLEUM

Clean thoroughly and allow to dry. Use a mild neutral cleaner and rinse. Make certain that all wax is removed.

#### (3) SEALING

***Note:*** *Most linoleum is sealed before it leaves the factory—that is, the upper layers are bound together with a tough film which resists traffic and prevents soil and stain from penetrating. If the seal has not been worn through, sealing may be omitted.*

***Note:*** *All wood floors should be sealed. Oak or other open-grain woods should be first filled as in par. 1. Close-grain woods, such as maple, birch, pine and beech, need no filler.*

Seal floors with 1 coat of Johnson's Penetrating Floor Sealer. Floor Sealer shall be brushed or mopped onto floor in full even coat. After 15 minutes, wipe with clean rag to remove Sealer which has not penetrated—leave no "bright spots." Allow to dry 8-10 hours and apply second coat, if needed, in same manner.

**On Wood**—After last coat has dried for 6 hours, it may be buffed with No. 3 steel wool under a wire brush. This procedure is not necessary but produces a beautiful satiny effect.

#### (4) WAXING

***Note:*** *Either a spirit solvent wax which requires polishing or a self-polishing material can be used.*

**Polishing Wax**—Apply 2 coats of Johnson's Traffic Wax (Paste). Be sure each coat is allowed to dry a half-hour or longer before it is polished and a couple of hours or more allowed between coats. Use a high-speed electric polisher for buffing as it will give a harder, more burnished effect than hand methods.

***Note:*** *Johnson's Traffic Wax Paste is recommended for this original finish. Liquid Wax will be found easier for subsequent cleaning and maintenance.*

**No-buff Floor Finish** — Apply 2 coats of Johnson's No-buff Floor Finish. Apply in a full even coat and allow to dry (approximately 20 minutes). Second coat may be applied as soon as first is thoroughly dry.

# MIDLAND CHEMICAL LABORATORIES, INC.

Manufacturers of Floor Preserving and Finishing Materials

DUBUQUE, IOWA




## THE COMPANY

Amply financed and backed by continuous experience over a third of a century in the manufacture of materials for preserving, finishing, and maintaining all types of flooring, the MIDLAND CHEMICAL LABORATORIES, INC., offer to the discriminating architect its complete line of time-tested and approved products.

Complete information and directions for the satisfactory use of these products may be found in the Midland Architect's Floor Manual (A.I.A. File No. 231). Copies sent on request.

## SERVICE

The MIDLAND CHEMICAL LABORATORIES, INC. has representatives in every state. Each is a thoroughly trained floor finishing and maintenance man. Their suggestions and advice are accessible to the architect without obligation as a part of the Midland's Service.

## WHY FLOOR FINISH AND MAINTENANCE ARE IMPORTANT TO THE ARCHITECT

It is an acknowleged fact that architects are best qualified by training and experience to select and specify the most suitable flooring materials for any particular location and use.

Whether the architect's judgment is considered good depends in a great degree, if not entirely, on how these floors are maintained.

The ease or difficulty and the cost of keeping floors in a sightly, commendable condition, however, is largely dependent on the original finish specified by the architect.

Experience has shown that where floors have been left properly finished by the architect, with recommendations as to their maintenance, that the floors have been properly maintained and remain during the life of the building a credit to the architect and a satisfaction to his client. Not only does the selection and application of the right type of finish preserve the floor but it brings out and maintains all its inherent beauty of color, so important to a successful architectural decorative treatment.

In the Architect's Floor Manual, published by the MIDLAND CHEMICAL LABORATORIES, INC., the Midland has endeavored to set forth the characteristics of the various types of floors, what detergents or treatments are damaging, with recommendations for not only the original finish but proper, economical maintenance.

MIDLAND CHEMICAL LABORATORIES, INC.

# MIDLAND PRODUCTS

*Recommended for Modern Floor Maintenance*

## MASTER FINISH

**Use**—On wood, concrete, composition, linoleum and practically every other type of modern flooring.

**Description**—A non-slippery floor finish, containing bakelite, which resists heat, alkali, alcohol, dilute acids, boiling water and hard use. It dries with a beautiful sheen, will not hold rubber-burns.

**Coverage**—Wood: 600 sq. ft. per gallon, one coat; 350 sq. ft. per gallon, two coats.

## MIDLAND LOHSEAL

**Use**—On wood, composition, linoleum, cork, masonite and concrete.

**Description**—Effective, practically colorless, pore and fibre seal. Applies with either a lambs wool or felt mop. Excellent as a seal or a base for a wax treatment. It dries within a few hours.

**Coverage**—Wood: 400 sq. ft. per gallon, two coats.

## MIDLAND MID-SEAL

**Use**—On marble, terrazzo, unglazed tile, slate and similar flooring materials.

**Description**—A seal and waterproofer which protects the flooring from daily traffic. Polishes to an attractive luster.

**Coverage**—Terrazzo: 800 sq. ft. per gallon, one coat.

## MIDLAND FLOORGLOH

**Use**—On linoleum, wood, tile, marble and terrazzo floors.

**Description**—A white paste wax. It should be applied thinly with a lambs wool mop. Dries rapidly and buffs with very little effort, and is resistant to scrubbing solutions.

**Coverage**—From 800 to 1000 sq. ft. per gallon for one coat depending on the type of flooring.

## MIDLAND GYMLOH

**Use**—On wood, or composition gymnasium floors.

**Description**—A special treatment for gymnasium floors containing a high percentage of bakelite and tung (chinawood) oil. Acts as both a seal and finish. It is non-slippery and affords wonderful traction, will not hold rubber-burns. This finish will not peel, craze, alligator or flake and is very resistant to heat, alkali, alcohol, dilute acids, boiling water and stands excessive use. Dries to a beautiful lustre which does not darken light colored floors.

**Coverage**—Wood: 600 sq. ft. per gallon, one coat; 350 sq. ft. per gallon, two coats.

## MIDLAND WAXLOH

**Use**—On asphaltic base and other types of mastic floors.

**Description**—A liquid wax containing no solvent that will dissolve, injure or affect the colors of asphalt or mastic floors. It requires buffing which produces a brilliant, hard surface and resists ordinary scrubbing compounds for a satisfactory period. Applied with a lambs wool mop or clean cloth.

**Coverage**—From 800 to 1500 sq. ft. per gallon for one coat depending on the type of flooring.

## MIDLAND SUNGLOH

**Use**—A non-buff wax for use on any type of floor.

**Description**—A liquid, water emulsion wax with a hard carnauba wax base, stands excessive wear, does not require polishing and buffing. It is easily applied with a lambs wool mop or soft clean cloth, and dries ready for traffic.

**Coverage**—From 1500 to 3000 sq. ft. per gallon for one coat, depending on the type of flooring.



### MIDLAND FLOOR ENAMEL

**Use**—On wood, concrete, stone, plaster and metal (exterior or interior).

**Description**—A quick drying enamel with surprising durability, and produces a smooth even finish with a fine gloss. Chart illustrating range of attractive colors furnished on request.

**Coverage** — 400 to 800 sq. ft. per gallon one coat, depending upon material and surface to be painted.

### MIDLAND CLEANSOLEUM

**Use**—On practically every type of modern flooring, especially adapted for linoleum and cork floors.

**Description**—A neutral cleansing compound which contains no acids. The action is not a burning but rather a dissolving and tearing down of soil deposit; the surface and body of the floor is not attacked in any way.

### TILEOLEUM (LIQUID AND POWDER)

**Use**—Excellent for cleaning tile, marble, terrazzo, slate, concrete and composition floors. Not recommended for use on rubber floors.

**Description**—There are three types of Tileoleum:

*Tileoleum Sassafras,* a mild liquid with powerful cleansing action, scented with sassafras.

*Tileoleum Pine,* a liquid cleanser for use in making stock scrubbing solutions. It contains pine oil.

*Tileoleum Powder,* a finely granulated, powerful preparation for use in removing rust, paint and metal stains from Tile, Terrazzo and Marble floors and walls.

Midland Tileoleums will not attack or affect the bond or tone of delicate, colorful installations.

### MIDLAND MID-WAX

**Use**—A buffing wax for use on wood, composition, tile, marble, terrazzo, linoleum and cork. Not recommended for use on asphalt base floors.

**Description**—A semi-liquid wax easy to apply and easy to polish. It can be buffed within thirty minutes after application.

**Coverage**—From 1000 to 1500 sq. ft. per gallon for one coat, depending on the type of flooring.

### MIDLAND KRYSLOH

**Use**—For general cleaning purposes, very satisfactory for cleaning rubber-tile floors.

**Description**—These crystals are excellent cleansers and water softeners, very satisfactory when used for cleaning greasy and oily floors. Midland Krysloh does not form suds.

### MIDLAND MID-CEDAR DUST LAYER

**Use**—For mop sweeping any type of floor.

**Description**—A volatile, non-slippery, non-greasy, non-sticky cedar oil preparation which is not injurious to floor finishes. To be used with the dry mop method. It polishes, cleans and picks up all dust quickly and efficiently.

### MIDLAND KLENSLOH

**Use**—For scrubbing tile, marble, terrazzo, cement, wood and many other types of modern flooring.

**Description**—A liquid floor cleaning preparation compounded from refined American potash. This product is highly concentrated and hence is very economical. Midland Klensloh is obtainable in two odors: Pine and Sassafras.

### MIDLAND SCRUBBING COMPOUND

**Use**—General scrubbing and cleaning, especially adapted for cleaning and bleaching unfinished wood floors.

**Description**—A highly concentrated, pure vegetable oil product with unusual cleaning strength.

*Over a Third of a Century*

MIDLAND CHEMICAL LABORATORIES, INC. DUBUQUE IOWA, U.S.A.

*of Service*

# MINWAX COMPANY, INC.

Wood Finishes and Masonry Coatings

11 West 42nd Street
NEW YORK, N. Y.

BRANCH OFFICE: CHICAGO, ILL.

FACTORY: DELAWANNA, N. J.

### Products

MINWAX METHOD OF WOOD FINISHING.

MINWAX BRICK AND CEMENT COATING.

For pages on Minwax Waterproofing and Dampproofings, and Caulkings, see File Index or Waterproofing Section.

TRADE MINWAX MARK

### Engineering Service

Our experience equips us with special engineering knowledge on application of our product, which we offer without reservations, to those seeking satisfactory results. We have representatives in the principal cities; for address consult local telephone directory.

## MINWAX METHOD OF WOOD FINISHING

The Minwax method is the superior way of securing a truly lasting and serviceable lustrous wax finish, that brings out all the natural beauty of the wood. It does this easily, with certainty and at a minimum cost, and differs from all ordinary methods of finishing: First, by adapting to modern conditions the "old time" principle of placing the finish *in the wood,* making it an actual part of the wood itself, instead of merely on the surface where it can be easily marred and spoiled. Second, by greatly simplifying application by combining the complete treatment—preserving, protecting, staining (if desired) and finishing, all in one easily applied material. Because Minwax Flat Finish goes into as well as on the wood itself, the surface possesses non-slip characteristics and the finish must last until the wood is actually worn down. Through over twenty years' service, time and hard usage have proven that, like the "old time" finishes, Minwaxed surfaces mellow and grow in beauty with only usual simple care.

### Minwax Flat Finish is Made in Two Types

The basic material of the Minwax method is Minwax Flat Finish, which is made in two types, and in Transparent and Masking colors.

**1st (Standard type) Minwax Flat Finish**—Cures more slowly, penetrates deeper and gives a soft luster rather than a high polish. Made only in transparent colors. Waxing with Minwax Finishing Wax is optional *after* a curing period of two weeks.

**Colors**—Natural or Clear, Natural Oak, Golden Oak, Light Oak, Dark Oak, Dark Walnut. These are transparent colors recommended for floors, trim or paneling.

**2nd Minwax Quick Drying Flat Finish**—Cures quickly, offers wider choice of colors, gives higher polish and harder finish. Made both in transparent colors and masking colors. Waxing with Minwax Finishing Wax after 12 hours is always recommended.

**Colors**—Made in the same transparent colors listed under Standard type Flat Finish. Also in the following masking colors recommended only for standing trim, paneling and furniture: Ipswich Pine, Colonial Maple, Cape Cod Maple, Special Walnut, Red Mahogany, Brown Mahogany.

**On Floors (Residential)**—The Minwax Method eliminates refinishing, for the finish is part of the wood and worn spots can be renewed in color and finish by simply wiping up the surface with some of the shade originally used. Approved by the National Oak Flooring Manufacturing Assn.

**Specifications**—Preparation: When other trades have finished work, the floors shall be scraped smooth and clean, using not less than three grades of paper, finish cut to be No. 60 paper or finer. Surface shall be swept free from dust.

*For High Polish and All Refinishing Specify Quick Drying Type*—Apply two thorough coats of Minwax Quick Drying Flat Finish, color as selected, wiping each to remove surplus and to even out, in not less than ten minutes or more than twenty minutes. Apply one coat of Minwax Finishing Wax (Paste) and buff to a satisfactory lustre with electric polishing machine. Twenty-four hours shall be allowed between coats. Protect floors with building paper pasted at laps.

*Softer Polish and Maximum Penetration, Specify Standard Type*—Apply thorough flow coat of Minwax Flat Finish (Standard Type), color as selected. After two to four hours wipe *thoroughly* with rags removing all excess. Repeat for second coat when dry, 12 to 24 hours. Wipe second coat thoroughly rubbing to dry polish. Allow 24 hours for drying and polish with electric polishing machine. Protect floors with building paper pasted at laps.

*Note:* For apartments, etc., we recommend "comeback" form of specification: Omit polishing above specified and add following paragraph: When apartment is ready for occupancy this contractor shall remove paper, clean floor thoroughly with rags or steel wool as necessary. Apply one coat of Minwax Liquid Finishing Wax and polish with electric machine.

*Note:* Fillers are not necessary but can be used if desired, in which case apply in usual manner after first coat of Minwax Flat Finish.



**For Residences**
Residence at Poundridge, Conn.
W. B. KIRKBY, Architect
Minwax Flat Finish on pine paneling and oak floors



**For Schools**
New Rochelle High School
GUILBERT & BETELLE, Architects
Minwax used on floors



**For Housing**
Williamsburg Housing, New York, N. Y.
R. H. SHREVE, Chief Architect
STARRETT BROS. & ELKEN, General Contractors
STORM FLOORING CO.
Minwax Flat Finish on all floors

**On Floors (School and Industrial)**—The Minwax Method penetrates deeply and provides a tough, lasting seal which resists all deteriorating agencies. Approved by the Maple Flooring Manufacturers' Association.

**Specifications**—Preparation. See paragraph under Residential Floors. *Specify Standard Type Natural No. 9 only. Stain colors not recommended for maple, beech or birch floors.*

All maple floors shall receive two coats of Minwax Flat Finish No. 9, as follows: *1st Coat*—Immediately after the final sanding apply one liberal coat of Minwax Flat Finish No. 9 (about 600 sq. ft. per gal.) with a brush or mop, after about twenty minutes even up and spread out any surplus, close off floor for 24 hours. *2nd Coat*—After other trades have completed their work, thoroughly sweep and dust the surface and apply a second coat of Minwax Flat Finish No. 9 (about 900 sq. ft. per gal.). Buff while wet with No. 3 steel wool to loosen up dirt and remove stains. Remove all surplus together with dirt and stain, wiping thoroughly with rags. 24 hours later, polish thoroughly with polishing machine padded with No. 1 steel wool and close off floor for 24 hours before use.

**On Trim and Paneling**—The Minwax Method gives a soft rubbed wax finish. Its economy, simplicity and serviceability are important. It enhances and develops the natural beauty of the wood.

**Specification**—Preparation. Wood shall be clean free from all shellac, varnish or other finish. Immediately prior to application sand all surfaces with No. 0 sandpaper or steel wool removing all hair grain and leaving perfectly smooth surface.

*In General Specify Standard Type Flat Finish for Trim, and on Outside Woodwork Standard Type Only.*

Apply two coats of Minwax Flat Finish (Standard Type) color as selected, wiping to remove excess as directed and rubbing final coat to a dry polish. Allow 24 hours between coats.

*Where Color Is Made Only in Quick Drying Type (as Colonial Pine) or where, because of the type of wood, masking colors are needed, specify Quick Drying Type.*

Apply two coats of Minwax Quick Drying Flat Finish, color as selected, wiping to remove excess as directed by manufacturer. Apply coat of Minwax Liquid Finishing Wax and polish. Allow 24 hours between coats.

## MINWAX BRICK AND CEMENT COATING

Minwax Brick and Cement Coating is a two-purpose material: decorative coating combined with a waterproofing preservative treatment for masonry surfaces. Its ability to waterproof and prevent frost action and leakage is important and makes its use economically sound where the use of ordinary paints would not be justifiable. Its ability to decorate and produce a clean, even color is almost equally important and the soft, natural, non-painty effects make it particularly suitable for fine residential work.

Minwax Brick and Cement Coating differs from all paints in that it has been developed from Minwax Clear Waterproofing. This is one of the oldest and most efficient mediums for waterproofing exposed masonry. From this product the vehicle for Minwax Brick and Cement Coating has been developed, adding to its basic waterproofness the ability to carry color uniformly, to flow smoothly and evenly under the brush, while retaining its tendency to penetrate and bite deeply into the pores of the masonry. This penetrative quality of the vehicle is fundamentally important, making the coating part of the surface and places the waterproofing deep into the masonry.

### Specifications

**General**—(1) Surfaces to which Minwax Brick and Cement Coating is to be applied should be thoroughly cured, sound, free from dust, sand, scale or other loose material and thoroughly dry when the material is being applied.

(2) Apply .. coats of Minwax Brick and Cement Coating, colors as selected, with brush or air spray, allowing 24 to 48 hours between coats. Thin first coats as directed with Minwax B. & C. Thinner only; apply final coat straight without thinning or adulteration.

(3) Do not apply this material in wet or foggy weather or when outside temperature is below 45° F. When work is interrupted by rain, permit surface to dry thoroughly before continuing. Store material in a warm place.

**Extent of Work**—On all exterior masonry extend the coating work in such a manner as to prevent the possibility of moisture getting into the wall back or above the treated surfaces. Coat right up to the eave boards or over the coping and down the back of parapets to roof flashing. Inspect window frames and where there is an open joint caulk with Minwax Caulking Compound.

**Number of Coats**—Two coats will give excellent results under most conditions. *In all cases* to assure uniform color "touch up" of suction spots which show light after first coat, is important. *Three coats* are recommended for very porous surfaces, as *common brick,* for severe exposures as *swimming pools,* etc., and where maximum life and service is desired.

**Covering Capacity**—200 to 300 sq. ft. per gallon per coat.

**Colors**—White, Cream, Yellow, Caenstone, Limestone, Terracotta, Brownstone, Cement Grey, Green, Blue, Brick Red.

### CAULKINGS AND TRANSPARENT WATERPROOFINGS

**Minwax Caulking Compounds**—Special elastic compound for making the joints around windows weathertight. Made in gray and buff, in two consistencies. Also Minwax Asphalt Caulking Compound for steel sash, hanging stile and locations where color is not important. *For complete data see file index or waterproofing section.*

**Minwax Transparent Waterproofing**—Where it is desired to waterproof masonry walls without changing their color or texture, Minwax Transparent Waterproofing should be used. *For complete data see file index or waterproofing section.*



**New York Dock Co.**
L. E. Driver, Chief Engineer, Brooklyn, N. Y.
Minwax Brick and Cement Coating protects and decorates exterior concrete



**On Residences of Brick or Stucco Minwax Brick and Cement Coating Gives Weather Protection as Well as Decoration**

# THE PURMA COMPANY

616 South Michigan Avenue
CHICAGO, ILLINOIS

## THE ULTRA MODERN TREATMENT FOR TERRAZZO AND CEMENT FLOORS

### PERMA-GLAZE FOR TERRAZZO FLOORS




Perma-Glaze is a combined hardener and sealed finish for all terrazzo floors. Once applied it becomes a part of the floor.

Perma-Glaze penetrates and reacts chemically with the cement content to form a binder which gives the entire floor the smooth hardness of marble, for the life of the floor. It closes all pores against the entrance of dirt and grease, producing an impervious, permanently hard surface. It eliminates dusting and chipping, the forerunners of floor disintegration.

Perma-Glaze reduces maintenance by as much as 75%. In no instance has the saving been less than 50%.

Perma-Glaze preserves and intensifies the color of new terrazzo floors and restores the beauty of old ones. It immunizes against staining and gradual discoloration.

#### Application

Perma-Glaze is applied in three coats. The first two penetrate and densify the cement binder. The third coat, applied twenty-four hours later, seals the pores against all absorption of foreign matter. Strict adherence to our material and process is required to accomplish the desired result. Supervision and material or authorized contractors.

### PURMA-GLAZE FOR CEMENT FLOORS

Purma-Glaze is a simple and inexpensively applied dressing for all cement floors. It is a penetrant, not a surface treatment.

Purma-Glaze will do this for old and new cement floors:

(1) Fills and seals all the voids of the cement and combines the particles in a solid mass.

(2) Permanently prevents dusting of cement floors.

(3) Makes the cement absolutely impervious to stains, such as oils, greases and inks.

(4) Preserves the appearance of cement floors and makes them easy to clean.

(5) Prolongs the life of cement floors and prevents the necessity of frequent repairing.

#### Application

Purma-Glaze is applied in two coats. The first for penetration and the second for finish. Authorized contractors can apply. Instructions to consumer.

### GRESOLV

Gresolv, a grease solvent for removing grease and oils from concrete, terrazzo and wood floors, enabling filler or sealer to penetrate and lock. Evaporates in about twenty minutes allowing immediate use of sealer. Insures coatings, such as paints, varnishes or other treatments, sticking until worn from surfaces. Harmless to floors as it contains no acid or alkali.

One gallon or more to 150 sq. ft. will do the work.

### LINOL

Linol, another equal to our Purma-Glaze.

A dressing for linoleum, rubber or asphalt floors. Restores dull colors and life body that was worn off. Ready for traffic in 1 hour. Cleans with dust mop or hair broom. Grease spots removed with lukewarm water, no harm to dressing. Lasts longer than the usual and good for twelve months wear.

Many satisfied Chicago customers.

## INSTALLATIONS

In the past six years most of the large office buildings in Chicago loop that have terrazzo floors have been Permaglazed. Many other smaller installations, such as churches, schools, restaurants, corridors and garages.

#### Terrazzo

Chicago Board of Trade Bldg.—66,200 sq. ft. (This job, our first, done 5 years ago, and the A. Wetten Company claim it still satisfactory.)
Field Office Bldg.—167,000 sq. ft.
Bankers Bldg.—39,731 sq. ft.
Metropolitan Bldg.—26,000 sq. ft.
Chicago Daily News Bldg.—38,675 sq. ft.
Palmolive Bldg.—39,652 sq. ft.
333 North Michigan Bldg.—Approximately 25,000 sq. ft.
Steuben Club Bldg.—Approximately 35,000 sq. ft.
Adams Franklin Bldg.—Toilets and Wash Rooms
Michigan Square Bldg.—(now working)—40,000 sq. ft.
International House (University of Chicago)—13,073 sq. ft.
Chicago Northwestern University—16,000 sq. ft.
Musicians Bldg.—8,000 sq. ft.
Decorative Arts Bldg.
Hogan Farwell Bldg.
Field Bldg. (700-718 North Michigan Ave.)
Fashion Trade Bldg.
10 North Clark Bldg.
Westminster Bldg.
Triangle Restaurant
Harding Restaurant
B/G Restaurant
616 So. Michigan Ave.
Providence High School
Maywood Proviso High School
Henrotin Hospital
840 No. Michigan Ave.
Upper National Bank (919 North Michigan Ave.)
St. Marks Rectory, Kenosha, Wis.

#### Cement

These are part of the many jobs that we have done during the past six years:
Wander Company, Villa Park, Ill.—30,000 sq. ft.
American Linen Supply Co.
Chicago Milwaukee R. R. Co.
Reid Murdock Co.
Quaker Oats Co., Cedar Rapids, Iowa, and Los Angeles, Calif.

**Permaglaze Sold on Sample, Tried and Proved**

**Samples in Chicago:**

Buckingham Bldg.
Hearst Bldg.
100 West Monroe Bldg.
Merchandise Mart Bldg.
Carbon & Carbide Bldg.

# L. SONNEBORN SONS, INC.

## Floor Preservatives; Technical Paints, Enamels and Varnishes

88 Lexington Avenue, NEW YORK, N. Y.

BRANCH OFFICES IN PRINCIPAL CITIES FACTORIES, NUTLEY, N. J.

For Our Page on Waterproofing and Dampproofing Materials, see File Index

### LAPIDOLITH TRADE MARK

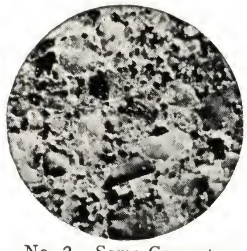
**Description**—A colorless liquid chemical to prevent disintegration and dusting of concrete floors. For over 25 years Lapidolith has continually proven the most dependable after treatment by which to insure long wearing, economically maintained floors. It is equally efficient in preserving terrazzo floors. The chemical action of Lapidolith on concrete is demonstrated by the photographs below, taken from an official report of Prof. R. J. Colony of Columbia University, New York.



No. 1 Untreated Concrete

Microphotographs of Specimens of Concrete

Magnified 50 Diameters



No. 2. Same Concrete, Lapidolized

No. 1. Note large numerous voids (black spots) and roughness of surface.

No. 2. Note roughness is reduced and voids filled with network of newly formed hard crystalline substance.

As a result of his examination, Prof. Colony says:

"The external application of Lapidolith to concrete surfaces results in (a) the formation of an optically isotropic but crystalline substance, derived by a reaction between components of the Lapidolith and the cement matrix of the concrete which (b) has a tendency to fill in voids and cavities and act as a binding agent, thus rendering the surface smoother and more uniform."

**Application**—Flush on and spread with mop or broom after concrete is set (usually about 10 days after pouring), in 3 applications by mixing with water, in proportions as directed. Simple to apply and areas can be used without delay between applications.

Concrete of average density requires about 1½ gal. for each 100 sq. ft. of surface for the 3 applications.

**Specifications**—Harden and dustproof the following concrete or terrazzo floor areas (specify) with 3 applications of Lapidolith manufactured by L. Sonneborn Sons, Inc., New York, applied according to their directions, or under their supervision and guarantee.

### LIGNOPHOL For Wooden Floors TRADE-MARK

**Description**—Lignophol is a liquid containing special gums, oils, fungicidal and preservative chemicals. These have been chosen for their specific value as penetrants and preservatives in checking the growth of fungus and mold and preventing splintering, warping, and common wood floor wearing problems. Lignophol is recommended as a superior finish and preservative for maple, oak, pine, spruce, walnut, birch and beech. Furnished in natural, light brown, medium brown and dark brown shades. Lignophol is available either in a penetrating finish or in a wax finish.

**Application**—Lignophol should be applied with a three or four-knot roofing brush. On close grained woods 1 gal. will spread over 400 to 500 sq. ft.; over porous woods, 1 gal. will spread over 350 to 450 sq. ft.

**Specifications, Penetrating Finish**—After scraping, all wood flooring shall be given one application of Lignophol Penetrating Finish (color to be selected) according to the manufacturers' directions or under their supervision.

(1) If complete absorption of Lignophol by the wood floor does not occur in three hours, the surplus must be wiped thoroughly from the floor with clean, dry rags or a clean, dry mop. Excess Lignophol must not remain on the floor after three hours.

(2) After the floor is thoroughly dry, it should be buffed with an electric polishing machine, using the buffer attachment or steel wool, or a weighted polisher. This will produce an especially smooth finish and a semi-sheen finish. After the buffing operation is completed the floors should be covered with finely powdered cornmeal as a protection against the effects of early traffic. Cornmeal should be kept on the floor until the workmen leave the building, when it may be swept off. This operation of covering the floor with cornmeal can be suspended on oak floors.

(3) After the floor has been thoroughly wiped, as called for in paragraph (1), or buffed as per paragraph (2), it should be covered with cornmeal (finely powdered) as a protection against the effects of early traffic. Cornmeal has an absorbing and drying effect. The cornmeal may be kept on a treated floor until the workmen leave the building, when it may be swept off the floor.

**Specifications, Wax Finish**—After scraping, all wood flooring shall be given one application of Lignophol Wax Finish (color to be selected) according to the following directions or under the manufacturers' supervision. The surfaces to be polished after three to five hours following application, for medium gloss. Wherever high gloss is required, allow about 24 hours to elapse after polishing, then apply one coat of Sonneborn's Amalie Paste Wax and polish in about 20 minutes.

### Floorlife No. 59 and No. 69

Both are efficient sealers and finishes, composed of treated gums and oils suitable for all types of wood floors. A long wearing, durable gloss finish is obtained with these two materials. Two coats are recommended and the covering capacity is estimated at about 500 sq. ft. to the gal., one coat.

Floorlife No. 69 is specified where two coats must be applied the same day.

*A complete list of local installations on these products will be gladly furnished on request. The growing number of users for all of Sonneborn's tested floor treatments is constantly growing and it is impossible in the space provided to give a satisfactory idea of the thousands of successful installations.*

## HARDENING, DUSTPROOFING AND DECORATING CONCRETE FLOORS

### Sonneborn's Cement Filler and Dustproofer

**Description**—Ordinary paint films do not supply that extra toughness essential for the severe traffic, floor paints must withstand. Sonneborn's Cement Filler and Dustproofer is especially made for cement floors. It is not water soluble and is unaffected by transient contact with acids, oils or solvent.

It is a compound of treated gums of maximum toughness and durability, coloring, and selected varnish oils, giving a penetrative coating that is smooth, dustless, flexible, unusually durable and decorative.

**Application**—The same as ordinary paint. 1 gal. will cover about 300 sq. ft., one coat, or about 200 sq. ft., two coats. Selection can be made from 10 colors, including transparent.

**Specifications**—Fill and dustproof the following cement floors (specify area) with two coats of Sonneborn's Cement Filler and Dustproofer (color as selected) manufactured by L. Sonneborn Sons, Inc., New York, in accordance with their directions or under their supervision.

## TECHNICAL PAINTS

### Cemcoat Interior Enamel

**Description**—A zinc, lithopone and oil paint of superior excellence and outstanding performance. Durable, non-poisonous, washable, sanitary, color permanent and resistant to action of free lime because of the specially treated oils used. Suitable for all types of surfaces. Easy flowing. Available in white or a range of colors; in gloss, eggshell or flat finishes.

*Full Specifications and List of Users sent on request.*

### Cemcoat Exterior Waterproof and Decorative Coating

**Description**—A weatherproof and decorative coating for dampproofing exterior walls above grade. Made in flat or gloss finish, white or in colors.

*Full Specifications and List of Users sent on request.*

### S.R.P. Rust Inhibitive Protective Coating for Metal Surfaces

A new development in the protection of metal surfaces. The S.R.P. Coatings form a film much more impermeable than the standard metallic primers or finish coats. They have a peculiar characteristic which makes them rust-inhibitive to a very unusual degree and they likewise afford protection against acids and alkalies.

They make an extremely durable and satisfactory priming or finishing coat for all metallic surfaces.

S.R.P. No. 75 should be specified for the priming coat. S.R.P. No. 87 for the finish coat.

*Full Specifications and List of Users sent on request.*

***Special Note:*** *Our research laboratories and technical staff have developed many outstanding products in wall sizes, interior and exterior protective coatings and paints and varnishes to meet problems that are peculiar to localities and industries. The services of this combined staff are available to the Architect in the interest of "surface conservation."*

# G. H. TENNANT COMPANY

ESTABLISHED 1870

MINNEAPOLIS, MINN. WESTFIELD, N. J.

## THE TENNANT SYSTEM OF FLOOR TREATMENT AND MAINTENANCE

### What It Is

The Tennant Floor Treatment and Maintenance System consists, first, in filling and hardening the wood fibers by applying a penetrating seal which is immediately burnished in by a roll of steel wool revolving at high speed. This quickly produces a surface resembling a hand-rubbed furniture finish—smooth—nonporous—non-slippery—*in* not *on* the wood. The floor is then immediately ready for use. With no surface film to mar or scratch, the floor remains smooth. Dirt does not penetrate even under the traffic of many footsteps or of heavy industrial trucking.

**Dry Cleaning**—Floors are swept daily with an oil mop. When they begin to show traffic stains which the oil mop does not remove, they are buffed with a steel wool roll or cylindrical fiber brush revolving at high speed. The vacuum on the machine picks up all dirt.

### Its Advantages

Hardening and sealing the wood fiber and eliminating the use of water are the main reasons for the success of the Tennant System as applied to wood floors receiving heavy traffic. Even the splintering usually seen where floors are trucked over is avoided. The expense of patching is saved. It is difficult to realize the wear a wood floor can withstand when maintained by scientifically correct methods.

Floors treated and maintained by the Tennant Method are bright, clean, attractive and light-reflecting.

### Its Applications

The Tennant System is applicable to all types of wood floors, especially in:

**(1) Industrial Plants**—Tennant-treated floors have conclusively demonstrated their superior wearing qualities, even under machine shop conditions.

**(2) Bakeries (and Other Food Industries)**—The Tennant System provides the highest standards of cleanliness and sanitation.

**(3) Schools and Colleges**—(a) Classrooms. (b) Gymnasiums. (c) Cafeterias. (d) Auditoriums.

**(4) Retail Stores**—(a) Drug. (b) Dry Goods. (c) Shoe. (d) Candy.

**(5) Public Buildings**—(a) Armories. (b) Post offices. (c) City halls. (d) Courthouses, etc.

**(6) Office Buildings**—(a) Offices. (b) Corridors. (c) Reception rooms. (d) Libraries. (e) Display rooms. (f) Conference rooms.

(The Tennant machine is used for scrubbing and wax polishing, as well as for dry cleaning with steel wool.)

### Representative Users of Tennant System

UNITED STATES GOVERNMENT—Tennant Equipment is listed on General Schedule of Supplies. 421 Tennant Machines are used for maintenance of floors in most of the newest and largest Federal buildings located in every state.
Western Electric Co., Kearney, N. J.
American Bakeries Corp., Atlanta, Ga.
The Andrew Jergens Co., Cincinnati, Ohio
J. B. Ivey Co., Charlotte, N. C.
Gar Wood Industries, Inc., Detroit, Mich.
Frigidaire Corp., Dayton, Ohio
Procter & Gamble Co., Cincinnati, Ohio
Cannon Mills, Kannapolis, N. C.
J. I. Case Company, Racine, Wis.
Van De Kamps Bakeries, Los Angeles, Cal., and Seattle, Wash.
Buick Motor Car Co., Flint, Mich.
General Electric Co., Fort Wayne, Ind.
Continental Baking Co., New York, N. Y.
Hershey Chocolate Co., Hershey, Pa.
L. Bamberger & Co., Newark, N. J.
Chicago Towel Co., Chicago, Ill.
Board of Education, Fort Wayne, Ind.
Board of Education, Pasadena, Cal.
City of St. Paul, Minn.
Iten-Barmettler Biscuit Co., Omaha, Neb.
City of Baltimore, Md.

### See The Tennant System at Work

As the Tennant System is now in use nationally, in all probability it is being employed on numerous floors in your own locality. Names of local users and illustrated circular and specifications will be sent upon request.



*Photo Courtesy R. H. Macy & Co.*

*Buffed floors have a finish resembling that of hand-rubbed furniture, reflect more light, retain their original attractiveness permanently, and are easily kept clean and dust-free without the use of water. They are refinished as needed wherever traffic is heaviest without time out for drying and without lap marks. They never require resanding.*

*Visitors are immediately aware of a sanitary plant when they see these bright well-kept floors. "Tennant" dry-cleaning prevents warping, cupping, discoloration, caused by water. Subfloor is always dry and sanitary. Mold and vermin are eliminated. Total costs are less than for scrubbing as smooth floors clean easily and sealed floors, kept dry, wear indefinitely.*

*Photo Courtesy Drake Bakeries, Inc.*



TELEPHONE
MOrsemere 6-5117

# VITRA SEAL COMPANY

INCORPORATED
Manufacturers of Permanent Floor Finishes
531 Church Street, RIDGEFIELD, N. J.

## VITRA SEAL

### A Permanent, Scratch-Proof Floor Seal

Vitra Seal is prepared for the integral sealing of the pores in wood and other floors of homes, schools, and institutions. The floor material is made impervious to stains, scratches and discoloration by the penetrating action of the hard drying oil vehicle carrying durable solids into the open pores or grain. Colors are enhanced and the natural beauty of wood grains accentuated. Dries in 1½ to 2 hours. Heavy traffic areas, when worn can be redressed without lapping. Floors treated with the Vitra Seal process are scratch-proofed, and future scraping is eliminated as no surface gum coat remains on the floor.

### Service Advantages

Licensed contractors, trained for the Vitra Seal method of floor finishing are available in principal cities. They are equipped to satisfactorily complete any floor job according to correct specifications and advise proper maintenance. A list of these operators may be obtained from the manufacturer.

### Coverage

Average Coverage Per Gallon

Wood Floors, *Vitra Seal* ..... 650 sq. ft. per coat
Wood Floors, *Vitra Finish*.....1500 sq. ft. per coat
Cement Floors, *Vitra Seal* ..... 300 sq. ft. per coat

### Colors

Comes in golden oak, brown, walnut, red, light oak, dark oak, olive green, black. Can be supplied in any shade.

### Maintenance

**Sweeping**—(1) If floor is subjected to heavy traffic, steel wool occasionally. (2) After heavy and long wear, redress traffic spots by applying thin coat of Vitra Seal with steel wool and removing surplus with cloth. (3) When dry apply thin coat of Vitra Finish and Polish.

## VITRA FINISH

### For Providing Lustre

Vitra Finish is used on floors previously treated with Vitra Seal, to establish a high-finish lustre. Floors thus treated present a smooth, hard, non-slippery surface. Vitra Finish dries hard in 15 minutes, leaving a non-greasy film with none of the disadvantages of ordinary wax finishes. Vitra Finish can also be used to advantage over floors coated with shellac or varnish. When used in either manner Vitra Finish provides extra protection and creates a surface which definitely facilitates cleaning—the use of a dry mop, and an occasional steel wooling supplanting the usual scrubbing methods.

### Specifications

**Wood Floors (New or Rescraped)**—Wood floors shall be sanded clean and all shellac, varnishes or other finishes entirely removed. Apply two (2) coats VITRA SEAL, steel wooling to remove surplus between each coat. Allow two (2) hours drying between each coat. Apply one (1) coat VITRA FINISH and polish with heavy electric polishing machine. Finished floors should not be used for at least two (2) hours after completion.

**Wood Trim, Furniture, School Desks**—All woodwork should be dry, smooth and clean. All holes, scratches or cuts shall be filled. Apply (2) coats VITRA SEAL removing surplus between each coat. Apply one (1) coat VITRA FINISH and polish.

**Magnesite, Composition or Cement Floors**—Sand paper, removing all cement residue and former finishes and smoothing the entire floor. Apply two (2) coats VITRA SEAL and two (2) coats VITRA FINISH.

**Wood Floors (Finished) With Gum Coats**—After floors have been treated with shellac or varnish, apply two (2) coats of VITRA FINISH, each coat to be buffed down with a heavy electric polishing machine.

**Linoleum Floors**—Clean floors to remove all old finishes. When perfectly dry apply two (2) coats VITRA FINISH.



B. Altman — New York



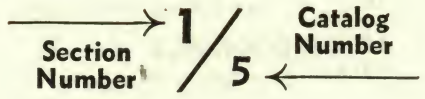
Library — North Carolina State University, Chapel Hill, North Carolina

### Other Fine Institutions Using Vitra Seal

Hotel Astor, New York, N. Y.
North Carolina State University, Chapel Hill, N. C.
Cornell University, Ithaca, N. Y.
Union Theological Seminary, New York, N. Y.
New York Hippodrome, N. Y.
P. J. Young Dept. Store, New Brunswick, N. J.
Georgian Court College, Lakewood, N. J.
North Bergen Schools, North Bergen, N. J.
Union City Schools, Union City, N. J.
St. Aloysius Academy, Jersey City, N. J.
Wells & Coverley, Syracuse, N. Y.
U. S. Treasury Bldg., Washington, D. C.
Christian Schmidt Store, Newark, N. J.
New York Schools, New York, N. Y.
Johns Hopkins Hospital, Baltimore, Md.
City Hall, Union City, N. J.
St. Mary's Academy, North Plainfield, N. J.
Syracuse University, Syracuse, N. Y.
Crouse-Irving Hospital, Syracuse, N. Y.

MEMORANDA

# GLASS
## - SECTION - 18




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Armstrong Co. . . . . 18/12
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**Stained Glass**
See Glass—Leaded

# AMERICAN WINDOW GLASS COMPANY

GENERAL OFFICES
Farmers Bank Building
PITTSBURGH, PA.

DISTRICT SALES OFFICES

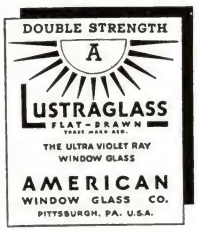
ATLANTA, GA. BOSTON, MASS. CHICAGO, ILL. DETROIT, MICH. LOS ANGELES, CAL. NEW YORK, N. Y.
PORTLAND, ORE. ST. LOUIS, MO. SALT LAKE CITY, UTAH SAN FRANCISCO, CAL. SEATTLE, WASH.

EXPORT OFFICES: SAN JUAN, PORTO RICO

FACTORIES

ARNOLD, PA. BELLE VERNON, PA. JEANNETTE, PA.

## PRODUCTS




**Lustraglass**—A flat drawn clear sheet window glass (the ultra-violet ray window glass).

**Lustrablu**—For mirrors, table tops and other decorating purposes.

**Crystal Sheet**—$\frac{3}{16}$ in., $\frac{7}{32}$ in. and $\frac{1}{4}$ in. thicknesses.

**Greenhouse Glass**—"The whitest of all."

**Bulb Edge Glass**—For shelving, window ventilators, counter partitions and wherever glass is used without a frame.

**Ornamental Etched Glass, Ground Glass and Chipped Glass**—For doors, partitions and other special uses where a translucent glass is required.

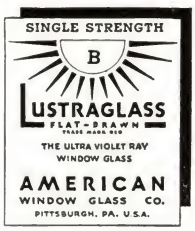
**Plexite, the Safer Safety Glass**—For automobiles, busses, railroad and street cars, airplanes, boats, asylums, factories, etc.

**Armor-Lite Bullet-Proof Glass**—For bank protection, prisons and armored cars.

**Lustrawhite Picture Glass** — Superfine, Selected and Standard qualities.

**Photo Glass**—For camera use, lantern slides, diagnostic X-ray and microscopic use.

## LUSTRAGLASS THE ULTRA-VIOLET RAY WINDOW GLASS




Lustraglass is a clearer, whiter, more lustrous window glass that provides many extra advantages at no extra cost. It is the closest approach to perfect transparency ever attained in a window glass.

It is generally recognized that the most effective ultra-violet rays in sunlight are those having a wave length from 313 mu. down to 302 mu. Ordinary window glass transmits practically nothing below 313 mu. Ultra-violet rays are seldom available in sunlight below 302 mu.

Lustraglass does transmit more daylight and a substantial amount of the shorter (more effective) ultra-violet rays of sunlight. Yet Lustraglass costs no more than ordinary window glass.

### Process and Production

Lustraglass is produced by an improved vertical drawn machine process that assures absolute flatness, superior lustre, uniform thickness and quality.

### Tests

Scientific tests with poultry and plants have proved the effectiveness of Lustraglass transmission.

Folder 3516 illustrates the marked increase in health, growth and strength of plants and poultry raised under Lustraglass as contrasted with similar specimens raised under ordinary window glass. Copies of folder 3516 will be supplied free on request.





### Glazing of Lustraglass

Lustraglass can be glazed either side out with the assurance that the appearance and clear visibility will be of the same high standard whether viewed from the inside or outside of a building.

### Chemical and Physical Properties of Lustraglass

The chemical properties of Lustraglass assure maximum resistance to discoloration, fade, stain or rust. Tests demonstrate great tensile strength and a high modulus of rupture to withstand maximum wind pressures.

### Identification Labels

Every light of *genuine* Lustraglass, the ultra-violet ray window glass, is labeled to identify its genuineness as well as thickness and quality.

### Packing

Lustraglass is packed with paper between each light and is further protected by the use of a specially processed corrugated board instead of straw. This reduces breakage and freight charges.

### Grading

Lustraglass is graded in "A" and "B" qualities, both of which are free from many of the imperfections permitted in Government specifications.

### Grades and Qualities

**"A" Quality**—Lustraglass ("A" Quality) is a perfectly flat, white, high lustre product of uniform thickness and appearance.

**"B" Quality**—This quality is free from all glaring defects and differs only from "A" Quality in that it contains imperfections which would prevent its being graded as "A" Quality.

# A TRULY MODERN SCHOOL

## *Glazed with Lustraglass*

In the classroom where children spend a great percentage of their daylight hours, windows have a decided effect upon their health, eyesight and disposition . . . Here in the Northville, Michigan Grade School, the windows are large and they are glazed with Lustraglass, the truly modern window glass. Lustraglass is the whitest of all window glass.

It transmits more daylight and more of the healthful ultra-violet rays of sunlight. Much credit must be given to architects, *Lyndon & Smith,* contractors, *H. B. Culbertson Co.,* and glazing contractors, *Schroeder Paint & Glass Co.,* all of Detroit, Michigan, for their example of what a modern school should be.





*F. S. Lincoln, Photographer*

### Dimensions

Glass is cut to dimensions ordered with an allowable tolerance of $\frac{1}{32}$ in. per $\frac{1}{8}$ in. thickness.



#### THICKNESSES AND WEIGHTS

Table 1—Average Thickness and Weight of Clear Sheet Window Glass

| | | |
|---|---|---|
| Single Strength | .091 in. | 18.9 oz. per sq. ft. |
| Double Strength | .125 in. | 26. oz. per sq. ft. |
| Crystal Sheet | .193 in. | 40. oz. per sq. ft. |
| Crystal Sheet | .218 in. | 45. oz. per sq. ft. |
| Crystal Sheet | .248 in. | 51.5 oz. per sq. ft. |

*Note:* The above are subject to the usual average allowable variations.

#### MAXIMUM DIMENSIONS RECOMMENDED

| | Width (in inches) | Length (in inches) |
|---|---|---|
| Single Strength | 40 | 50 |
| Double Strength | 60 | 80 |
| Crystal Sheet, $\frac{3}{16}$ in., $\frac{7}{32}$ in. and $\frac{1}{4}$ in. | 76 | 120 |

### Inspection

Every light of "A" Quality glass, after being cut and inspected by experienced cutters, is re-inspected by men specially trained for that work. The quality is again checked by the chief inspector.

### Suggested Specifications

All window glass used in this building shall be Lustraglass, a product of AMERICAN WINDOW GLASS COMPANY, and shall be (here specify the thickness and quality of glass desired). The Lustraglass label must appear on each light of Lustraglass.

*Note:* If the AMERICAN WINDOW GLASS COMPANY'S glass is specified, this company, upon request, will inspect the installation and without expense report whether the glass furnished is the kind, quality, and thickness specified.

## LUSTRABLU

A beautiful translucent blue glass for mirrors, table tops and other ornamental purposes. Used extensively in Florida and Southern California as a "sun shade" window glass. Available in all dimensions: 16 oz., single, double, $\frac{3}{16}$ in. and $\frac{7}{32}$ in. sheet. Also $\frac{13}{64}$ in. polished plate glass.

## CRYSTAL SHEET—$\frac{3}{16}$ IN., $\frac{7}{32}$ IN., $\frac{1}{4}$ IN. THICKNESSES

Crystal Sheet Glass possesses a brilliant surface, uniform thickness and is the flattest and whitest window glass produced by any process.

Being lower in price than polished plate, it is frequently used instead of plate for many purposes at a considerable saving.







## PLEXITE

REG. U.S. PAT. OFF.

### The Safer Safety Glass

Plexite Safety Glass is a new and distinctly superior product in every respect. Plexite provides much greater protection and resistance to fracture than ordinary safety glass.

#### The Soundproofing Qualities of Plexite Should Be of Special Interest to the Architect

While manufactured originally for automobiles, Plexite, because of its soundproofing properties, has proved of outstanding value in apartment houses and other buildings in keeping out street noises.

Plexite does not "let go" or become "blotchy" after it has been in service for a period of time, nor will it discolor from exposure to sunlight for any length of time.

Plexite Safety Glass can be easily and quickly cut into any shape or size with an ordinary glass cutter's wheel and a sharp knife.

Instead of rigid resistance to impact, as is characteristic of ordinary safety glass, Plexite yields or "flexes" like a net on impact, resulting in less glass being displaced and greater safety.

Plexite resists the penetration of moisture and requires no sealing. The binder used in making this new safety glass imparts a lighter color to the glass than nitrate or acetate cellulose.

Plexite Safety Glass is available in thicknesses ranging from .134 to .288 in. Ask for Plexite Booklet.

## ARMOR-LITE BULLET-PROOF GLASS FOR BANK PROTECTION

Provides positive protection against gunfire.

This glass is available in thicknesses ranging from .979 to 1.255 in.

Armor-Lite D.P.T. is approved by the Underwriters' Laboratories, Inc.

# FOURCO GLASS COMPANY

MANUFACTURERS OF

## Window, Crystal Sheet, Photo and Bulb Edge Glass

GENERAL OFFICES

Union National Bank Building

CLARKSBURG, WEST VIRGINIA

SALES OFFICES

NEW YORK N. Y., 11 West 42nd Street. FORT SMITH, ARK. CHICAGO, ILL., 58 East Washington Street

FACTORIES

CLARKSBURG, W. VA. VINCENNES, IND. SISTERSVILLE, W. VA. FORT SMITH, ARK.

### Product

FLAT DRAWN SHEET GLASS for all purposes.

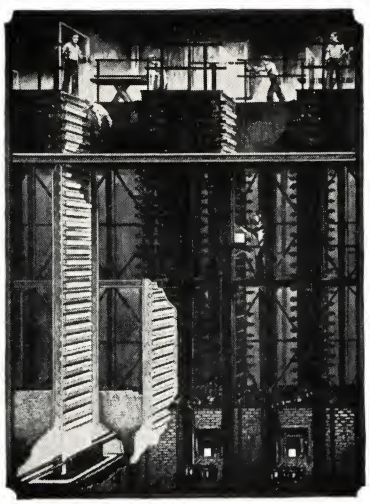
### Brand—Clearlite

CLEARLITE WINDOW GLASS is vertically drawn in perfectly flat sheets. There is no curvature to be ironed out, no bend to be straightened—it is kept flat from start to finish, the finest quality flat glass made. It is the same on both sides—no wrong or right side to look for when glazing.

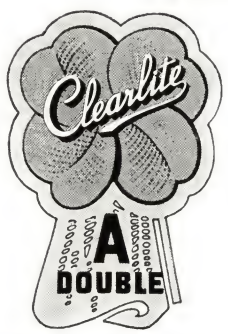
EASY ON THE EYES

### Advantages of Clearlite Glass

(1) Perfectly flat.
(2) Uniform in thickness.
(3) Natural fire polish of great lustre.
(4) Clear vision.
(5) The same on both sides.
(6) Great tensile strength.
(7) Easy to cut.
(8) Graded according to the highest standards.
(9) Clean and well packed.
(10) Available through leading jobbers in all principal centers.



**Vertically Drawn in Perfectly Flat Sheets**




*Clearlite Glass Carries This Label Designating Quality*

### Uses

For all purposes where perfectly flat glass is required. Not only for lighting of homes and buildings, but for mirrors, furniture, display cases, French doors, etc.

### Grading

CLEARLITE is graded according to the higest standards adopted by flat glass manufacturers of America and these standards of grading are strictly adhered to.

THICKNESS

| For | Lights per Inch | | |
|---|---|---|---|
| | Minimum | Average | Maximum |
| Single strength glass | 10.50 | 11.00 | 11.50 |
| Double strength glass | 7.50 | 8.00 | 8.50 |
| 16-oz picture glass | 13.00 | 13.50 | 14.00 |

| For | Thickness in Inches | | |
|---|---|---|---|
| | Minimum | Average | Maximum |
| Crystal sheet or heavy window glass— | | | |
| 3/16-in. glass | 0.187 | 0.193 | 0.200 |
| 7/32-in. glass | .212 | .218 | .225 |
| 1/4-in. glass | .240 | .248 | .255 |

### Service and Distribution

CLEARLITE is obtainable from the leading jobbers in the principal cities. If the jobber is unable to supply you, write or wire direct to FOURCO GLASS COMPANY, Clarksburg, W. Va.

Prompt shipment can be made from any one of the company's plants. The company, or nearest sales office, is prepared to furnish any information or offer recommendations to cover any requirements that may be submitted.

### A Perfectly Flat Sheet from Start to Finish

As illustrated to the left, CLEARLITE is vertically drawn from the molten state to the finished sheet—and it remains flat during this process. This assures glass of perfect flatness, uniform thickness, natural brilliant fire polish and great tensile strength. Thoroughly annealed as it is drawn, CLEARLITE is a clear vision glass of the finest quality.



# LIBBEY • OWENS • FORD

# *Glass*

FLAT DRAWN SHEET GLASS • POLISHED PLATE GLASS • TUF-FLEX TEMPERED PLATE GLASS • VITROLITE COLORFUL STRUCTURAL GLASS • VITROLUX COLOR FUSED TEMPERED PLATE GLASS • AKLO HEAT-ABSORBING PLATE GLASS • EXTRUDALITE STOREFRONT METAL • BLUE RIDGE FIGURED AND WIRE GLASS • OPTEX GLASS BLACKBOARD

# Glass IN ARCHITECTURE

As America rebuilds, the rule of common sense in architectural planning everywhere is evident. Ornamental appendages of prewar days are gone. The vision of a new type of architectural beauty based on related functional forms is a definite reality.

In this sweeping new movement in architecture, GLASS is being emphasized more and more. Its unique characteristics, enhanced by latest improvements in manufacturing processes, solve many a problem in residential, commercial and industrial building.

The fact that the average person spends at least half a lifetime between four walls makes self-evident the need for ample fenestration, more and larger windows. Window Walls, Picture Windows, Sun Porches and Solaria, as integral features of design, help the average person to bring more light and air into the daily pattern of his life. These are but a few of the ways in which glass, skillfully handled by the architect, compensates for the limitations of modern living habits.

In interior design, the beauty and practical utility of glass are recognized by architects as valuable aids, with generous areas of wall space being specially allotted to mirrors. Architects realize that mirrors mean much to the successful execution of interiors . . . that mirrors will double the apparent size of a room. Mirrors bring light to shadowed corners. Mirrors are gay and sparkling as they reflect lights and throw back color motifs. Their importance brings mirrors, unquestionably, within the architect's province to design and place judiciously throughout. Color, too, is now available for interesting effects with mirrors of L·O·F Polished Plate Glass . . . in blues, peach and green.

The glass industry has kept pace with the modern trend of architectural design. It has developed new and practical types of glass whose special characteristics and physical properties open up broader fields for the use of the product in design and construction. Tuf-Flex Tempered Plate Glass is three to seven times stronger than regular plate glass and has unusual resistance to physical and thermal shock. Vitrolux Color-Fused Tempered Plate Glass has the same physical properties as Tuf-Flex and is available in a wide range of colors. This glass enables the architect to practically build with color and light. Aklo, the heat absorbing plate glass, absorbs the infra-red rays of the sun and when used in double glazing fulfills many important useful functions in design and construction. All of these special glasses are discussed in detail in this catalog.

The increasing demands on glass — for more light and distinctive character in all types of modern construction — emphasize the importance of unvarying, highest quality in the product specified and used.

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# SELECTING THE RIGHT GLASS

**● The current trend in building which demands so much of glass has created the need for specialized types of glass to meet special requirements. As a result, well-known types of flat glass have been greatly improved. New types have been developed. Their uses cover an ever-broadening field, summarized in the following outline of glazing practice.**

## SHEET GLASS

● A Quality Double Strength is widely used in glazing private homes, apartment houses where low rentals prevail, smaller hotels, schools, hospitals and other public buildings.

## POLISHED PLATE GLASS
### (Clear and in Colors)

● In buildings and in private homes where the importance of quality glazing is recognized, Polished Plate Glass is used extensively. It is essential for store windows. Its use in many mirror installations falls logically within the province of the architect. To furnish even broader opportunities in mirror treatment, L·O·F Polished Plate Glass is also now regularly produced in three shades of blue, a peach and a green.

## FIGURED AND WIRE GLASS

● Figured Glass is generally specified for office corridors, partitions, skylights, elevator doors and other openings where obscurity is desirable. As a decorative medium, its distinctive character is employed in many homes and public buildings. Wire Glass is used in skylights and light wells and usually is required by building codes in openings exposed to the possibility of fire.

## SAFETY GLASS

● Safety Glass has many uses in industrial plants and in other buildings as a protection against theft.

## VITROLITE

● Vitrolite Opaque Structural Glass is furnished in a variety of plain and agate colors for use in bathrooms and kitchens in the home, modern store-front facings, store interiors and fixtures, wainscoting, theater lobbies, toilet partitions in public buildings and similar installations. It is preferred for its unusual structural beauty, for sanitation and for the ease and economy with which its sparkling surface can be maintained.

## TUF-FLEX

● Tuf-Flex Tempered Plate Glass has many specialty uses which employ the advantages of its peculiar properties. Its resistance to impact and thermal shock makes it ideally suited for uses where greater strength is necessary such as in display cases, revolving doors, display shelves, sign facings and show-window trim. Tuf-Flex cannot be cut, mitered, beveled or edged after tempering, and **must** therefore **be ordered from the factory in exact sizes** required.

## VITROLUX

● Vitrolux Color Fused Tempered Plate Glass has the same physical characteristics as Tuf-Flex with the added feature that it is available in a wide range of attractive colors—some translucent and some opaque. It answers the architect's demand for a material that will enable him to use luminous color as an integral part of the structure itself, and may be used to create unusual exterior or interior lighting effects. For more complete information see pages 9 to 13 of this catalog.

## AKLO

● This Plate Glass, with its special chemical composition, has the unusual property of absorbing infra-red heat rays. This is an important aid in maintaining even temperatures within a structure. AKLO Plate Glass reduces the cost of operating air-conditioning equipment for cooling purposes, because it reduces the total load for a given window area. Recommended for store fronts and lighting fixtures where perishable products are to be displayed.

# L·O·F SHEET GLASS



The formation of the sheet by the Exclusive L·O·F Flat Drawing Process is illustrated above. Here the glass is being drawn from the melting tank and passed through carefully regulated gas flames which give it a natural fire finish and lasting brilliance.

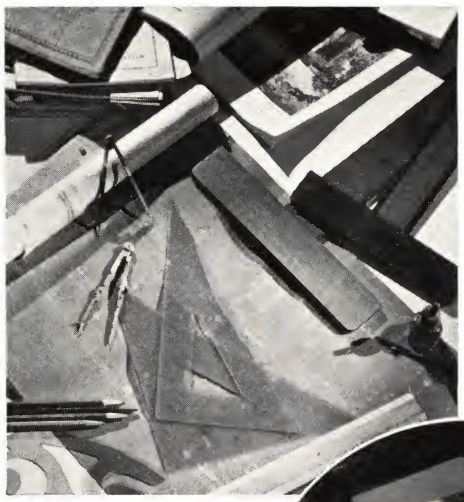
● When first introduced over 19 years ago, the Exclusive Libbey·Owens·Ford Flat Drawing Process revolutionized the window glass industry. This process has been constantly refined and improved. Today the glass made by it is brighter, flatter and clearer than any the industry has ever offered. The exceptional flatness of L·O·F Sheet Glass is vitally important when it is used in double glazing—so essential for air conditioning and lower fuel cost.

After the glass is drawn from the tank by the Exclusive L·O·F Sheet Glass Machine, it is thoroughly annealed in lehrs four or five times longer than those used in any other process. This slow and thorough annealing eliminates strain, making a less brittle glass and consequently one in which there is far less breakage.

Because of these characteristics and the wide public acceptance enjoyed by all L·O·F products, a closed specification for L·O·F Quality Glass assures your client's satisfaction.

## *Can you tell which is which?*

While this is by no means a technical or scientific test, it is nevertheless a very practical one, and convincing evidence that L·O·F Quality Sheet Glass is exceptionally clear and flat. It explains, in some measure, why so many architects write a closed specification for this fine glass. For your protection, instruct contractors and builders to leave the labels on until final inspection has been made.



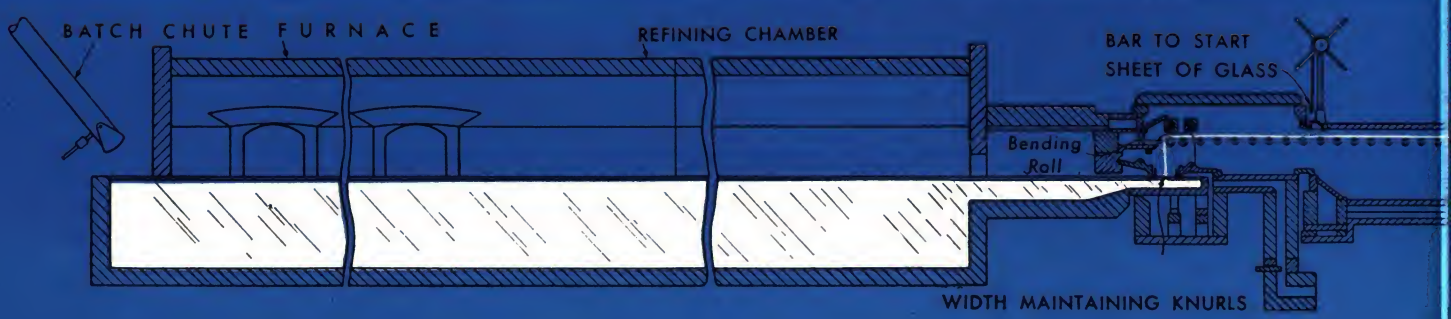


The authenticity of these photographs is attested to by Underwood & Underwood.



One of these pictures was taken through a piece of L·O·F Quality Glass. (In the other there was **nothing** between the camera and the subject.)

## A PRACTICAL DEMONSTRATION OF THE *Superior Quality* OF L·O·F QUALITY SHEET GLASS



# PRACTICAL INFORMATION ON SHEET GLASS




● **Libbey·Owens·Ford Flat Drawn Sheet Glass is manufactured in several grades and of varying thicknesses. Single Strength and Double Strength Sheet Glass are regularly supplied in two standard grades—A Quality and B Quality. Both are labeled. (A blue label indicates Double Strength —a red label, Single Strength.)**

## FLATNESS . . . . . .

The L·O·F exclusive process of manufacture draws the glass into a flat sheet directly from the molten state. This process produces a glass so free from wave that it gives a clearer, sharper image.

## TOLERANCES IN THICKNESS . . .

L·O·F Sheet Glass Table of Thickness Standards is given below:

| | Thickness, in. | | Lights per in. | | Av. Weight, oz. per sq. ft. |
|---|---|---|---|---|---|
| | Min. | Max. | Min. | Max. | |
| SINGLE STRENGTH . . . . | .087 | .100 | 10.5 | 11.50 | 19.55 |
| DOUBLE STRENGTH . . . . | .118 | .133 | 7.5 | 8.50 | 26.00 |
| $\frac{3}{16}$" SHEET . . . . . | .187 | .200 | 5.0 | 5.35 | 40.00 |
| $\frac{7}{32}$" SHEET . . . . . | .212 | .225 | 4.4 | 4.70 | 45.00 |
| PICTURE GLASS . . . . . | .056 | .067 | 15.0 | 17.00 | 13.00 |

## DIMENSIONS . . . . . .

L·O·F Sheet Glass is cut to dimensions well within the allowable limits of Government specifications, less than 1/32 in. per $\frac{1}{8}$ in. thickness.

## PACKING . . . . . .

All L·O·F Sheet Glass is shipped in Cushion Corner Cap packages —the neatest, cleanest, and nearest to moisture-proof method of packing so far developed.

## STANDARD SPECIFICATIONS . . .

All Flat Drawn Sheet Glass shall be Libbey·Owens·Ford A Quality Double Strength, except as otherwise noted, packed in Cushion Corner Cap boxes. Each light shall bear the Libbey·Owens·Ford label, indicating strength and quality of the glass.



# L·O·F POLISHED PLATE GLASS

● **Libbey·Owens·Ford Polished Plate Glass is manufactured in plants fitted throughout with the finest and most modern equipment. Only raw materials of highest quality are used. The sparkling luster and brilliance characteristic of L·O·F Plate Glass are a result of grinding and polishing by highly accurate machines. Grinding removes surface inequalities as the glass reaches this stage of manufacture. Polishing, which imparts distinctive beauty to L·O·F Plate Glass is accomplished by felt-covered rotating discs. Each light of glass is carefully inspected and graded before it receives the identifying L·O·F label. Because of its superior finish, unusual clearness and enduring brilliance, discriminating architects prefer and specify Libbey·Owens·Ford Polished Plate Glass for an increasing number of uses.**

## PRACTICAL INFORMATION

The very finest polished plate glass, which is used almost exclusively in making the costliest mirrors, is known as "First Silvering Quality." Owing to the high cost of selecting this quality, it is never specified for building purposes. The next quality is called "Second Silvering" and is often used for high-grade glazing work, but is seldom specified in sizes over 20 sq. ft. Most of the plate glass used in glazing is known as "Glazing Quality." Definite requirements for tolerances in thickness and dimensions are set up in U. S. Government specifications. The general requirements under U. S. standards are:

## SIZE AND THICKNESS

The standard thickness of plate glass shall be 1/8, 3/16, 1/4, 3/8, 1/2, 5/8, 3/4, 1, 1 1/4 and 1 1/2 in. Sheets are available 1/4-in. thick in sizes having a maximum area of 250 sq. ft. Glass of 1/4-in. thickness may be furnished in any dimensions under the maximum 126 x 284 in. The standard stock thickness for glazing purposes is 1/4 in., but this may vary between 7/32 and 5/16 in. Standard thickness of colored plate glass is 7/32 in.

## TOLERANCES IN THICKNESS

The maximum and minimum thickness allowed shall not be more than the given thickness plus or minus one half the difference between the standard thicknesses, although for 1/4-in. glass occasional plates as thick as 5/16 in. are supplied. The general variation in thickness should not be more than 1/32 in. for individual lights under 10 sq. ft., in thicknesses up to 1/4 in. The variation in lights over 1/4 in. in thickness should not exceed one half the total tolerance for that thickness.

## STANDARD SPECIFICATION

Where polished plate glass is specified or shown on plans, it shall be manufactured by the Libbey·Owens·Ford Glass Company, and shall be of (—) quality and (—) thickness (insert quality and thickness) in accordance with U. S. Government Standards.

# POLISHED PLATE GLASS FOR *Mirrors*

**MIRRORS** have become, in many instances, an integral part of architectural design. In modern residences, as well as in stores and public buildings, they form an important part of the interior decorative motif. As the use of silvered plate glass continues to broaden, its specification and adaptation become more and more a province of architecture.

Libbey·Owens·Ford Polished Plate Glass is noted for its brilliant polish and freedom from imperfections.

**STANDARDS OF QUALITY** • For the guidance of the architect and owner and for the protection of the mirror manufacturer, the following standards of quality have been approved by the Mirror Manufacturers Association of America.

**A QUALITY** • The central area of mirrors of this quality shall be free from major defects, but may contain well-scattered seed and short faint hair lines, when not grouped, and occasionally very light short finish visible only on close inspection. The outer area, in addition to the foregoing, may contain seed and short faint scratches when not grouped.

**No. 1 QUALITY** • The central area of mirrors of this quality may contain scattered seed, faint hair lines, and light short finish. The outer area in addition to the foregoing may contain short scratches and occasional strings not over 2 in. long.

**No. 2 QUALITY** • Mirrors of this quality may contain the following defects: Numerous scattered seed, occasional coarse seed, light reams, strings, light scratches, short finish if not torn, hair lines if not too densely grouped, and bullseye if not visible from front inspection.

**THICKNESS** • Plate glass mirrors of commercial standard quality shall be between 3/16 and 5/16 of an inch thick. If specific thicknesses are ordered, a variation of 1/32 in. plus or minus the given thickness shall be allowed.

**SILVERING** • All commercial standard quality mirrors shall be silvered in an approved manner and guaranteed for a period of one year from the date of manufacture unless the mirrors are subjected to unusual conditions, such as open weather, moist walls, steamed rooms, direct sunlight or, similar conditions.



**Right**—The sparkling brilliance of these mirror panels forms the decorative keynote of this excellent interior design.



**Above**—This happy combination of the functional and decorative use of a large mirror area gives added width to the room and a note of brilliance to its attractive interior.

**Right**—A mirrored wall panel effectively flanked by mirror strips brightens up this wall area and reflects light back into the room.





**Right**—View through a picture window of peach color plate glass, the exterior of which is illustrated on page 7.



# *Colored* PLATE GLASS

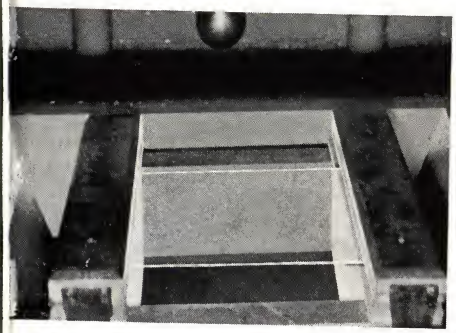
Architects and interior designers are finding that polished plate glass in colors is a valuable aid in creating interesting effects both in residences and public buildings. In mirrors, the peach or the green, or any of the three shades of blue can be used to add a cheerful emphasis to the decorative treatment. Peach color plate glass is used in the picture window illustrated here. From within, the view through this delicately colored glass assumes an unusual warmth.

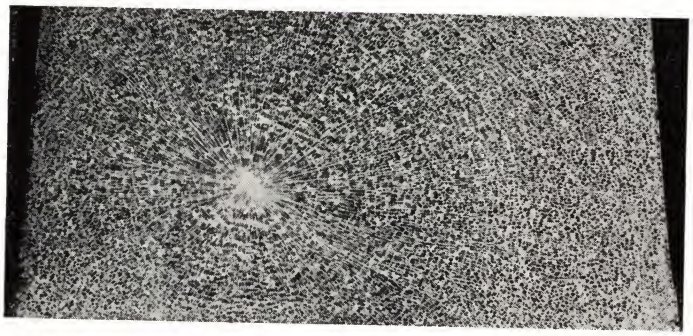
# TUF-FLEX *Tempered* PLATE GLASS

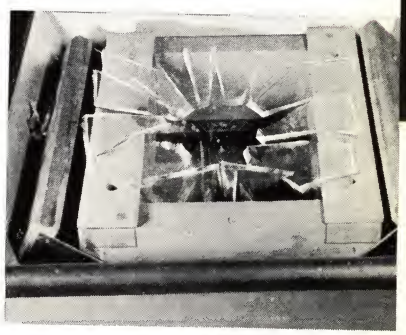
● **TUF-FLEX** is a tempered plate glass made by a special process of reheating and cooling polished plate glass. It is much stronger than plate glass of the same thickness and more resistant to impact and thermal shock. Tuf-Flex is ideally suited for glass shelving and fire-screens; for port-hole glass in ships; for sterilizing ovens, oven doors and similar enclosures subject to extreme heat changes; for glazing doors of stores and public buildings and places of amusement; for kick-plates on doors; for show-case shelves in stores and in exhibition cases in museums; for use in modern fixtures; and as a practical substitute for wire glass in skylights and monitors when additional light is required. These are a few of the many practical new uses for Tuf-Flex constantly being discovered.

Tuf-Flex is furnished in clear or colored plate glass. Vitrolite Structural Glass can also be tempered into Tuf-Flex to give it extra strength and greater heat resistance. Tuf-Flex can be supplied silvered, ground or etched, but cannot be cut after it is tempered, consequently **the exact sizes required must be specified.** It is available in sizes not exceeding 48 x 48 in. and in thickness from ¼ in. up, with the exception of Tuf-Flex made of colored plate glass which is produced in 7/32-in. thickness only. Complete information on Tuf-Flex is available in booklet form.

*While Tuf-Flex is not unbreakable, its tempering process limits its susceptibility to breakage. Chipping or puncturing exposed edges or surfaces causes the glass to disintegrate into small crystals which have a tendency to fly apart.



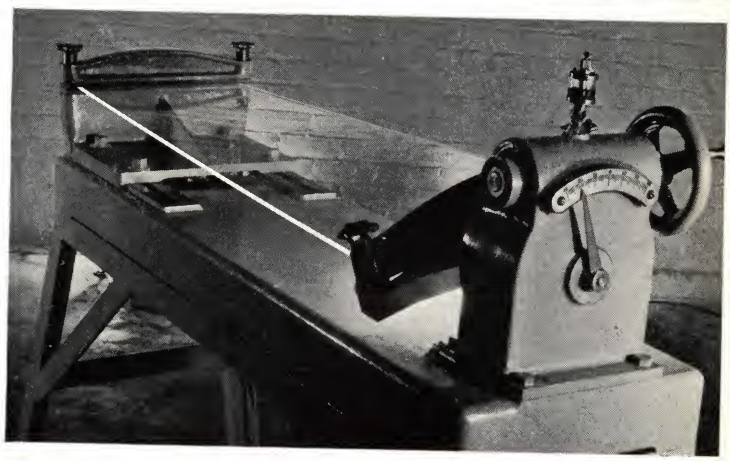






**ABOVE** ● The photograph on the left shows a 2-pound steel ball bounding back from a 12 x 12-in. light of ¼-in. Tuf-Flex, after a drop of 5 ft. At the right, from less than 1 ft., the same ball shatters a similar light of ¼-in. regular plate glass. The center photograph shows the manner in which Tuf-Flex disintegrates when the limit of resistance is reached.

**BELOW** ● At the left, Tuf-Flex does not break when molten lead is poured on it, even though the ¼-in. light rests on a cake of ice. Regular plate glass, similarly tested, shattered instantly. At the right, a 12 x 48-in. light of Tuf-Flex twists through an angle of 20 degrees without failure. Regular plate glass of the same size and thickness failed at 7 degrees.



# VITROLUX

## COLOR FUSED TEMPERED

## *Plate Glass* OFFERS

### Limitless combinations for store fronts . . . theaters . . . restaurants . . . gas stations




● In recent years architecture has been seeking a more skillful, a more colorful use of light. This architectural demand for a medium offering diversified colors and surfaces evenly luminous by better light diffusion has led to the creation of VITROLUX. Now, luminous color as an integral part of the structure itself opens up vast new design possibilities. Luminous buildings that "give off," not merely reflect light, become beacons of soft, glowing color. Store fronts are created that bring every eye to attention.

VITROLUX—three to seven times stronger than ordinary plate glass and highly resistant to thermal shock—is offered in a wide range of colors, translucent or opaque. It becomes, therefore, the logical companion of VITROLITE (opaque colorful structural glass, a product of Libbey · Owens · Ford Glass Company) in achieving full realization of modern design possibilities in commercial fronts and in details of residential interiors.

TWO TYPES of Vitrolux are available—TRANSLUCENT in 18 colors, OPAQUE in 9 colors, or any two-color COMBINATION. Infinite design possibilities thus afforded are further increased when considered in conjunction with VITROLITE.

TRANSLUCENT VITROLUX diffuses light with such exceptional uniformity that with properly designed lighting, no bright spots reveal the source of illumination. When not illuminated, Translucent Vitrolux appears to be a solid opaque colored glass.

No other material available today has the same combination of characteristics that makes Vitrolux the outstanding material for store fronts. Vitrolux provides even diffusion of light; the fire fused colors are an integral part of the glass and because of its unusual resistance to thermal shock it is not affected by rain or snow coming in contact with the warmed surfaces of the lighted glass area.

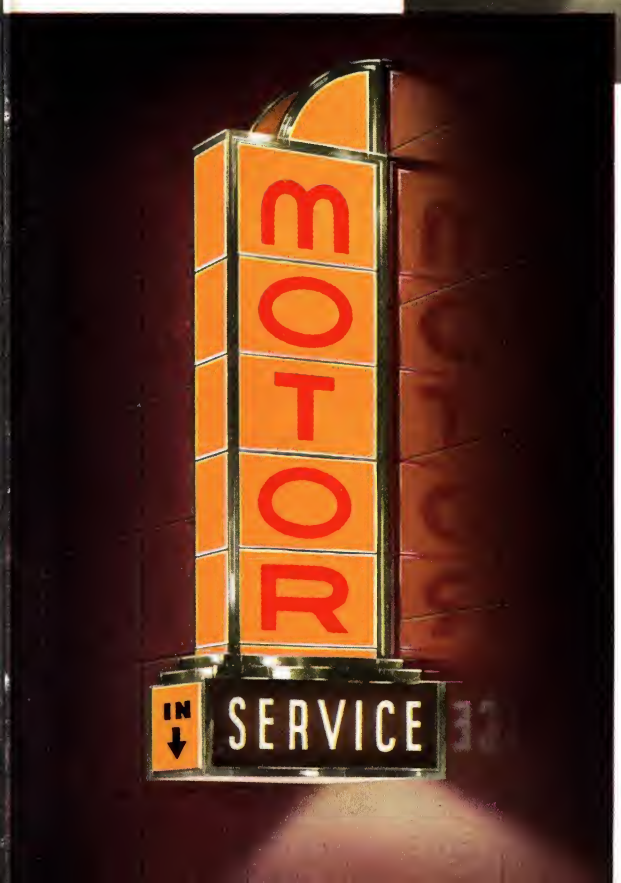
An entire store front may be designed to provide space for lighting and is thus transformed by the use of Vitrolux into a startlingly different new type of front—appealing to the eye—advanced in smartness. Vitrolux is ideally suited for lettering of exterior signs on store fronts and other commercial buildings. Cut-out wood or metal letters provide silhouette lettering. Also, signs of two-color Vitrolux may be furnished in two translucent colors — or an opaque background with translucent letters — or a translucent background with opaque letters. Any of these combinations produce a striking effect. Vitrolux is particularly applicable to theater fronts, transoms, bulkheads and gas stations.




**LEFT**—The Biltmore Tap Room, 69 E. Madison Ave., Chicago, designed and erected by Palmer Personal Service. The highly luminous effect of translucent Vitrolux is clearly illustrated—offering a brilliant welcome to all who pass.

**RIGHT**— A colorful and attention-arresting front for a smart shop—Vitrolux makes any place of business appear modern and progressive.

**BELOW** — Luminous signs that are strikingly beautiful can be created with translucent Vitrolux. Lettering and color are an integral part of the glass.




And because of its exceptional strength and unusual resistance to thermal shock, Vitrolux is highly effective in the creation of attractive overhead hanging signs — particularly in localities where codes normally restrict the size of glass panels because of danger of breakage. For if broken, this new, remarkable type of glass crumbles into relatively small particles resembling bath salts—an added provision for public safety.

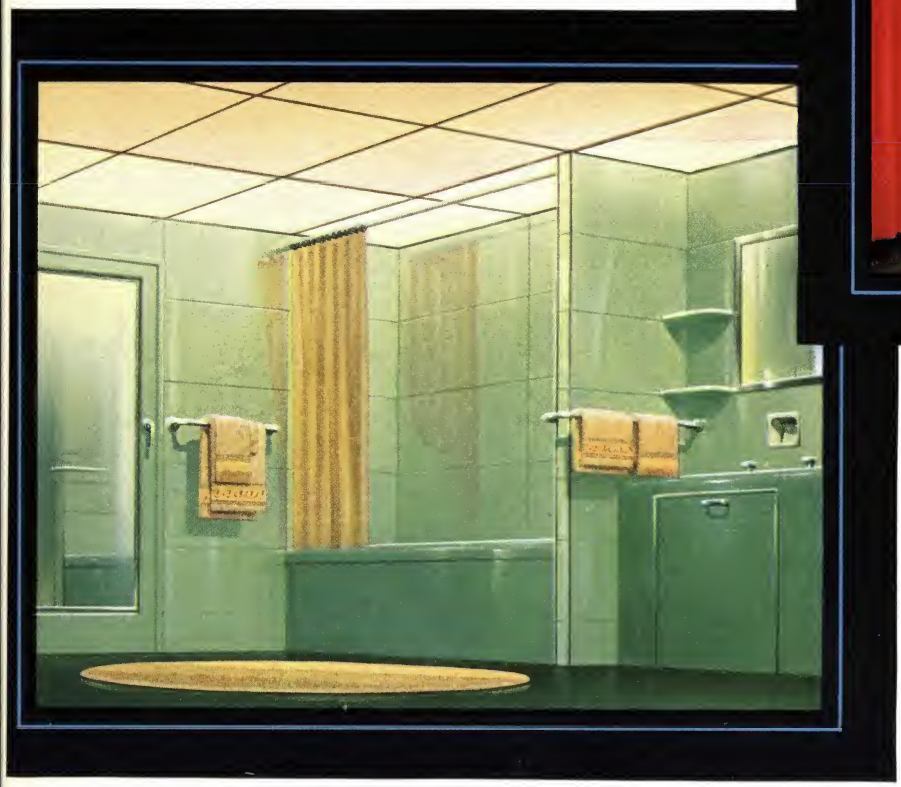
While Vitrolux is not unbreakable, its tempering process limits its susceptibility to breakage. Chipping or puncturing exposed edges or surfaces causes the glass to disintegrate into small crystals, and if not framed, the crystals have a tendency to fly apart.

OPAQUE VITROLUX is made at present in nine colors, six of which match the six standard plain colors of Vitrolite and special colors can be furnished on order. Opaque Vitrolux may be installed with mastic in the same manner as structural glass.

# IN *modern homes* USE VITROLUX AND VITROLITE

● Rare and distinctive beauty is attained in modern bathrooms with the combined use of Vitrolite and Vitrolux. Walls of Vitrolite in soft shades with luminous Vitrolux for ceiling lighting elevate the bathroom to a new plane of attractiveness and convenience—make it modern.





## GENERAL SPECIFICATIONS FOR VITROLUX

**VITROLUX** is Tuf-Flex Tempered Plate Glass with the added feature of vitreous color—fire-fused on the back surface to become an integral part of the glass itself. Vitrolux color is of the sunfast type and offers the same natural resistance to weathering, crazing and checking as ordinary glass. Vitrolux Glass can only be furnished cut to exact size or pattern. All edgework, pattern cutting or drilling of holes, etc. must be done at the factory.

**DIMENSIONS**—Thickness ¼" only. Maximum length 48". Maximum breadth 48". No lights furnished in long, thin proportions exceeding 1 to 12. Examples of limits: 2" x 24", 3" x 36", 4" x 48".

**CUTTING**—Vitrolux cannot be cut or ground after manufacture. This necessitates careful layout work as exact dimensions must be given in ordering.

**EDGEWORK**—Unless otherwise specified, all Vitrolux is furnished with seamed (or swiped) edges at no extra charge. On order, Vitrolux will be furnished with polished edges, bull noses or most types of standard edgework.

**TONG MARKS**—Always found along one edge. (Small lights may be produced without them.)

**DRILLED HOLES**—Minimum size of hole that will be drilled, ¼" diameter. All holes or apertures must have minimum distance of 1½" from perimeter to edge of light.

**WARPAGE**—Slight warpage possible, never serious enough to interfere with installation.

**INSTALLATION**—Vitrolux should be handled as glass, bearing in mind, of course, that it can be neither worked nor altered on the job. Translucent Vitrolux should be installed exactly as ordinary glass is installed. When used for structural purposes, opaque Vitrolux should be installed exactly as structural glass is installed.

# Essentials

# OF LIGHTING DESIGN FOR LUMINOUS ELEMENTS OF VITROLUX GLASS

**LIGHTING METHOD**— The recommended lighting of translucent Vitrolux Glass is accomplished by placing electric lamps behind the glass and enclosing them with reflecting surfaces. These reflecting surfaces may assume various shapes or forms referred to as Element Forms, and while no general set of design data can embrace all the conditions encountered in luminous architecture, the eight Element Forms illustrated in accompanying tables are typical of a wide range of applications.

**REFLECTING SURFACE**—It is extremely important to economy and effective luminosity to completely enclose the lamps behind the glass with a reflecting surface of high efficiency. All interior surfaces should have a white finish such as mat white paint.

**ELECTRICAL EQUIPMENT**—The lighting design is based upon the use of standard Mazda lamps, and no special fittings or reflectors are required in most elements.

**BRIGHTNESS**—The desirable brightness for luminous displays governs the lamp wattage to be selected. Brightness is the degree of brilliancy of a surface and is measured in Foot-Lamberts. A luminous surface of too high brightness causes glare while a luminous surface too low in brightness is drab and unattractive. An installation of any given Foot-Lamberts will have an effect of low brightness or high brightness under varying conditions such as size and brightness of nearby displays and surrounding areas and size of the installation itself. And different types of commercial establishments require not only a careful color selection but different degrees of brightness to provide the desired effect. With certain colors, too, a lower brightness often proves effective.

**USE OF TABLES**—The following table lists various types of installations and recommends the degree of brightness most advantageous in low-, medium- or high-brightness districts. In selecting the lamp wattages from Table II only an approximate brightness value is required from Table I.

## (TABLE I)

## SUGGESTED AVERAGE BRIGHTNESS VALUES FOR VITROLUX

(In Foot-Lamberts)

| Type of Luminous Installation | General Brightness of District | | |
|---|---|---|---|
| | Low | Medium | High |
| Luminous store fronts, luminous transoms, luminous backgrounds and signs | 80–130 | 100–200 | 150–350 |
| Projecting units of dominant character | 50–130 | 70–170 | 150–300 |
| Decorative flush units (Principal units in design) | 30–100 | 50–150 | 100–300 |
| Translucent letters with an opaque background | 150–200 | 200–400 | 300–600 |
| Marquees, pylons, gasoline service stations, etc. | 80–150 | 100–250 | 200–400 |
| Interior ceiling installations: (Approx. upper limits) | | | |
| High ceilings | 500 | | |
| Low ceilings | 250 | | |
| Interior bathroom and shower ceilings | 75 | | |

**ELEMENTS**— The majority of the eight luminous element forms illustrated and tabled below are adaptable to typical Vitrolux applications. Each offers advantages to particular installations such as—No. 3, shallow background; No. 1, use of lower wattage; No. 5, more suitable to corner installations.

**LAMP LOCATION AND SIZE**— After the selection of the element form, the table accompanying the element chosen will determine such factors as size and wattages of lamps, distance from the back of the glass to the center of the lamp and correct spacing between lamps. In the tables below,

W—represents the width of the Vitrolux glass to be illuminated.

D—is the distance from the back of the Vitrolux glass to the center of each lamp.

S—is the maximum spacing between lamps for uniformity of brightness (measured between centers of filaments).

**EXAMPLE**— For a transom sign 30" high the element form must first be chosen. If, say, element form 2 is chosen, run down the column headed W to 30 and we find that the lamps should be spaced 10 inches behind the glass and 15 inches apart. The other figures at the right represent varying degrees of brightness as set forth in Table I. If brightness 150 is selected, the figure at the top of the column indicates that 60-watt lamps should be used.

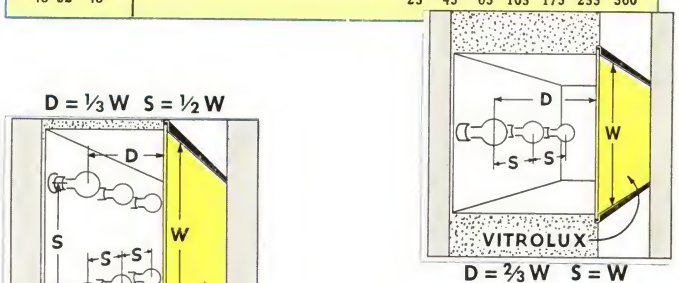
## (TABLE II)

## COMPUTED AVERAGE BRIGHTNESS VALUES IN FOOT-LAMBERTS FOR LUMINOUS ELEMENTS OF DIFFUSING WHITE VITROLUX GLASS

**(Depreciation from initial values has been allowed for—initial brightness x 0.7)**

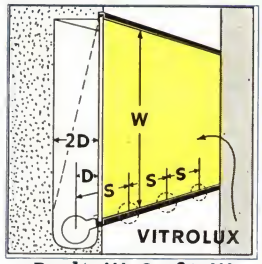
**ELEMENT FORM No. 1**

| Dimensions in Inches | | | Watts per Lamp | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| W | D | S | 10 | 15 | 25 | 40 | 50 | 60 | 75 | 100 | 150 | 200 | 300 | 500 | 750 | 1000 |
| 6 | 4 | 6 | 90 | 160 | 290 | 500 | | | | | | | | | | |
| 9 | 6 | 9 | 40 | 70 | 130 | 220 | 295 | 415 | 535 | | | | | | | |
| 12 | 8 | 12 | 20 | 40 | 70 | 125 | 165 | 230 | 300 | 430 | | | | | | |
| 15 | 10 | 15 | | 25 | 45 | 80 | 105 | 150 | 195 | 275 | 465 | | | | | |
| 18 | 12 | 18 | | | 30 | 55 | 75 | 105 | 135 | 190 | 320 | 455 | | | | |
| 24 | 16 | 24 | | | | 30 | 40 | 60 | 75 | 105 | 180 | 255 | 410 | | | |
| 30 | 20 | 30 | | | | | 25 | 35 | 50 | 70 | 115 | 165 | 260 | 450 | | |
| 36 | 24 | 36 | | | | | | 25 | 35 | 50 | 80 | 115 | 180 | 310 | 455 | |
| 48 | 32 | 48 | | | | | | | | 25 | 45 | 65 | 105 | 175 | 255 | 360 |




**ELEMENT FORM No. 2**

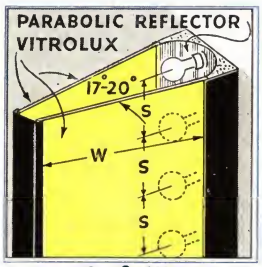
| Dimensions in Inches | | | Watts per Lamp | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| W | D | S | 10 | 15 | 25 | 40 | 50 | 60 | 75 | 100 | 150 | 200 | 300 | 500 | 750 | 1000 |
| 12 | 4 | 6 | 90 | 160 | 290 | 500 | | | | | | | | | | |
| 18 | 6 | 9 | 40 | 70 | 130 | 220 | 295 | 415 | 535 | | | | | | | |
| 24 | 8 | 12 | 20 | 40 | 70 | 125 | 165 | 230 | 300 | 430 | | | | | | |
| 30 | 10 | 15 | | 25 | 45 | 80 | 105 | 150 | 195 | 275 | 465 | | | | | |
| 36 | 12 | 18 | | | 30 | 55 | 75 | 105 | 135 | 190 | 320 | 455 | | | | |
| 48 | 16 | 24 | | | | 30 | 40 | 60 | 75 | 105 | 180 | 255 | 410 | | | |




D = 1/10 W S = 2/10 W

**ELEMENT FORM No. 3**

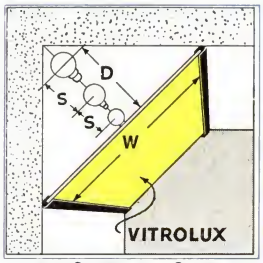
| Dimensions in Inches | | | Watts per Lamp | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| W | D | S | 10 | 15 | 25 | 40 | 50 | 60 | 75 | 100 | 150 | 200 | 300 | 500 | 750 | 1000 |
| 18 | 2 | 4 | 25 | 45 | 85 | 145 | 190 | 265 | 345 | 490 | | | | | | |
| 24 | 2½ | 5 | | 25 | 50 | 85 | 115 | 160 | 210 | 295 | 500 | | | | | |
| 30 | 3 | 6 | | | 35 | 55 | 75 | 105 | 140 | 195 | 330 | 470 | | | | |
| 36 | 3½ | 7 | | | | 40 | 55 | 75 | 100 | 140 | 240 | 335 | 535 | | | |
| 48 | 5 | 10 | | | | | 30 | 40 | 50 | 75 | 125 | 175 | 280 | 480 | | |




S = 2/5 W

**ELEMENT FORM No. 4**

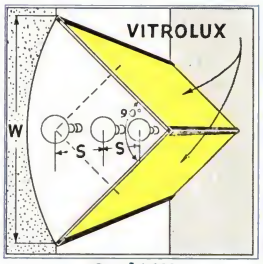
| Dimensions in Inches | | | Watts per Lamp | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| W | D | S | 10 | 15 | 25 | 40 | 50 | 60 | 75 | 100 | 150 | 200 | 300 | 500 | 750 | 1000 |
| 18 | | 8 | | | 35 | 65 | 85 | 115 | 155 | 220 | 370 | 520 | | | | |
| 24 | | 10 | | | | 40 | 50 | 70 | 190 | 130 | 220 | 315 | 500 | | | |
| 30 | | 13 | | | | | 30 | 45 | 55 | 80 | 135 | 195 | 310 | 530 | | |
| 36 | | 15 | | | | | | 30 | 40 | 60 | 100 | 135 | 215 | 380 | 555 | |
| 42 | | 18 | | | | | | | 30 | 40 | 70 | 100 | 165 | 270 | 400 | |
| 48 | | 21 | | | | | | | | 30 | 55 | 75 | 120 | 205 | 300 | 425 |




D = 2/5 W S = 3/5 W

**ELEMENT FORM No. 5**

| Dimensions in Inches | | | Watts per Lamp | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| W | D | S | 10 | 15 | 25 | 40 | 50 | 60 | 75 | 100 | 150 | 200 | 300 | 500 | 750 | 1000 |
| 12 | 5 | 7½ | 40 | 65 | 125 | 215 | 285 | 400 | 515 | | | | | | | |
| 15 | 6 | 9 | 25 | 45 | 85 | 140 | 190 | 265 | 345 | 490 | | | | | | |
| 18 | 7 | 10½ | | 30 | 60 | 100 | 135 | 190 | 245 | 350 | 590 | | | | | |
| 24 | 10 | 15 | | | 30 | 55 | 70 | 100 | 130 | 185 | 310 | 440 | | | | |
| 30 | 12 | 18 | | | | 35 | 45 | 65 | 85 | 120 | 210 | 290 | 465 | | | |
| 36 | 14 | 21 | | | | | 35 | 45 | 60 | 85 | 150 | 210 | 335 | 575 | | |
| 48 | 19 | 29 | | | | | | 25 | 35 | 50 | 80 | 110 | 180 | 320 | 450 | |

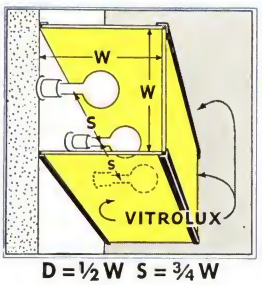



S = ½ W

**ELEMENT FORM No. 6**

| Dimensions in Inches | | | Watts per Lamp | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| W | D | S | 10 | 15 | 25 | 40 | 50 | 60 | 75 | 100 | 150 | 200 | 300 | 500 | 750 | 1000 |
| 12 | * | 6 | 40 | 70 | 130 | 220 | 295 | 415 | 535 | | | | | | | |
| 18 | * | 9 | | 30 | 55 | 100 | 130 | 185 | 240 | 340 | 570 | | | | | |
| 24 | * | 12 | | | 30 | 55 | 75 | 105 | 135 | 190 | 320 | 445 | | | | |
| 30 | * | 15 | | | | 35 | 45 | 65 | 85 | 120 | 205 | 290 | 465 | | | |
| 36 | * | 18 | | | | | 35 | 45 | 60 | 85 | 145 | 200 | 320 | 555 | | |
| 48 | * | 24 | | | | | | 25 | 35 | 50 | 80 | 115 | 180 | 310 | 450 | |

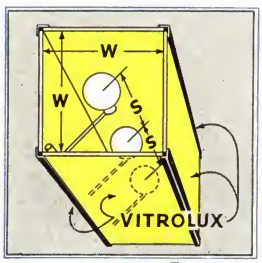
*Position Lamps Equidistant from the two sizes.




D = ½ W S = ¾ W

**ELEMENT FORM No. 7**

| Dimensions in Inches | | | Watts per Lamp | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| W | D | S | 10 | 15 | 25 | 40 | 50 | 60 | 75 | 100 | 150 | 200 | 300 | 500 | 750 | 1000 |
| 12 | 6 | 9 | | 25 | 50 | 85 | 115 | 160 | 205 | 290 | 495 | | | | | |
| 18 | 9 | 13½ | | | 20 | 40 | 50 | 70 | 90 | 130 | 220 | 315 | 500 | | | |
| 24 | 12 | 18 | | | | | 30 | 40 | 50 | 75 | 125 | 175 | 280 | 480 | | |
| 30 | 15 | 22½ | | | | | | 25 | 35 | 45 | 80 | 110 | 175 | 310 | 450 | |
| 36 | 18 | 27 | | | | | | | 25 | 35 | 55 | 80 | 125 | 215 | 310 | 445 |
| 48 | 24 | 36 | | | | | | | | 20 | 30 | 45 | 70 | 120 | 175 | 250 |




D = ½ W S = 7/10 W

**ELEMENT FORM No. 8**

| Dimensions in Inches | | | Watts per Lamp | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| W | D | S | 10 | 15 | 25 | 40 | 50 | 60 | 75 | 100 | 150 | 200 | 300 | 500 | 750 | 1000 |
| 12 | 6 | 8½ | | | 45 | 80 | 105 | 145 | 190 | 270 | 460 | | | | | |
| 18 | 9 | 12½ | | | | 35 | 50 | 65 | 85 | 125 | 210 | 295 | 470 | | | |
| 24 | 12 | 17 | | | | | 25 | 35 | 50 | 70 | 115 | 160 | 260 | 445 | | |
| 30 | 15 | 21 | | | | | | 25 | 30 | 45 | 75 | 105 | 165 | 290 | 420 | 595 |
| 36 | 18 | 25 | | | | | | | | 30 | 50 | 75 | 115 | 200 | 290 | 410 |
| 48 | 24 | 34 | | | | | | | | | 30 | 40 | 65 | 110 | 160 | 230 |




## (TABLE II—Continued)

**NOTE:** These tables are based on enclosed white reflecting surfaces reflecting 75% of the light.

For the sake of simplicity, only a single sheet of Vitrolux glass covers the face of the element in each of the element forms illustrated. But it is, of course, possible to use any desired number of pieces of glass for the face of the element.

To produce luminous areas larger than those shown in the tables, element forms may be combined one above or beside another. For example, the design of lighting for an area 12 ft. high may be composed of 3 units of Element Form No. 1, each 48" high, and the size and location of lamps determined directly from the table of Element Form No. 1. In this case the abutting reflecting surfaces of the three combined elements may be omitted, enclosing the lamps with the outer end and rear reflecting surfaces only.

If such a design results in a depth greater than practical, the distance behind the glass may be reduced by designing the lighting to be comprised of four element forms each 36" high, etc., etc.

## LIGHTING DESIGN OF VITROLUX IN COLORS OTHER THAN WHITE

The lighting design for other colors should be determined by the same procedure followed in the design for lighting for white Vitrolux. The same values of "D" and "S" should be used regardless of color.

The lamp wattages as determined in Table II for white Vitrolux may also be used for

| | |
|---|---|
| Ivory | Deep Orange |
| Yellow | Chinese Red |
| Bright Yellow | Brilliant Red |
| Light Orange | Bright Red |

It is suggested that the next larger size of lamp be used for

| | |
|---|---|
| Pastel Green | Apple Green |
| Sea Green | Light Blue |
| Baby Blue | |

Lamps two sizes larger than those determined by Table II are recommended when using

| | |
|---|---|
| Irish Green | Dull Green |
| Dark Green | Medium Blue |

For example, in working out an installation in which Table II requires 60-watt lamps for white Vitrolux, use 75-watt lamps instead, if Pastel Green Vitrolux is used. If Irish Green Vitrolux is to be installed, use 100-watt lamps instead of 60-watt lamps.

•

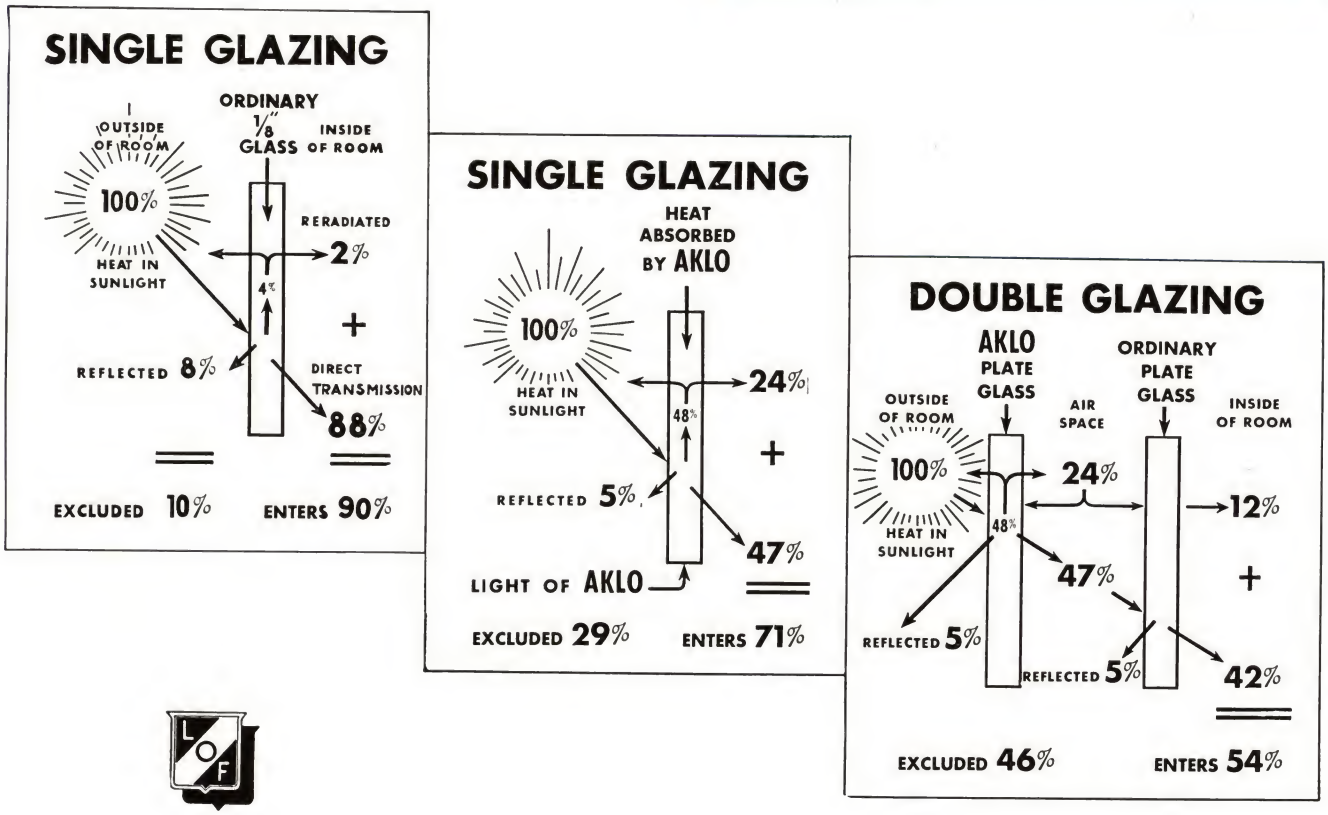
In figuring wire sizes and circuit layout, it is good practice to allow capacity for at least one size larger lamp than planned in order to provide a margin for testing or future increases of brightness.

# AKLO HEAT-ABSORBING PLATE GLASS

**AKLO** Plate Glass is a glass of special chemical composition that has the peculiar property of absorbing heat. It is a practical aid in solving the problem of transmission of solar heat into all types of buildings. Even when air-conditioning equipment is installed to assure comfortable temperatures by artificial means, AKLO Plate Glass reduces the cost of operating that equipment by reducing the total cooling load for a given window area. Double glazing, of course, is always recommended and is practically essential with air-conditioning equipment. AKLO simply increases its efficiency, as is evident from the table at the right that records the results of laboratory experiments.

**AKLO** Plate Glass absorbs the infra-red rays from the sun and from artificial light. In the table at the right, the maximum temperature differences between the inside and outside of an enclosure were measured in a small box 6 x 6 x 3 in. in which a small window was placed using different kinds of glass. The temperature differences were measured with the sun shining through the glass on the blackened bulb of a thermometer. These temperatures indicate to some extent what might be expected in a large room. The maximum difference in temperature inside and outside of a room will depend upon the area of the window or the heat energy transferred into the room, volume or heat capacity of the room and the rate of heat loss through the room.

| Glass | Visible Light Transmitted | Total Radiant Heat Excluded | Maximum Temperature Difference Inside Enclosure and Outside |
|---|---|---|---|
| Ordinary sheet glass . . . . . | 92% | 10% | 79.5° F. |
| AKLO . . . . . | 78% | 29% | 60.0° F. |
| Double window, ordinary sheet glass . . . . . | 85% | 19% | 77.5° F. |
| Double window, AKLO and ordinary sheet glass . . . . . | 72% | 45% | 48.0° F. |



# Blue Ridge

# FIGURED AND WIRE GLASS



**POLISHED WIRE GLASS**

(Wire Mesh Shown Actual Size.) Used in all openings where clear vision and the security of non-scatterable fire-retardant glass are desired. Genuine polished plate glass with wire reinforcement. Note that the wire is clean—no disfiguring bubbles on the twisted wire to mar the sharp outline or distort the vision. Blue Ridge's outstanding quality product. (See table of sizes, thicknesses, etc.)

● Familiar uses for Rolled Figured and Wire Glass and Polished Figured and Wire Glass manufactured by Blue Ridge Glass Corporation include the glazing of partitions, doors, transoms, windows, and skylights. The current architectural trend introduces many other innovations. For example, a variety of attractive ornamental effects is achieved with plain or decorated figured glass panels, screens and lighting fixtures in private homes and public buildings as well as in show windows and interiors of fine stores. Structures designed to interpret the current mode which uses glass so liberally afford many opportunities for practical and distinctive applications of Blue Ridge products.

Blue Ridge Glass is carried in stock by leading glass jobbers and glazing contractors or can be furnished promptly by them through quick shipment of any pattern, size and thickness from the factory's ample supplies.

The following unvarying features distinguish this glass and keep it in high favor with leading architects of the nation: (1) Uniform quality and thickness; (2) Sparkling brilliance; (3) Attractive and efficient patterns; (4) Easily cleaned designs; (5) Light transmitting and diffusing effectiveness; (6) Versatility of use; and (7) Wire glass fire-retarding properties (approved by Underwriters' Laboratories, Inc. as Number R-2129).

In contemplating the use of or in specifying figured and wire glass, it is well to remember these few important facts: (1) State width (horizontal measurement) first, and height (vertical measurement) second, when writing the size of any kind of glass; (2) Wire glass is usually set with the wire running vertically, hence the first dimension given is understood to be across the wire twists (width) unless specifically shown otherwise; (3) Ribbed glass is generally glazed with the ribs running vertically (parallel to height); (4) Prism glass distributes light best when prisms are set horizontally (parallel to width); (5) Specify kind of glass by name and give thickness and finish (see table of Patterns, Thicknesses, Sizes and Weights); (6) Stipulate Blue Ridge Glass Corporation as the manufacturer and insist that Blue Ridge Glass be furnished.

The Standard Specification, Obscure and Wire Glass is as follows: Where figured or polished wire or obscure glass is specified herein, or shown on plans, it shall be (—) in. in thickness and shall be (—) pattern (specify thickness and pattern desired), and shall be manufactured by the Blue Ridge Glass Corporation.

# BLUE RIDGE WIRE GLASS

## FIRE RETARDANT NO. R-2129

**STRENGTH.** The exclusive method of manufacture employed by Blue Ridge effectively centers the wire in the glass. This is extremely important as wire glass is specified and used because of its fire-retarding properties and its greater resistance to breakage by impact and wind pressure as compared with unwired glass. In a series of tests conducted by a well-known physicist, it was found that glass with properly centered wire was consistently stronger than glass of the same thickness and pattern in which the wire was substantially closer to one surface than the other. The difference ran as high as 42% in some of the comparisons. When Blue Ridge Wire Glass, Figured or Polished, is specified the advantage of this extra strength is assured because the wire is placed where it should be—approximately in the center.

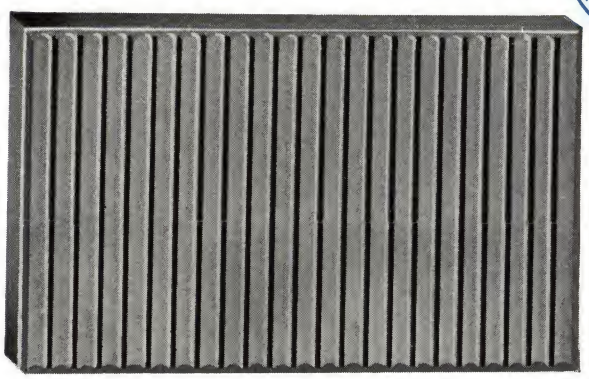
**APPEARANCE.** Another outstanding feature of our wire glass is its freedom from the clusters of bubbles on the wire that are so objectionable when appearance of the job is considered. And the wire itself is bright, clean and untarnished—all the result of a superior method of manufacture in which both physical properties and appearance of the product are given equal consideration.

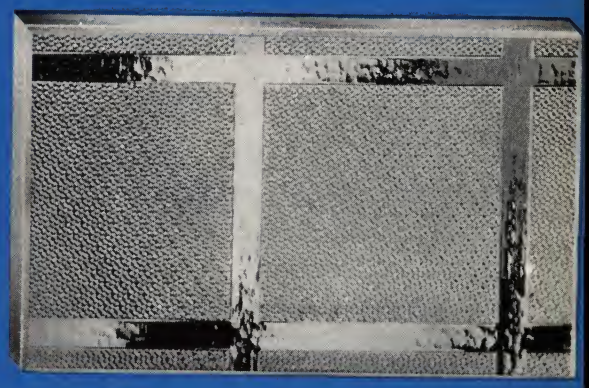
**LIGHT TRANSMISSION.** The effect of wire in glass is to reduce the amount of light transmitted by about 10% as compared with unwired glass of the same pattern, thickness and batch composition.

**UNDERWRITERS' RESTRICTIONS.** The rules and requirements of the National Board of Fire Underwriters limit the size of wire glass which can be glazed in openings exposed to fire hazard. In no case shall the unsupported area of the glass measure more than 48 in. in either dimension or exceed 720 sq. in. (5 sq. ft.). Typical maximum sizes which satisfactorily meet that requirement are 15 x 48, 18 x 40, 20 x 36 and 24 x 30. It should also be noted that wire glass used for this purpose must be set in non-inflammable materials. Blue Ridge Wire Glass is an approved fire retardant bearing number R-2129 of the Underwriters' Laboratories, Inc.

See table of Patterns, Thicknesses, Sizes and Weights for list of patterns available in wire glass.

**SKYTEX GLASS** • (Pattern Shown Actual Size.) A pattern containing eight parallel vertical ribs per inch which spread the light passing through the glass and drain off condensation. Chiefly used in skylights, but equally suitable for general industrial glazing. Available both plain and wired. (See table of Sizes, Thicknesses, etc.)

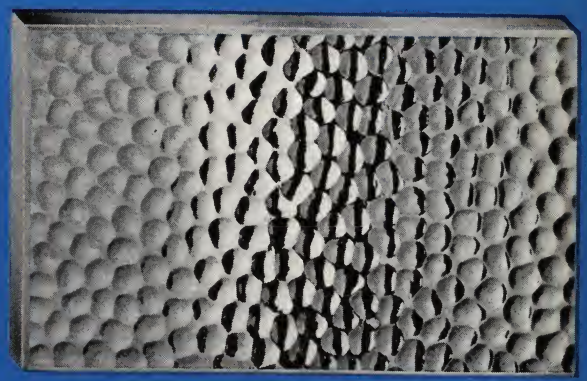




**TRANSEX GLASS** • (Pattern Shown About ⅓ Size, squares 3¼ x 3¼ in., division lines ⅜ in. wide.) For store-front transoms. A solid sheet of glass made to resemble separate panes set in metal bars. No cemented joints to weaken under the stress of wind and rain storms. The background pattern (Diffusex) and the smooth division lines are uniformly and but slightly elevated without pits, grooves or sharp angles in either. Transex will remain clean and distribute light efficiently even under unfavorable conditions long after dirt collections have destroyed the effectiveness of ordinary tiled or prism transoms. (See table of Sizes, Thicknesses, etc.)



**DIFFUSEX GLASS** • (Pattern Shown Actual Size.) Primarily for interior partitions, doors and transoms, but equally effective in any location where an adequate volume of softly diffused light is desired. An attractive grouping of small and very slightly elevated lenses spaced far enough apart to avoid dirt collecting pockets and to permit easy cleaning with a moist cloth. Available both plain and wired. (See table of Sizes, Thicknesses, etc.)



**HAMMERED GLASS** • (Pattern Shown Actual Size.) For general industrial glazing—exterior and interior. The contiguous lenses forming the pattern distribute the light passing through the glass and accentuate the brilliance of the metal. A clean glass with beauty and mechanical efficiency. Available both plain and wired. (See table of Sizes, Thicknesses, etc.)

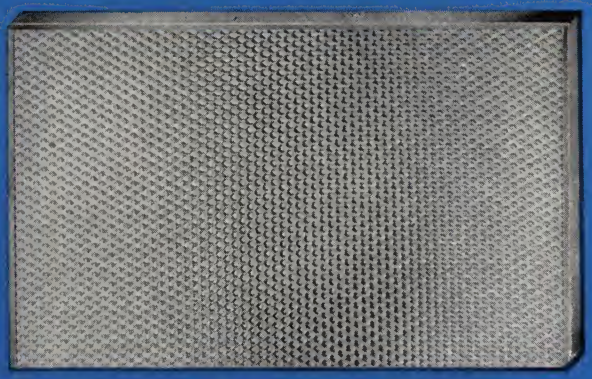
# *Some facts* ABOUT TRANSMISSION AND DIFFUSION OF LIGHT BY *figured* GLASS

**TRANSMISSION.** Figures showing the percentage of light transmitted by one type of glass or another should always be accepted as only approximate in specifying glass for factory and commercial buildings. There are two very logical reasons why positive values cannot be established.

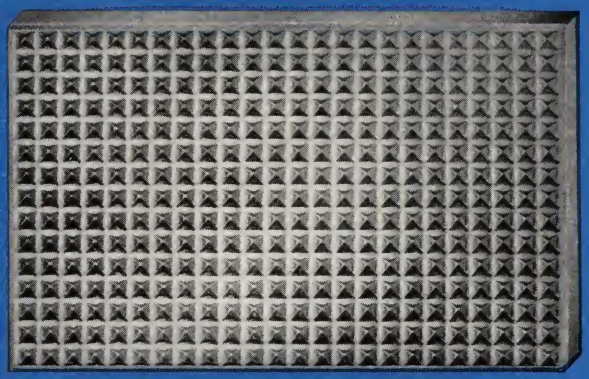
In the first place, transmission factors determined by laboratory apparatus in the hands of experienced observers often show wide variations. Differences up to 5% in the readings are not uncommon. In the second place, and of even greater significance, such studies are practically always made of glass that has been thoroughly washed and cleaned.

Obviously, glass in windows, skylights, transoms, doors and partitions in factory buildings (and to a lesser extent office buildings), cannot possibly be maintained in the same spotlessly clean condition as the laboratory samples. Glass will get dirty, some types more quickly than others, and dirt prevents the passage of light through the glass. Even clear window glass, which has two smooth surfaces, has been found to have lost about 50% of its original efficiency due to dirt collection within six months after glazing in windows of factory buildings. And the loss was 83% in the same set of tests for windows set on a slope of 60 degrees—the pitch of the average skylight.

*Use glass liberally to insure adequate daylighting* within buildings both old and new and, of equal importance, specify patterns that are free from grooves, crevices and pits which will collect dirt rapidly and hold it even if the glass is washed frequently. Blue Ridge Luminex, Diffusex, Industrex, Muralex, Hammered and Velvex are especially recommended for cleanliness and high transmission values. Transex, for store-front transoms, is another Blue Ridge pattern of the shallow type.



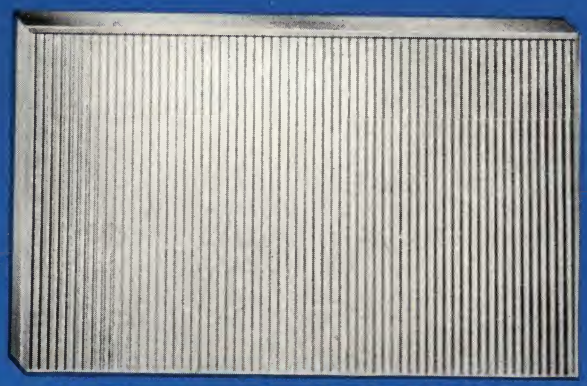
**INDUSTREX GLASS** • (Pattern Shown Actual Size.) For industrial and commercial buildings—exterior and interior openings. A compact arrangement of lens-shaped figures combining effective distribution of light and attractive appearance without the disadvantage of deeply cut grooved lines. Not a "dirt collector." Industrex can be easily cleaned with a moist cloth. Available both plain and wired. (See table of Sizes, Thicknesses, etc.)



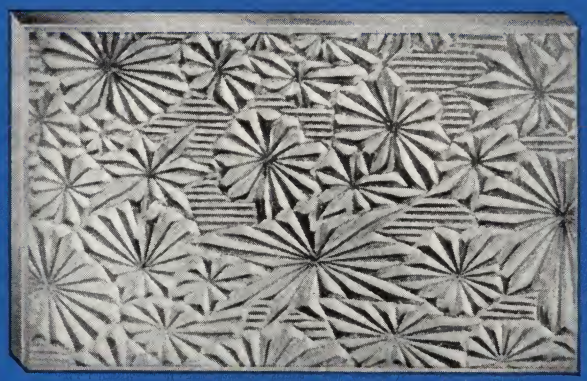
**REGLEX GLASS** • (Pattern Shown Actual Size.) A popular pattern for the interior glazing of fine buildings. The design is made of pyramidal-shaped indentations—64 to the square inch—which diffuse the light remarkably well and at the same time provide great obscurity. (See table of Sizes, Thicknesses, etc.)



**PEBBLEX GLASS.** (Pattern Shown Actual Size.) An unusually brilliant and obscure glass for office building interiors; diffuses light splendidly and affords privacy within the room. Pebblex is more deeply imprinted than some of the newer Blue Ridge patterns such as Diffusex and Muralex. Its attractive appearance has led many architects to specify it. Available both plain and wired. (See table of Sizes, Thicknesses, etc.)



RIBBED GLASS • (Pattern Shown Actual Size.) Used only for industrial glazing. Diffuses light when clean but has a tendency to collect dirt more rapidly than our newer patterns. Available both plain and wired. (See table of Sizes, Thicknesses, etc.)



FLOREX GLASS • (Pattern Shown Actual Size.) Long a favorite for interior glazing. A brilliant and attractive pattern, available both plain and wired. (See table of Sizes, Thicknesses, etc.)



MAZEX GLASS • (Pattern Shown Actual Size.) Another design for building interiors. Highly obscure, it distributes light remarkably well. Available both plain and wired. (See table of Sizes, Thicknesses, etc.)

**DIFFUSION.** Occasionally, we are asked to guarantee that a certain glass will **eliminate** glare but such a guarantee can never be made in good faith by any manufacturer. Glare is the result of strong contrasting bright spots on the surface of the glass. It is the function of diffusing glasses to distribute the light which passes through and consequently to lessen the contrasting bright spots but perfect diffusion cannot be obtained from any figured glass. Opal glass, which is opaque, approaches perfection but its factor of transmission is low compared with Figured Glass.

Naturally, some Figured Glasses diffuse light better than others. Blue Ridge Pebblex, Diffusex, Industrex and Muralex are excellent diffusing patterns, while Luminex, Velvex and Hammered are less efficient in this respect. Ribbed Glass and Prism, both of which collect dirt rapidly, throw light mainly in two directions.

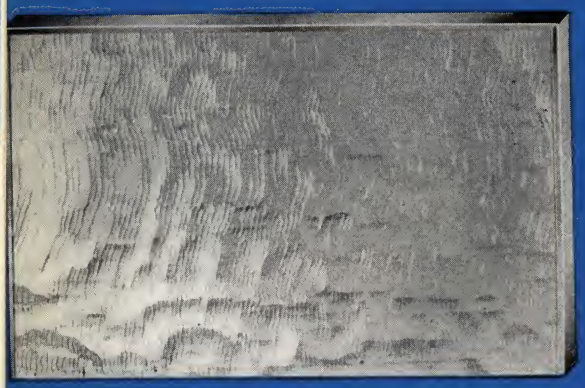
## APPROXIMATE LIGHT TRANSMISSION OF VARIOUS PATTERNED GLASSES

A—Illuminometer reading of direct light.

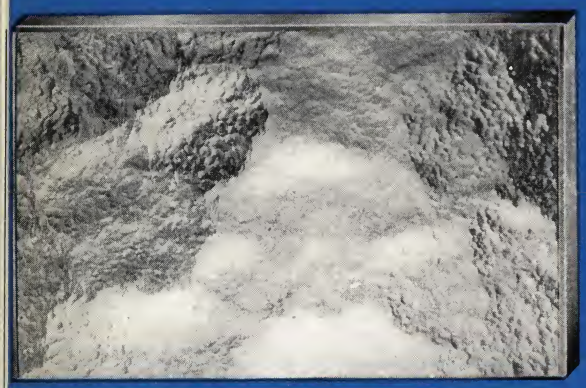
B—Illuminometer reading with glass interposed and in contact with sensitive surface of cell.

100 B/A is taken as the percentage transmission.

| GLASS | A | B | 100 B/A |
|---|---|---|---|
| Diffusex | 12.9 | 11.3 | 87.6 |
| Florex | 13.0 | 11.2 | 86.2 |
| Hammered | 13.0 | 11.7 | 90.0 |
| Industrex | 12.7 | 11.2 | 88.2 |
| Luminex | 12.9 | 11.4 | 88.4 |
| Luminex, Satinol one side | 12.9 | 11.2 | 86.8 |
| Luminex, Satinol two sides | 12.9 | 11.0 | 85.3 |
| Luminex, Sandblasted one side | 12.8 | 9.3 | 72.7 |
| Luminex, Frosted | 12.9 | 9.1 | 70.5 |
| Mazex | 12.7 | 11.1 | 87.4 |
| Muralex | 12.9 | 11.1 | 86.0 |
| Muralex, Satinol one side | 12.9 | 11.1 | 86.0 |
| Muralex, Satinol two sides | 12.9 | 10.6 | 82.2 |
| Pebblex | 12.8 | 10.2 | 79.7 |
| Prism | 12.8 | 7.8 | 60.9 |
| Prism, Satinol pattern side | 12.9 | 7.0 | 54.3 |
| Prism, Satinol smooth side | 12.8 | 7.2 | 56.3 |
| Prism, Satinol two sides | 12.9 | 7.0 | 54.3 |
| Reglex | 12.8 | 6.7 | 52.3 |
| Ribbed | 12.8 | 10.8 | 84.4 |
| Ribbed Frosted | 12.8 | 9.0 | 70.3 |
| Skytex | 12.9 | 8.6 | 66.8 |
| Velvex | 12.7 | 11.3 | 89.0 |
| Velvex, Satinol one side | 12.7 | 10.8 | 85.0 |
| Velvex, Satinol two sides | 12.8 | 10.3 | 80.5 |



**LUMINEX GLASS • (Pattern Shown Actual Size.) Especially recommended for industrial buildings where the cost of keeping glass clean is an important factor. Provides a medium distribution of light and is a relatively transparent pattern of extremely fine texture that can be glazed and cleaned like clear glass. Available both plain and wired. (See table of Sizes, Thicknesses, etc.)**



**VELVEX GLASS • (Pattern Shown Actual Size.) A highly practical glass for skylights, factory walls and monitors but also suitable for office partitions, doors and transoms. This unique pattern is extremely shallow, yet it creates the illusion of depth when light rays pass through the glass. An exceptionally clean glass—not totally obscure but sufficiently so for ordinary commercial and industrial building conditions. Available both plain and wired. (See table of Sizes, Thicknesses, etc.)**



**MURALEX GLASS • (Patterns Shown Actual Size.) A new glass for partitions, doors and transoms. Its modest dignified beauty harmonizes with any style of architecture and its mechanical efficiency insures its popularity. The pattern is finely engraved to reduce dirt collections and to afford easy cleaning. Available both plain and wired. (See table of Sizes, Thicknesses, etc.)**

# SATINOL

● Satinol is not a new glass. It is a process which may be applied to one or both surfaces of Blue Ridge Figured Glass. The finished thickness is $\frac{3}{16}$ in. and four Satinol-Processed patterns are carried in stock by the factory: Velvex, Luminex, Muralex and Louvrex. Other Blue Ridge designs in Satinol may possibly be obtained by special arrangements on application.

Satinol Processing gives a mellow satin-like finish which does not fingermark or spot. It materially improves the diffusing property of any glass to which it is applied and its illumination is soft, restful and pleasing to the eye. In general, Satinol on one surface reduces the transmission of light by about 3% and on two surfaces by about 6%.

Sandblasting, which is also applied to Figured Glass sometimes to improve the distribution of light decreases transmission by 16% one surface and from 20 to 30% both surfaces—depending on the pattern of glass. Rapid collection of dirt and difficulty in cleaning are additional objections to sandblasting. Dust which accumulates on the surface of Satinol-Processed glass can be removed with a dry rag.

The label which appears on every light of genuine Satinol-Processed Blue Ridge Glass states the degree of processing. The standard Satinol Specification is: "Where obscure glass is specified herein or shown on plans, it should be (—) inch in thickness and shall be (—) pattern Satinol (one surface or two surfaces), and each light shall bear the Satinol label of the Blue Ridge Glass Corporation." Always specify the thickness, name of pattern and whether one or two Satinol surfaces are desired.









# *Blue Ridge* LOUVREX





● Louvrex is a new figured glass especially developed for use in modern architecture. Its directional pattern of parallel lines resembles a series of louvre boards in venetian blinds. This simplicity of design makes Louvrex particularly effective when glazed in large sections. Maximum dimensions of 136" x 60" permit unbroken expanses of the straight horizontal and vertical lines so highly favored in contemporary building. Used for window glazing, Louvrex is not only pleasant to look at from the inside, but also has a dignified, modern appearance when viewed from outside. For window ventilators, partitions, shelving, transoms and many other practical and decorative uses, Louvrex produces smart and distinctive effects. Louvrex is available either semi-transparent or Satinol-Processed to a satin-like finish which does not fingerprint or spot. This treatment materially improves diffusion, increases obscurity and affords soft, restful illumination.

Highly translucent, Louvrex also provides a new range of appealing designs when double glazed with the pattern lines at right angles. When used for double glazing the maximum size is 60 x 60 inches. By varying the angle, many other distinctive results can be obtained. This not only increases the value of Louvrex as a decorative medium, but also strongly recommends its use in double glazing to reduce operating costs of heating and air-conditioning equipment.

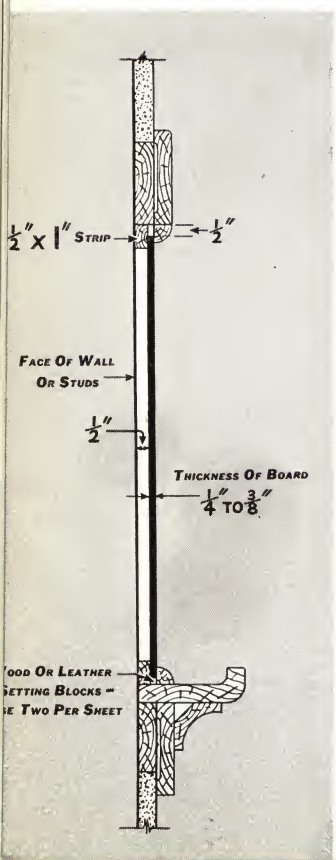
The striking applications of this new glass are extended still further by the number of luminous effects it permits. When illuminated by reflected light, Louvrex provides soft, diffused lighting for homes and commercial buildings. It also affords attractive exterior illumination for storefronts, theaters, cafes and other buildings—and, when colored lights and colored backgrounds are used with Louvrex, a wide variety of entirely new and strikingly different color effects can be achieved.

# BLUE RIDGE *Optex* GLASS BLACKBOARDS




● Optex Glass Blackboards are more serviceable, more efficient and more attractive. For several years highly successful results have been obtained with Optex Glass Blackboards by schools, offices and industrial plants in various sections of the country.

Available in black and green or other colors on special orders, Optex blackboards fit any color scheme. Reflection of light, always a problem, is practically eliminated—eyestrain is reduced and visibility increased. Colors are permanent and uniform—no matching or grading of sections is required. The hard, vitreous surface of Optex glass is highly resistant to wear and offers greater protection against accidental scratching. Its machine-smoothed finish is not injured by washing with water, soap, alcohol or naphtha—even oil paints come off easily with a paint remover. Available in 12-foot lengths, as well as in smaller sections, Optex boards provide a larger unbroken writing area. Clearly visible and permanent rulings can be applied to Optex at the factory.




The back surface of Optex is coated with a special enamel unaffected by moisture, heat, free lime in plaster or frost in brick walls. A special elastic fibrous backing protects the enamel and adapts itself to variations in expansion of glass. The air cushion between the Optex board and the wall insures ventilation and combines with the fibrous backing to deaden noise. Optex will not break unless subject to exceptional shock and, if broken, pieces of glass tend to adhere to the elastic backing.

## INSTALLATION DETAILS

Optex blackboards are not cemented to the wall, therefore all finish back of the board can be omitted. Two strips of lumber ½" x 1" are affixed to the wall, level and plumb, so that Optex boards may lean against them without undue strain. Where vertical joints are necessary, a zinc "H" joint-moulding is furnished, and a small amount of putty should be placed on the back portion of the board which fits into this section—otherwise no putty or mastic of any kind should be used. As the zinc section is thicker than the Optex board, the ½" x 1" strips, top and bottom, should be relieved where the joints occur. Opening sizes: Height of board, plus ¾", Length of board, plus 1". Weight is 4.5 lbs. per sq. ft. Optex can be installed easily by carpenters or glaziers at a saving which represents a considerable item in the final cost. Frames and chalk rails to be supplied by others.

## SPECIFICATIONS

**Wherever blackboards are specified or indicated on the drawings, the contractor shall furnish and install ¼ inch thick Optex glass blackboards as manufactured by the Blue Ridge Glass Corporation, Kingsport, Tenn., and distributed by The Libbey·Owens·Ford Glass Company, Toledo, Ohio.**

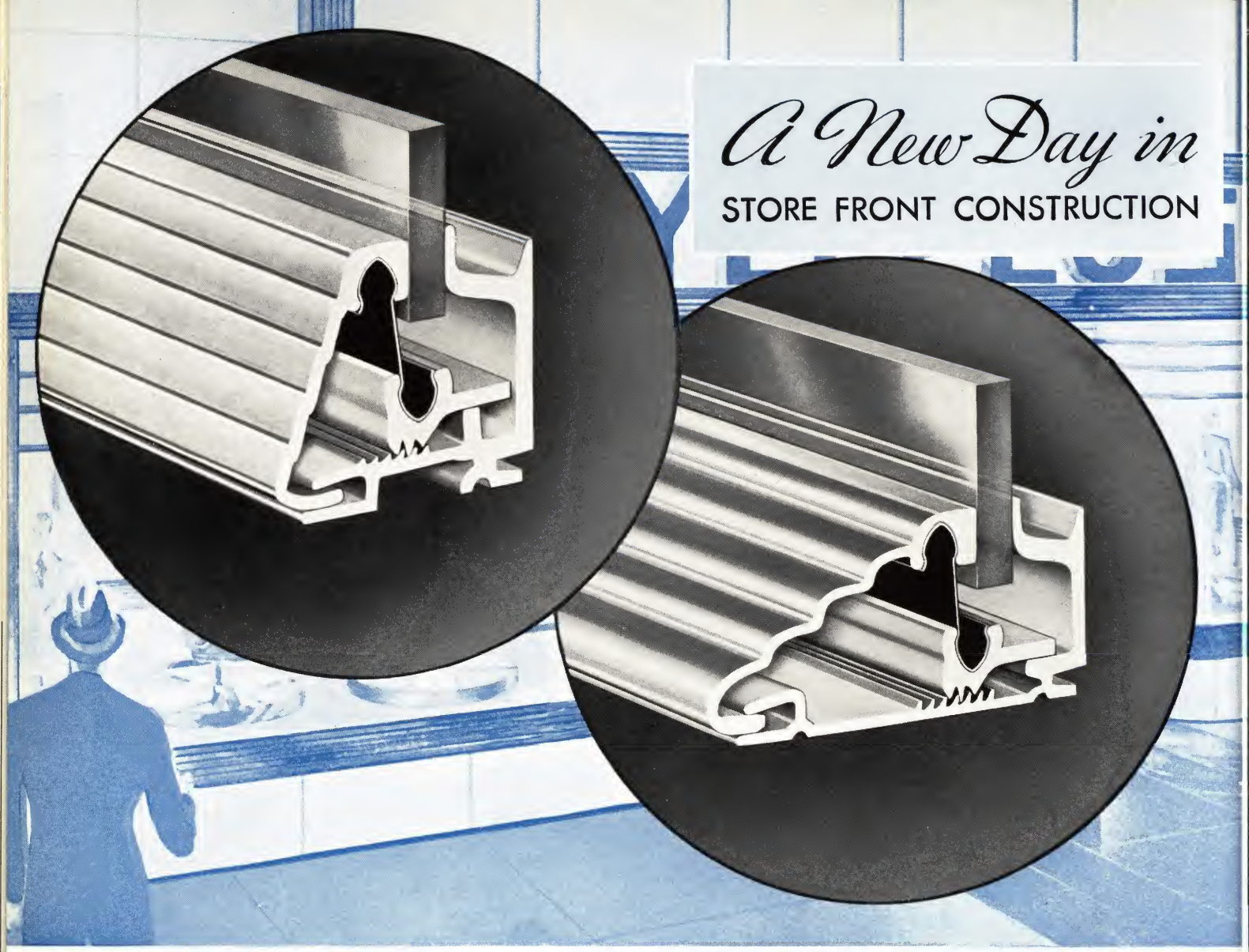
**The color of these boards shall be_____, (State color desired—black or green.)**

**Each piece must be marked by the manufacturer with the word "Optex" in the lower left hand corner.**

# PATTERNS, THICKNESSES, SIZES AND WEIGHTS

| THICKNESS IN. | PATTERNS | MAX. WIDTH IN. | MAX. LENGTH IN. | APPROXIMATE WEIGHT PER SQ. FT., LBS. (Glass Only) |
|---|---|---|---|---|
| **ROLLED FIGURED GLASS** | | | | |
| 1/8 | Hammered, Ribbed, Luminex, Skytex, Velvex, Industrex, Diffusex, Florex, Mazex, Pebblex, Reglex | 48 | 132 | 2 |
| 3/16 | Hammered, Ribbed, Luminex, Skytex, Velvex, Industrex, Diffusex, Florex, Mazex, Pebblex, Reglex | 48 | 136 | 2¾ |
| 1/4 | Hammered, Ribbed, Luminex, Skytex, Velvex, Industrex, Diffusex, Florex, Mazex, Pebblex, Reglex | 48 | 136 | 3½ |
| Approx. 1/4 | Louvrex | 60 | 136 | 3½ |
| Approx. 1/4 | Muralex, Transex, Prism | 48 | 136 | 3½ |
| 3/8 | Hammered, Ribbed | 48 | 90 | 5 |
| 1/2 | Hammered, Ribbed | 48 | 90 | 6¾ |
| **SATINOL PROCESSED GLASS** | | | | |
| 3/16 | Louvrex | 60 | 136 | 2½ |
| 3/16 | Luminex, Velvex, Muralex | 48 | 136 | 2½ |
| **WIRE GLASS** | | | | |
| 1/4 | Hammered, Ribbed, Luminex, Skytex, Velvex, Industrex, Diffusex, Florex, Mazex, Pebblex, Muralex | 48 | 144 | 3¾ |
| 3/8 | Hammered, Ribbed | 48 | 90 | 5 |
| 1/2 | Hammered, Ribbed | 48 | 90 | 8 |
| 1/4 | Polished | 48 | 144 | 4 |
| **POLISHED FIGURED GLASS** | | | | |
| Approx. 1/4 | Diffusex, Pebblex, Reglex, Muralex, Louvrex | 48 | 136 | 3¾ |

**NOTE: Where 48 in. is shown as minimum width, some patterns and thicknesses may be available up to 60 in. wide, depending on stock on hand. Also, thicknesses greater than indicated above may be made to order by special arrangement. Likewise, patterns other than Louvrex, Luminex, Velvex and Muralex may possibly be obtained with Satinol finish, but 3/16 in. is the minimum thickness at all times.**




## LIBBEY • OWENS • FORD ANNOUNCES

# EXTRUDALITE

## METAL STORE FRONT CONSTRUCTION

Featuring the Pressure-Controlled
Shock-Absorbing Sash

● Extrudalite is a fundamentally new principle of store front construction and design offering outstanding advantages hitherto unobtainable. Extrudalite's patented sash construction definitely minimizes plate glass breakage. All pressure contacts between metal and glass are automatically controlled to a predetermined degree and constant pressure is maintained through spring cushioning.

# Features OF REVOLUTIONARY EXTRUDALITE

● It is a far cry from the old fashioned store fronts of yesteryear to our modern store fronts of eye-compelling beauty trimmed with colorful structural glass, illuminated panels, and self-supporting extruded metal glass-retaining mouldings.

Extrudalite, likewise, is a radical step forward both in design and practical construction features, as compared with glass mountings hitherto obtainable.

The Extrudalite line, as the name suggests, consists of solid extruded members only. It is sufficiently diversified in size, design and consequent price range, to fit every class of construction. Even the most modest store front may now include the distinction of extruded metal.

## DESIGN FEATURES

Extrudalite is revolutionary in eye appeal. Its profiles are truly metallic in interpretation, at the same time eliminating entirely all plain, flat surfaces prone to give the optical illusion of waviness.

By giving each distinct area a slight radius and by using "reeds" and "cascades", these flat surfaces have been made artistic and beautiful. By "streamlining" old classical design standards, a new type of store front design has been developed. Only in extruded metal is it possible to so accurately and faithfully reproduce intricate details of design.

Unlike flat metal surfaces, which must be kept spotlessly clean to be attractive, the distinctive beauty of Extrudalite is easily maintained. A casual wiping of the surface, easily a part of window-washing routine, will bring out the high points of the reeds and cascades in contrast with the lower portions of the profiles. This accentuates the contrast between light and shade which is the main object of moulding profile design. This unique decorative effect thus produced is a new design element in store front construction.

## CONSTRUCTION FEATURES

### SASH

The sash is the key member of metal store front construction. To fulfill its functions perfectly it must be self-supporting—retain its own perfect alignment for the glass to rest against—provide strong but limited pressure for holding the glass and should contain a cushioning means to absorb shocks, vibration, expansion and contraction.

Contrary to general belief, the sash should be as nearly air-tight as possible, in our opinion. It should also dust-proof the display windows rather than provide holes for doubtful ventilation and drainage. Moisture from condensation or window washing can be taken care of with a chamois or sponge. However, standard drain holes will be furnished if desired.

Extrudalite Sash No. 500 fulfills all the above requirements and provides a comparatively deep reveal for the glass.

The interlocking teeth of the base member, and the clip member which is attached to the face piece, allow identical action and pressure to be applied at all points regardless of the thickness of the glass.

After the face piece is in loose setting position, held there by the tongue-and-groove fitting at the front, the Installator runs down the set-screw from behind until it locks into permanent setting position.

The amount of cushioned pressure thus applied to the glass is pre-determined. It is impossible to apply too much tension or pressure.

This action and pressure can be described as follows:

The direct pressure of the screw spreads through the rigid clip-lever and is transferred into the cushioning spring. The spring transfers the cushioned pressure to the rigid face-piece which, in turn, applies it evenly all along the face of the glass.

The spring is like a transformer because it transforms the direct rigid pressure into cushioned pressure. The face-piece may be likened to a distributor because it distributes the cushioned pressure evenly along the face of the glass.

Reversely, the spring also acts as a shock-absorber because it absorbs all shocks, vibrations and expansions into itself. The same spring also acts as a stabilizer by throwing the pressure back against the glass under contraction.

These performances are impossible under direct or indirect rigid pressure.

This principle of pressure transformation, distribution and control is revolutionary in store front construction. It will tend to eliminate glass breakage from any and all sash failure causes.

Extrudalite Sash No. 300 contains the above described features but is smaller and provides a narrower reveal. Being smaller it is also lower in cost—and outstanding in its size and price range.

# EXTRUDALITE FEATURES

Extrudalite Sash No. 100 does not contain the pressure control, nor the cushioning features of the two larger sashes but does contain many features that make it a stand-out in its price class. In price it compares very favorably with most of the standard rolled type of sash. Being of extruded metal however, it is in a class of its own in this field. Sash No. 100 is installed by running a wood screw through the face piece and gutter into a wood backstop. By the addition of a rigid clip into which a screw is tapped through the face piece this sash is transformed into sash No. 101 which is self-supporting.

## SASH CAPS

Extrudalite sash caps do away with the necessity of mitering and have no screws exposed.

## VERTICAL CORNER, REVERSE AND DIVISION BARS

A perfect bar of the above type should be strong enough to withstand abnormal wind pressure without allowing glass breakage. It should not, however, be so bulky that it will obstruct vision.

These bars should be well designed with no operating parts exposed. They should take a definite cushioned grip on the edges of the glass and fit all angles within its classified range.

Extrudalite is unique in that it fulfills all of these requirements.

The necessity for tape or plastic materials of any kind when installing the bars is eliminated.

A light standard-type division bar is provided for use in transom work. There is also available one size of reinforcement which can be used for division of plate glass, in show windows where cost is a major factor.

In addition there is a structural vertical division bar which is especially adaptable for use in large illuminated areas. This member, when anchored at top and bottom provides ample support for the glass facing. Horizontal division strips may be tied directly to the backs of these vertical members for their support.

A variety of face-pieces will be furnished allowing either the horizontal or vertical members to run straight through or allowing for mitering of these members. In this connection, we have developed a horizontal auxiliary bar which allows replacement of the upper or lower light of glass separately. It is small in size, has the same contour on both faces and is absolutely water-proof.

This member ties in perfectly with the above mentioned structural vertical bars and will also find wide use for the separating of painted glass valance signs from the clear plate glass below.

## NOTE THE BEAUTY OF EXTRUDALITE TRANSOM BARS

Standard practice for the covering of transom bars has been to provide a top and bottom interlocking member of metal which forms a 4" bar. Wider bars have been obtained by the use of 2" filler strips, as many as necessary being used in order to obtain the required height.

This method has been improved by providing a one-piece 4" bar, a two-piece interlocking 6" bar, a 2" filler strip with which to form an 8 and 10" bar and a 6" filler to form a 12" bar.

All of which means a simple and less costly installation of transom bars and the opportunity to incorporate real character of design.

A very important feature of Extrudalite is this—If a complete store front installation is made using Extrudalite sections as called for on our standard detail sheets, there will be no possibility of this front leaking at any point. This is assured by proper designing of the sections.

Aside from the aforementioned items Extrudalite includes all the latest features contained in sills, jambs, Vitrolite trim moulding, copings, soffit sections, hinged ventilators, showcase doors, pilaster coverings, and also offers a complete line of extruded tubular doors, transoms and frames. In fact, anything and everything in metal that comes in connection with a store front, in radically improved construction and design is offered by Extrudalite.

Due to the flexibility of Extrudalite and to its method of manufacture, we are in a position to offer the architect a highly specialized service. Anything that he cares to develop in the way of a designed section can be incorporated into the regular line at a minmum cost and will be held exclusively for his use. We will also assist in working out any special store front problem the architect cares to submit.

## EXTRUDALITE IS EASY TO INSTALL

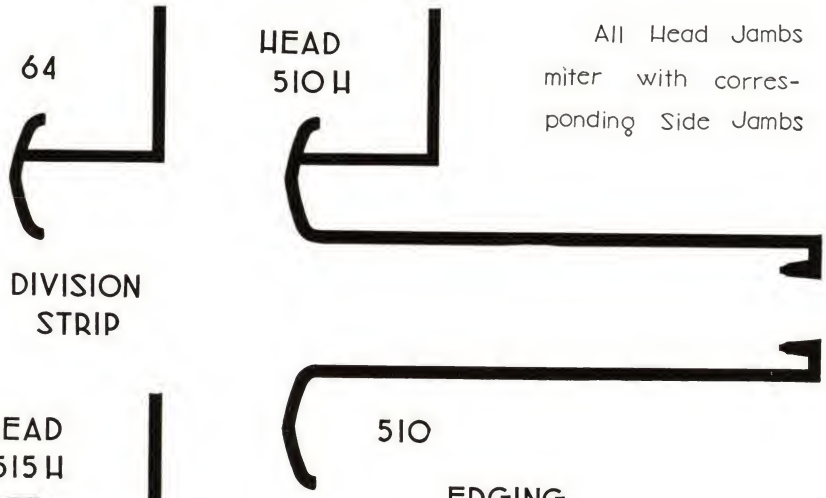
Installation is one of the most important steps from the time a job is planned until it is completed. It is even more important to the owner than the planning or materials.

Extrudalite is fundamentally new and different. Yet it does not radically depart from proven standards of setting. The few departures it makes actually improve and simplify the job. Extrudalite eliminates minute and intricate workmanship so as to make the installation fool-proof.

Detail sheets are designed to work to two different planes of alignment. First, the woodwork to which the metal is attached. This is made easy for the carpenter by lining on one plane for all members. Second, EXTRUDALITE lines itself to the face of the Vitrolite.

EXTRUDALITE is featured in aluminum alloy No. 53-S with gloss alumilite finish, a protective finish is furnished on all welded construction instead of alumilite which discolors at weld joints. It is also available in extruded bronze, polished or satin finishes. EXTRUDALITE can also be furnished upon special order in nickel silver. Other special finishes on all metals can be supplied.

● Extrudalite detail sheets have been developed in the simplest form possible as an aid in planning and laying out the practical constructive interpretation of store front designs. The following sheets give in simple basic form full sized cross sections of all members in the line in order to give the "feel" of each individual moulding when choosing desired sections. These full sized sections may also prove useful in solving and detailing special conditions with various combinations of standard items. For standard vertical and horizontal sections through typical store fronts, will be found sheets giving details in ¼ full size scale. They are offered as a guide to correct and practical combinations of the individual members and are drawn to the small scale in order to make the job of detailing lighter. The importance of complete store front

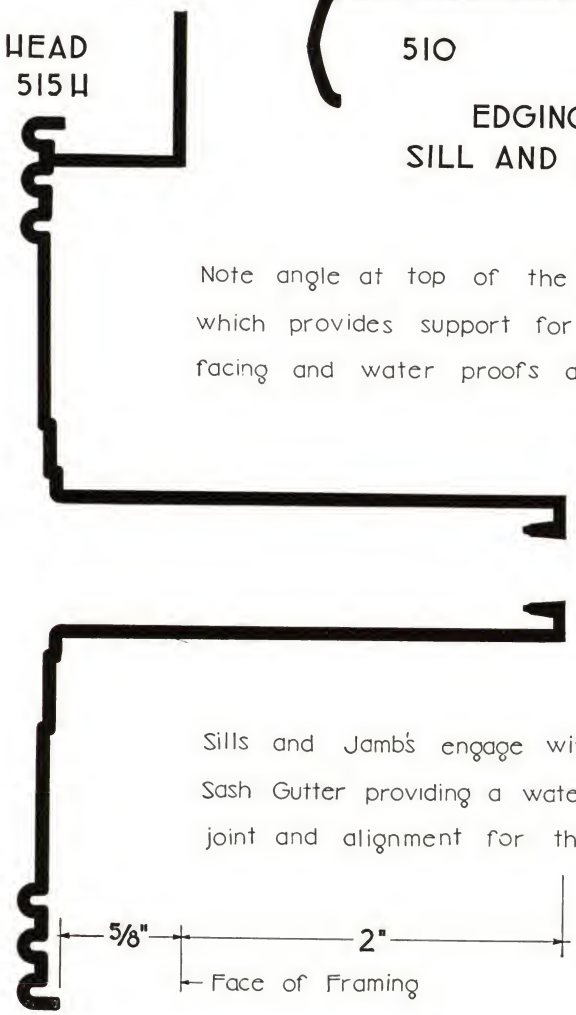



All Head Jambs miter with corresponding Side Jambs

See Sheet Number 11 for quarter size Vertical and Horizontal Sections using these elements

All sections drawn are actual size

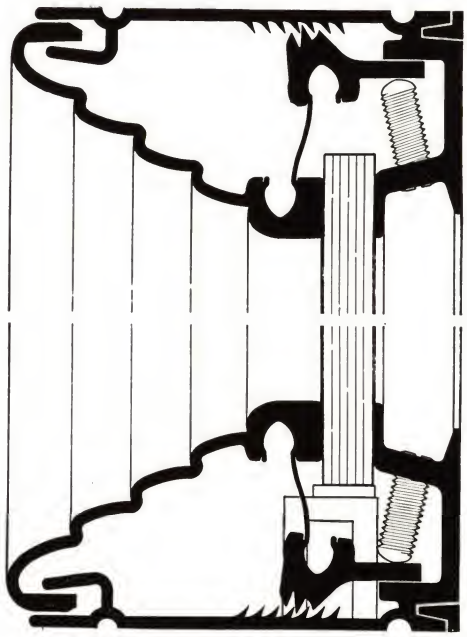
EDGING
SILL AND JAMB




Note angle at top of the Head Jambs which provides support for the Vitrolite facing and water proofs at this point

Sills and Jamb's engage with the Sash Gutter providing a water tight joint and alignment for the Sash

SILL AND JAMB 515



SASH 500

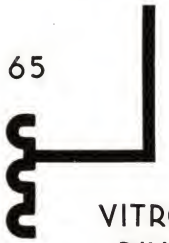
EXTRUDALITE

details on every job cannot be emphasized too strongly. Backed up with clear cut and adequate specifications, they insure the job being completed exactly as designed and planned.

We will be glad to assist in working out special condition details.

All Extrudalite sections are designed to assemble and install in a water-tight and dust-proof manner. Assembly sheets 11, 12 and 13 illustrate this fact clearly.

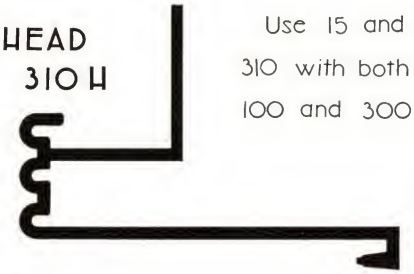
Sash ventilation holes do not prevent nor remove frost or condensation from the inside of the windows, they do, however, admit damaging dust. Drainage holes at the bottom sash rail serve their intended purpose for only a short time until the inside of the sash packs with dirt and debris, they



65

Use 65 with 15 310 and 515

VITROLITE DIVISION STRIP

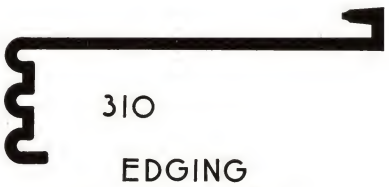


HEAD 310 H

Use 15 and 310 with both 100 and 300

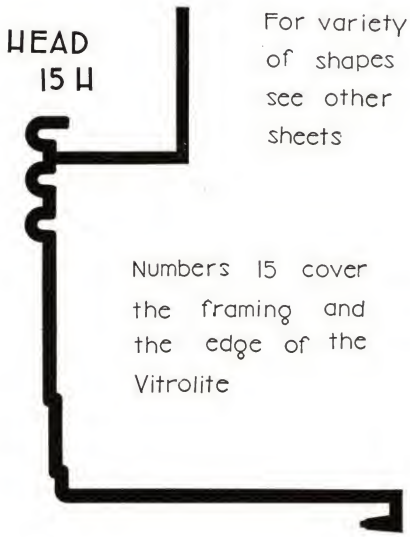
See Sheet Number 12 for quarter size Vertical and Horizontal Sections using these elements

All sections are actual size



310

EDGING SILL AND JAMB



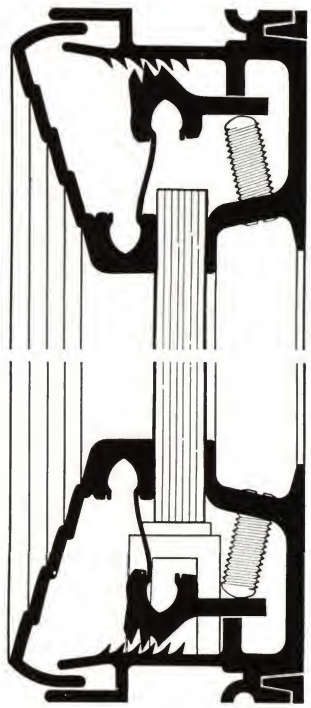
HEAD 15 H

For variety of shapes see other sheets

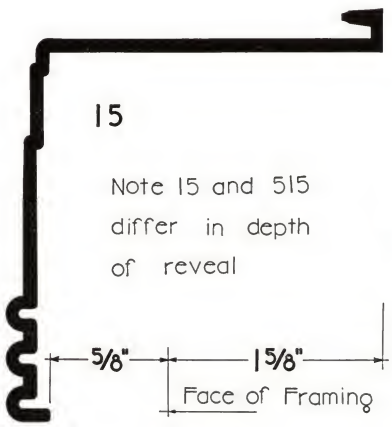
Numbers 15 cover the framing and the edge of the Vitrolite



318



SASH 300



15

Note 15 and 515 differ in depth of reveal

5/8" 15/8" Face of Framing

SILL AND JAMB



318

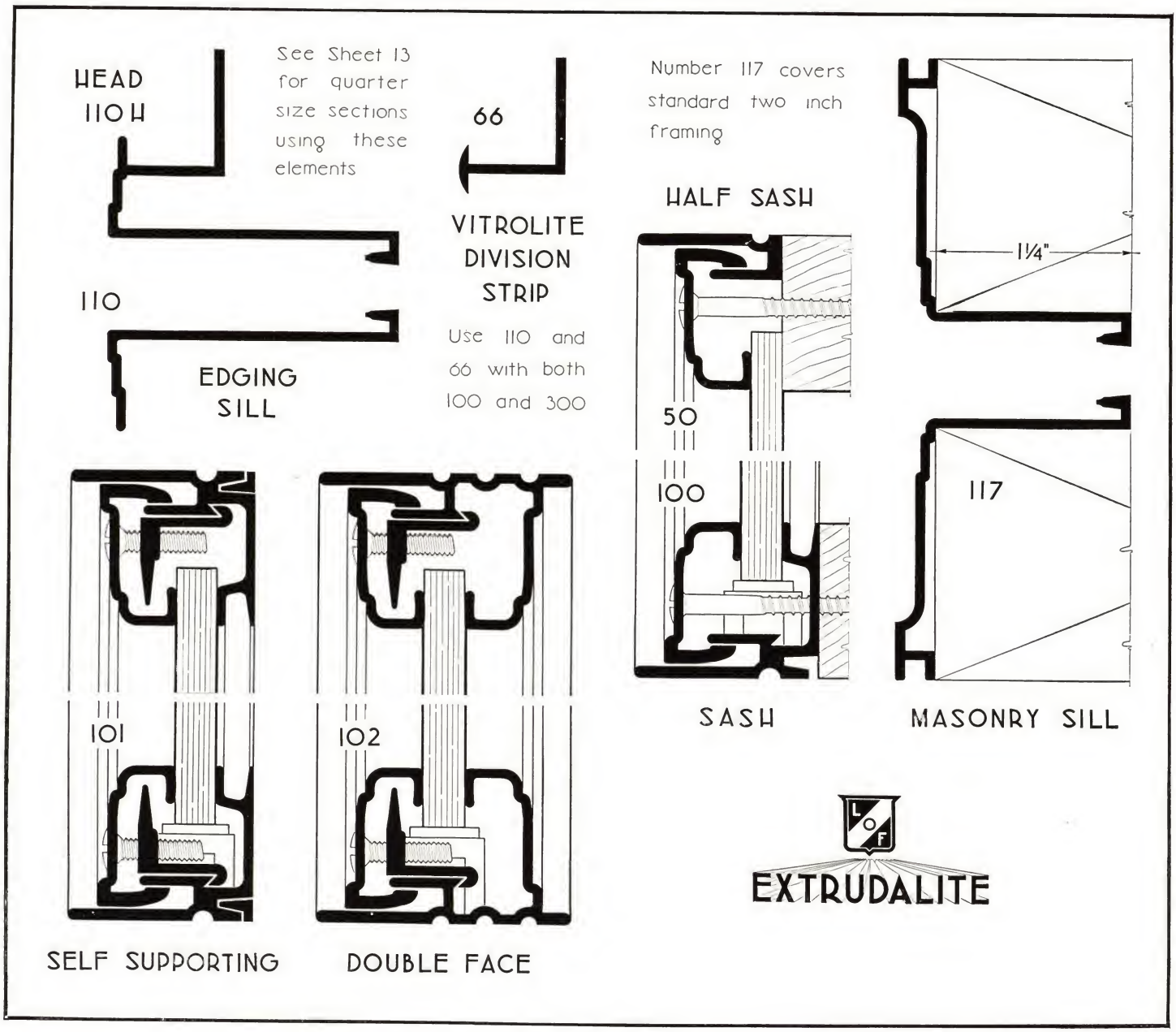
SELF SUPPORTING SILL AND JAMB

Use 318 with masonry construction

EXTRUDALITE

then become holes for blowing dust into the window. Elimination of this very questionable feature helps to maintain bright clean displays, and improves the appearance of sash face pieces. Extrudalite provides a generous sized interior gutter to catch and hold water from window washing and it is a simple matter to soak up these drippings with sponge or chamois after each cleaning. Make your windows water-tight and dust-proof with the proper Extrudalite sections.

Extrudalite basic quality at minimum cost is featured throughout the Number 100 series. No job has to be designed and planned so modestly that it must be denied the handsome sturdiness and clean cut lines of Extrudalite. Note the versatility of uses possible with Double Face Sash Number 102. It is the practical support and trim for various types of glass partitions. It is well suited for residential picture windows. Note that Half Sash Number 50 is of two piece construction. This allows for adjustment to various glass thicknesses without the usual gapping at the bottom of the face which is unsightly and not water-tight. This is a decided improvement in half sash construction. However, we recommend that you use half sash construction only when it is absolutely necessary from a cost standpoint, the small savings effected by using this item make such occasions rare. When used, be sure to specify that the wood stop which receives the back of the glass is to be of fine quality and planed to perfect alignment. Under no conditions should half sash be used at the bottom of glass.

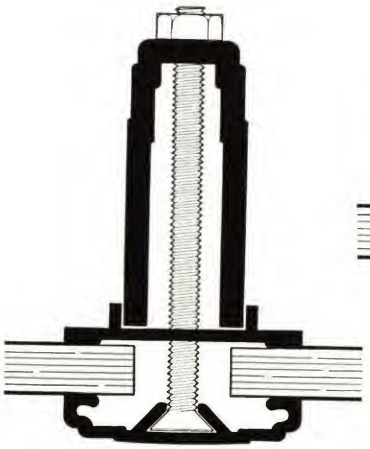


Extrudalite vertical bars are built to uphold their part of this line from a standpoint of both construction and design. They are not just metal strips to cover glass joints. Bars Nos. 20, 21 and 22 are built to automatically fit a wide range of angles and contain spring cushioned pressure. No bulky extra reinforcement members are necessary to strengthen these bars, and no operating parts are exposed on the inside to detract from their design. Each bar is a complete mechanical unit—designed as such—and requires no tape or plastics to securely but safely hold the glass.

Structural Division Bar Number 240 was designed especially to support large areas of Vitrolux. It can be furnished with a variety of face pieces and can be fastened either from the face or the rear. See special Vitrolux details for application of this member.

Division Bar Number 121 is for use exclusively in transom glass where strength is of minor importance, when transformed by reinforcing member R into Division 121-R it provides a rigid construction for use with large lights of glass where very low cost is an important factor. This bar is particularly designed to take its place in the Number 100 series.

All bars should be securely anchored at top and bottom with Extrudalite anchors.



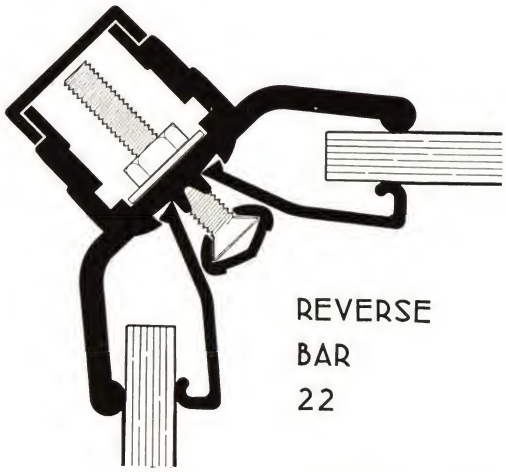
LIGHT DIVISION BAR 121 R



240

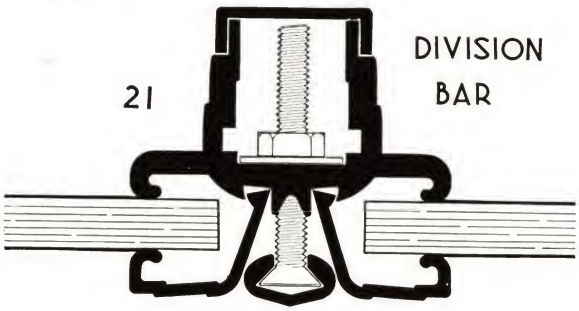
STRUCTURAL DIVISION BAR

Sections actual size

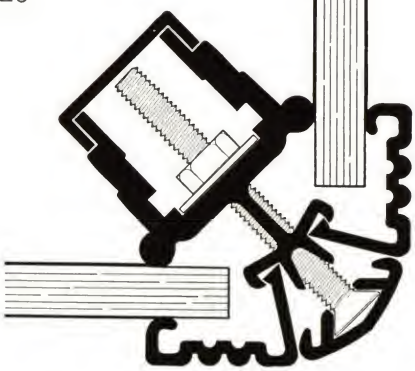


REVERSE BAR 22

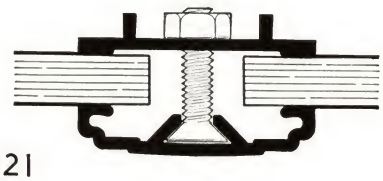
Bars 20 21 22 are universal in adapting themselves to all necessary angles



21 DIVISION BAR



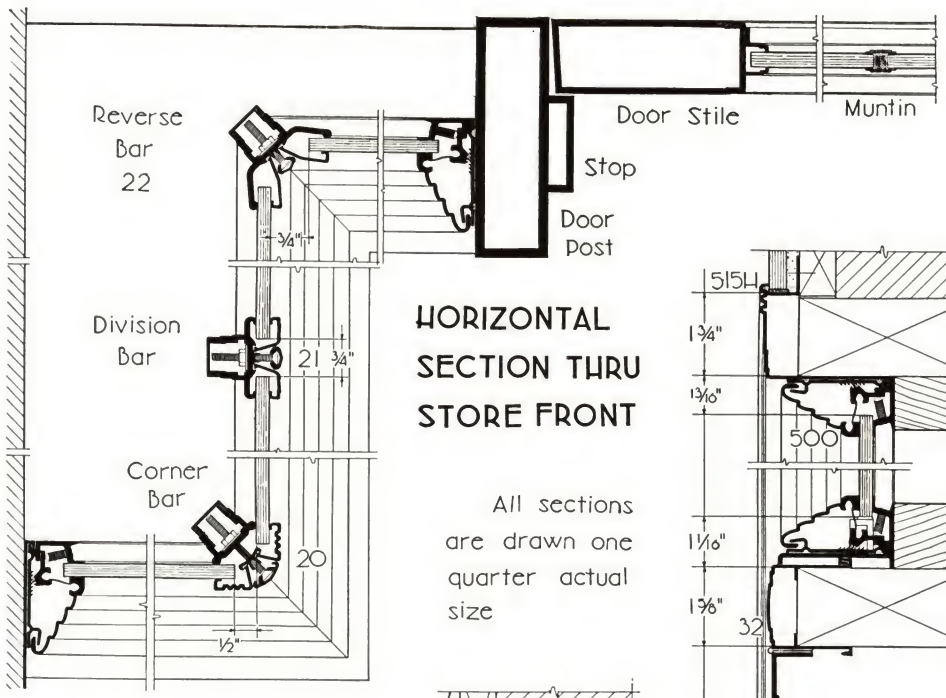
CORNER BAR 20



121

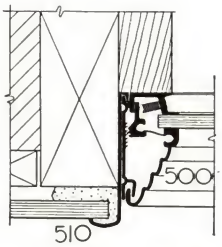
TRANSOM DIVISION BAR

EXTRUDALITE

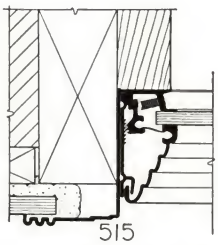



## HORIZONTAL SECTION THRU STORE FRONT

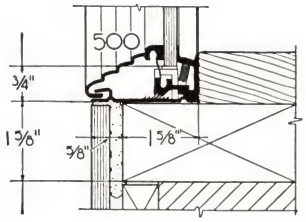
All sections are drawn one quarter actual size

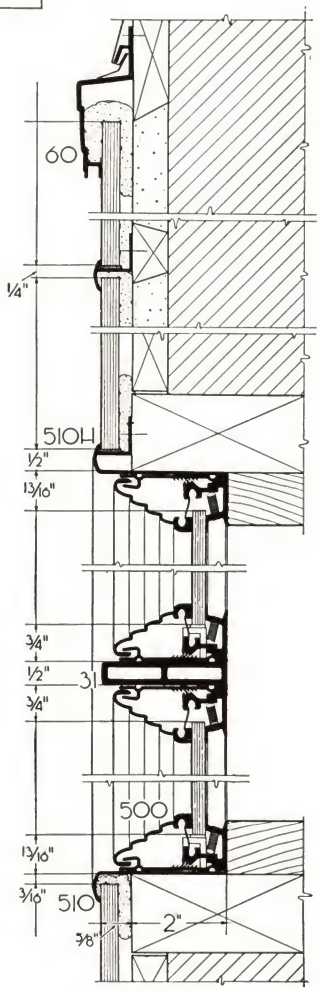



SIDE JAMB

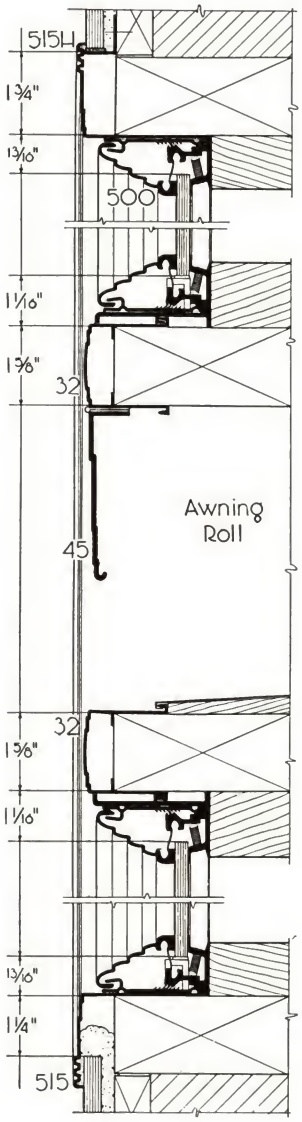


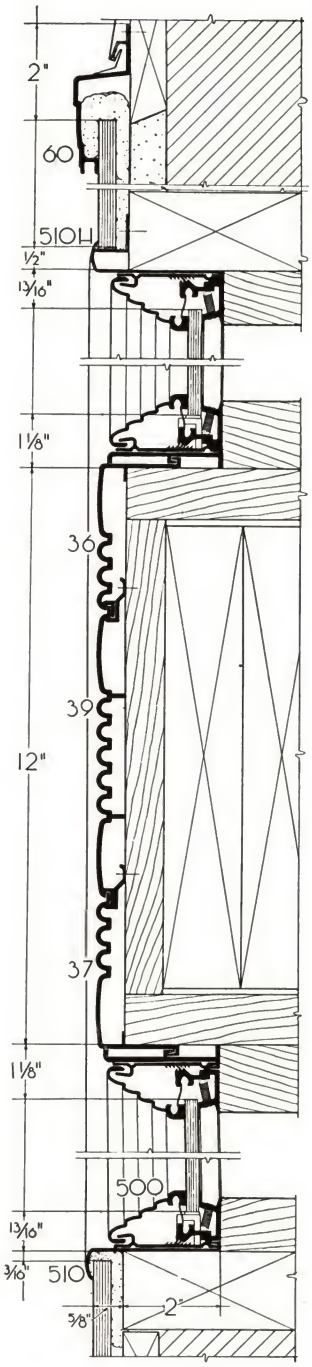

SIDE JAMB




VERTICAL SECTIONS

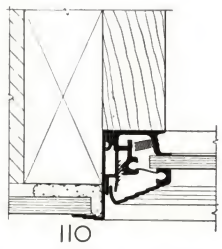


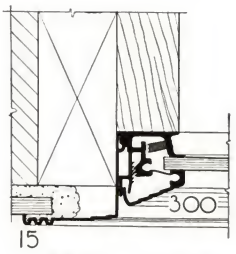

VERTICAL SECTIONS

EXTRUDALITE

A FUNDAMENTALLY NEW PRINCIPLE OF CONSTRUCTION



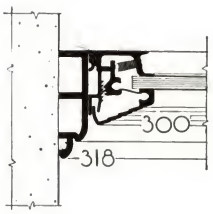

SIDE JAMB




SIDE JAMB

All framing is on one plane

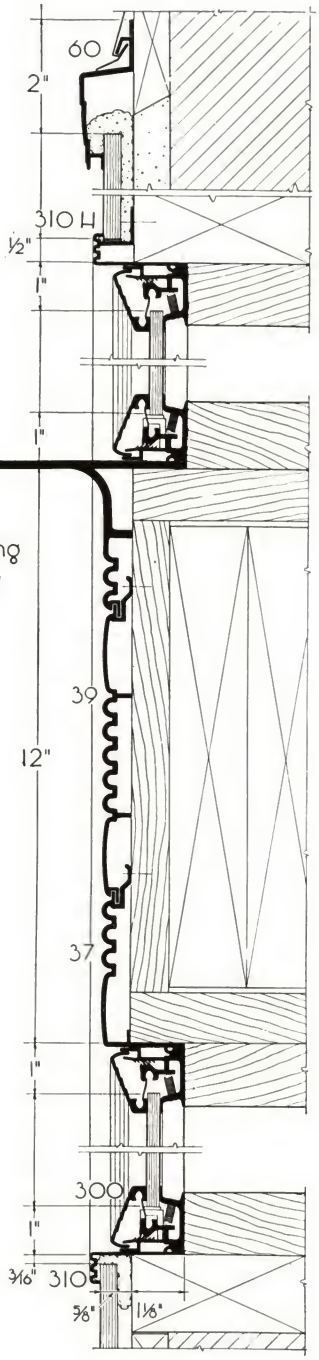
Cast End Brackets furnished

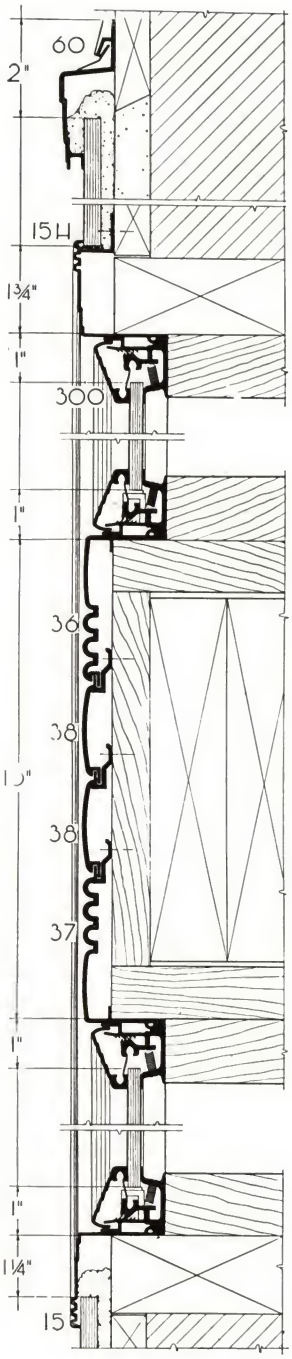



SIDE JAMB



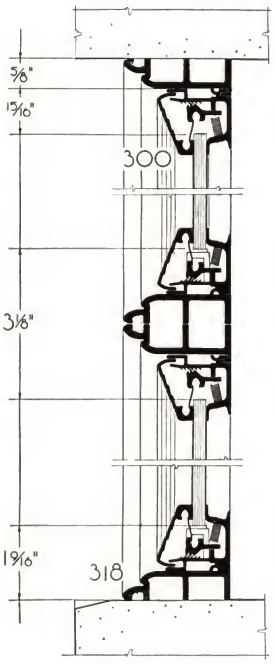

One piece Awning Hood



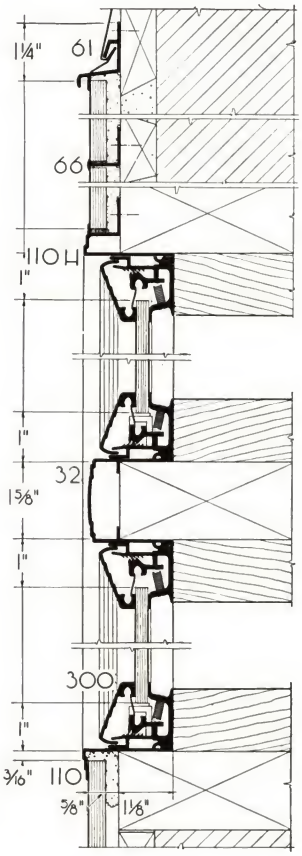




VERTICAL SECTIONS

Note weather proof construction thruout

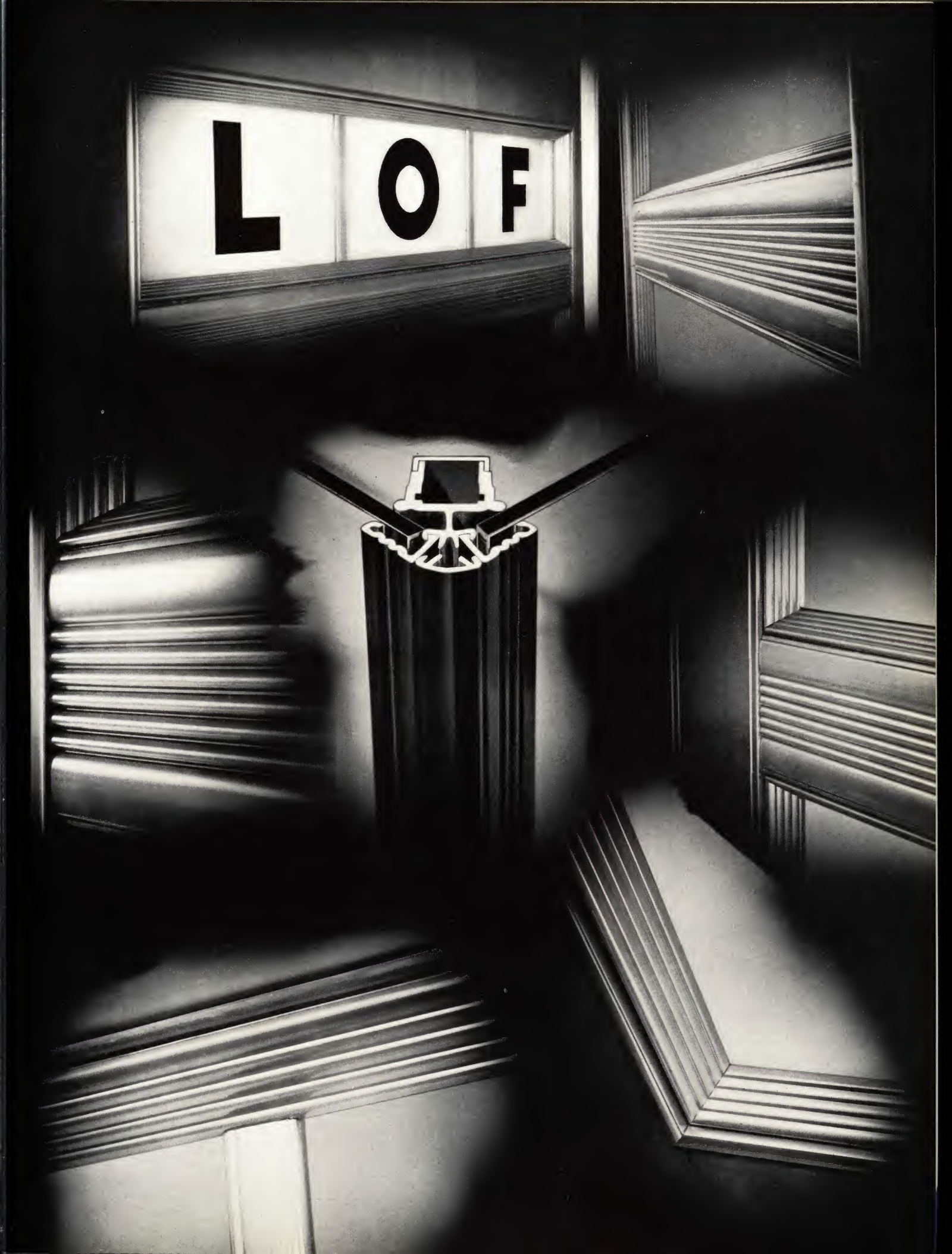



SELF SUPPORTING SILL AND JAMB




VERTICAL SECTIONS

EXTRUDALITE


L O F

# VITROLITE
## *Colorful Structural Glass*

## VITROLITE IN ARCHITECTURE

● Vitrolite has a long record of usefulness in buildings of all kinds and serves a great variety of purposes. Used at first as a material for sanitary purposes, the variety of colors in which it is made and the beauty of its surface have led architects to recognize in Vitrolite a means of securing architectural character and striking decorative effects. Vitrolite is peculiarly expressive of the modern movement in architecture and decoration and has been used for both interior and exterior purposes by leading architects, in an imposing list of buildings. Vitrolite requires definitely different structural methods and detailing than marble or tile. To make it easier to work out projects in Vitrolite the details and specifications on the following pages are presented to the architectural profession with the assurance that in Vitrolite they will find a material that not only meets the most exacting requirements of service, but will prove a source of increasing interest and fascination to the designer who is striving to interpret the needs of this modern age in terms of directness, simplicity and color.

**WHAT VITROLITE IS**—Vitrolite is an opaque structural glass, fused at high temperature. Its structure is dense and tough, with a tensile strength and resistance to wear greater than that of marble. The face of Vitrolite has a high luster and the back has a ribbed surface that may be effectively attached with mastic to any smooth, dry and permanently secure background.

**QUALITIES**—Vitrolite will not warp, swell, or craze. Liquids in common use cannot penetrate it, and it will not absorb liquids or gases that give off unpleasant odors. It is highly resistant to staining and to burns from cigars or cigarettes. It is difficult to write or mark upon, and is easily cleaned by wiping with a damp cloth—or in extreme cases by the application of soap and water.

**STRENGTH**—Vitrolite has a minimum tensile strength of 937 lb. per sq. in. and crushing strength of 31,658 lb. per sq. in., which is about 40% greater than marble. It has a very high resistance to abrasion.

**WEIGHT**—Actual net weight, lbs. per sq. ft.: 11/32 in., 4.4 lbs.; 7/16 in., 5.6 lbs.; ¾ in., 10.2 lbs.; 1 in., 14 lbs.; 1¼ in., 17.5 lbs.

**SURFACES**—Vitrolite is produced in two types of surfaces—fire polished and mechanically ground and polished.

**THE FIRE POLISHED SURFACE** is a natural result of the process of melting, rolling and annealing Vitrolite. The polish is high, hard, smooth, and dense, and therefore sanitary and highly resistant to staining and abrasion. Due to recently improved manufacturing methods, this surface has been highly perfected, being remarkably free from defects and the waviness common to fire-polished surfaces.

**MECHANICALLY POLISHED SURFACE**—Where mirror-like, reflective surfaces are desired, Vitrolite in black, and in a number of other colors, is supplied with a Mechanically Polished Surface, at slightly higher cost.

**VITROLITE COLORS**—Vitrolite is furnished in sheets of various thicknesses and sizes, in a number of plain colors and a variety of agate colors, as shown on Vitrolite Color Chart.

**DECORATIVE PROCESSES**—Decorative effects or letters may be secured in plain or colored sandblasted ornament or by inlays of thin colored opaque glass or mirrors. A very effective relief sign can be made by cementing Vitrolite letters to Vitrolite background. By protecting the solid surface with a stencil, a grille may be made by sandblasting through the Vitrolite. An irregular pattern effect of interesting reflective value, similar to frosting on glass, may be obtained through a process of glue chipping. By sandblasting over a resist, black Vitrolite may be given a surface resembling black granite. A crackle finish is attained by sandblasting over a resist that has separated in drying.

**THICKNESS**—White, Black, Gray, Jade and Ivory are produced in thicknesses of 11/32 in., 7/16 in., ¾ in., 1 in. and 1¼ in. Agate colors are produced in 11/32 in. thickness only. Other plain colors—Red, Yellow, Sun Tan and Tropic Green are made in 11/32 in. only. Latest information regarding colors available will be furnished by the company or any of the authorized Vitrolite dealers located in principal cities.

**SIZES**—The size of slabs to be used in actual installation are dependent on the location, construction and the purpose for which they are used. For store fronts, limit size of slabs to 6 sq. ft. with 3 ft. as the maximum horizontal width and 4 ft. as maximum height. For wainscoting, ashlar pieces from 8 x 12 in. to 24 x 24 in. are commonly used. Within these limits they are furnished with finished edges at a somewhat lower price than if especially cut and finished to fractional or irregular sizes. Pieces for special wainscoting should not exceed 3 x 4 ft. Slabs for toilet partitions may be had up to 5 ft. square.

**STRUCTURAL ORGANIZATIONS**—Franchised Vitrolite dealers, experienced and competent in the installation of Vitrolite are located in all principal cities. They may be called upon for additional information and estimates.

**USES**—Due to its decorative and sanitary values, its permanence, and ease of maintenance, Vitrolite has many uses in new construction and in modernizing.

Among these are:

Modernizing store fronts.

Facing exteriors of buildings.

Lobbies of hotels and office buildings.

Wainscoting and partitions for corridors, washrooms, shower baths and toilets in public buildings.

In homes as walls and wainscoting for bathrooms, kitchens, breakfast rooms, as well as work tables and splash backs.

For walls, ceilings and wainscoting of laboratories, bakeries, dairies.

In hospitals—for operating rooms, diet kitchens, laboratories, and bathrooms.

In barber shops, meat markets and other shops.

For lunch counters, bars, soda fountains, table tops in restaurants, confectioneries and taverns.

**CONSTRUCTION METHODS**—Careful study of the details and specifications will indicate a considerable difference in construction methods for exterior and interior work.

**EXTERIOR CONSTRUCTION**—Because of the extremes of temperature and exposure in exterior work special precautions must be observed to safeguard the Vitrolite, which has a very slight degree of expansion, against the expansion of materials back of it or adjacent to it, such as metal, wood, concrete or masonry, which have a considerably higher degree of expansion. Vitrolite should never come in direct contact with these materials but there should always be a space for clearance between them, filled with joint cement, cork tape or caulking, depending on the location. The facing at bulkheads should contain a base section about six inches high so as to produce an extra horizontal joint for expansion. On exteriors the Vitrolite is attached to masonry or cement plaster walls with special mastic cement made for exterior use, supplemented by shelf angles. The details shown apply generally to heights of two stories. Horizontal joints are $\frac{1}{16}$ in. wide and have adhesive cork tape set back from the face. Vertical joints are 1/32 in. wide and all joints are buttered with joint cement.

Outside edges and top of store fronts should be protected with metal trim.

For upper stories attachment may be made by concealed hangers or exposed metal members, details of which will be furnished upon request.

**INTERIOR CONSTRUCTION**—On interiors Vitrolite is attached against plaster or other dry and permanently secure wall surface with a mastic cement made for interior use. It is set with contact joints which are pointed with joint cement except in showers or bath tub recesses, where the joints should be solidly buttered with joint cement.





# (A) STORE FRONTS and BUILDING EXTERIORS

(A-1) **WORK INCLUDED.** The Contractor for Structural Class (afterwards referred to as this Contractor) shall furnish and set all of the Structural Glass required for the completion of the building (alterations) (work) as indicated on the drawings and as hereinafter specified.

This Contractor shall consult the General Conditions, Form of Contract, and other documents bound herewith or on file at the office of the Architects for instructions pertaining to his work.

(A-2) **WORK NOT INCLUDED.** This Contractor shall not include the following items, which work will be done by other contractors:

NOTE: List any items of which there may be doubt as belonging in the contract for Structural Glass.

(A-3) **MEASUREMENTS.** This Contractor shall take all measurements he may require, at the building, and shall be responsible for the proper working out of all details and dimensions and for the proper relation between the Structural Glass and the work of other contractors. He shall confer with all contractors whose work adjoins the Structural Glass to see that all details are in perfect agreement.

(A-4) **DISTRIBUTION.** The following schedule is submitted for this Contractor's guidance as to the locations, kind and extent of Structural Glass.

(a) This schedule is not necessarily complete in every detail and shall be used by this Contractor in conjunction with the drawings, this Contractor providing all exterior Structural Glass that may be indicated or called for:

NOTE: "Describe the location and various kinds of Structural Glass and details of thickness, color special decorations, names and similar details."

(b) Unless otherwise indicated, the Structural Glass finish shall return into all recesses, window and door openings and shall be carried around all projections.

(A-5) **SEPARATE PROPOSALS.** This Contractor shall submit separate proposals as called for under the heading of "GENERAL WORK."

(A-6) **SAMPLES.** This Contractor shall submit duplicate samples of the various kinds of Structural Glass included in the contract to the Architect for his approval before executing any of the work and he shall submit additional samples if the first samples are not approved. All samples shall be properly labeled and all Structural Glass furnished shall be equal in every respect to the approved samples.

(A-7) **SHOP DRAWINGS.** This Contractor shall prepare and submit complete shop drawings of all Structural Glass to the Architect for his examination before executing any of the work, as further described under "GENERAL CONDITIONS".

The shop drawings shall indicate the jointing, the various thicknesses of material, color, finish and all other salient details.

(A-8) **COLOR AND FINISH.** All exterior Structural Glass shall be of colors indicated (or to be selected) and the surfaces shall be fire polished or mechanically ground and polished with sandblasted and special decorations or textures, all as indicated on the drawings and details and as described under side heading of "DISTRIBUTION". The back of all Structural Glass shall have ribbed surface.

(A-9) **MATERIALS.** All Structural Glass shall be opaque and homogeneous, fused and rolled into slab form and thoroughly annealed.

(a) All Structural Glass shall be "Vitrolite" as manufactured by the Libbey·Owens·Ford Glass Co.

(b) All cement for setting Structural Glass shall be an asphaltic cement especially made for external use and shall be approved both by the Architects and the manufacturer of the glass. All joint cement shall be of a make as approved by the manufacturer of the Structural Class and the Architects.

(A-10) **FABRICATION.** This Contractor shall follow the approved details and shop drawings in cutting, fitting and setting all Structural Glass.

(a) All Structural Glass shall be fabricated to exact sizes and shall be plumb, true and square.

(b) Where indicated Structural Glass shall be cut to special shapes and bent to indicated radius or curve. All abutting edges shall be ground square and the angles at the intersection of the face and edges shall be slightly beveled or rounded. At salient angles all exposed edges shall be polished and shall be square, rounded or beveled. Concealed edges (not abutting glass) may be clean cut.

(A-11) **INSTALLATION.** All Structural Glass shall be set in the best possible manner. Only experienced and competent setters shall be employed. Surfaces shall be plumb and true. Horizontal joints shall be in perfect alignment. Where continuous vertical joints occur they shall be plumb and form perfect intersections with the horizontal joints.

(a) All surfaces to which Structural Glass is to be applied shall be dry, rigid and secure and shall be masonry or cement plaster on metal lath.

(b) Wood backing will not be permitted.

(c) This Contractor shall examine the surfaces left by other contractors and shall report all defects in wall surfaces to the architects.

(d) The commencement of his work shall be an indication of the acceptance of the surfaces by him.

(e) All exterior surfaces over which Structural Glass is to be applied shall receive a bond coat of approved material applied by this Contractor. This bond coat shall be of a type that will act as a waterproofing material and that will provide an affinity between the wall surface and the cement.

NOTE: This bond coat is not required on glazes vitrified or other similar impervious and non-absorbent surfaces.

(f) The surfaces of the wall and the back of the Structural Glass shall be perfectly dry.

(g) The Structural Glass shall be cemented by an approved mastic to the wall surfaces, and the space between the wall and the glass shall not exceed approximately ⅜ in. with a variance of ⅛ in. narrower or wider.

(h) Where Structural Glass starts at the sidewalk level it shall be set on a cushion strip of heavy roofing or other approved permanent and resilient material at least ¼ in. thick.

(i) At the base, top and sides of the Structural Glass, and around all openings the setting cement shall be applied solidly for a width of 3 in. from the edge of the glass. Elsewhere the cement shall be set in daubs 2 to 3 in. in diameter evenly distributed so that 60% of the total area of the glass shall be covered with cement when set.

(j) Each horizontal joint shall have a strip of adhesive cork tape 1/16 in. thick set back about ⅛ in. from the face. This tape shall be buttered over and the open joint in front filled with joint cement.

(k) Each vertical joint shall be at least 1/32 in. in thickness and shall be thoroughly buttered with joint cement and in no case shall pieces of Structural Glass in either vertical or horizontal joints abut directly against each other.

(l) Where the edges of Structural Glass finish against metal or against adjoining property a joint of 1/16 to ⅛ in. shall be left and the joint pointed smooth and even with joint cement.

(m) The Structural Glass shall be supported on shelf angles set approximately 3 feet apart vertically and in such a manner that they will be concealed by the joint cement.

(n) These angles shall be No. 18 gauge (galvanized iron) (brass) approximately 3 in. square and with a ½ in. leg to support the Structural Glass.

(o) They shall be spaced at approved intervals and shall be secured to the wall with expansion bolts, toggle bolts or other approved manner.

(p) The top edge of the upper course of Structural Glass shall be set under the masonry sill or projection and the joints shall be thoroughly filled with cement.

(q) Where no projection occurs, the top course of Structural Glass shall be covered with a member of (aluminum) (stainless steel) which shall be furnished and installed by this Contractor.

(r) This member shall be formed to provide a drip and shall be flashed into the wall in a manner to eliminate the possibility of water getting in behind the Structural Glass.

(s) Where the Structural Glass facing extends to the top of a wall where no coping is used, this Contractor shall furnish and install an (aluminum) (stainless steel) coping well anchored to the wall and forming an approved drip.

(t) Exposed edges of Structural Glass at the extreme sides of the installation shall be covered by an (aluminum) (stainless steel) molding. This molding shall be furnished and installed by this Contractor in a manner to cover the cement joint and to eliminate the possibility of moisture getting behind the Structural Glass.

(u) Where ceiling and soffit slabs occur see (k) and (l) under B-11—Interiors.

(v) Where Structural Glass is indicated above limit and height permitted for setting by the methods described above the mastic cement shall be supplemented by the use of mechanical fastenings to be approved by the Architect and in conformance with the requirements of the local building ordinance.

**(A-12) CUTTING, DRILLING AND FITTING.** This Contractor shall do all cutting, drilling and fitting of Structural Glass required for its proper installation and as required by other contractors to properly complete their work.

**(A-13) SCAFFOLDING.** This Contractor shall furnish, maintain and move as required all scaffolding he may require for the installation of Structural Glass.

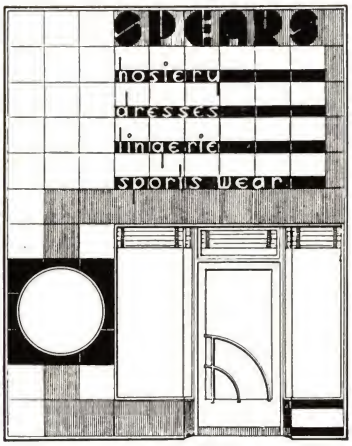
All scaffolding shall be constructed and maintained in strict accordance with Federal and State Laws and City Ordinance requirements.

**(A-14) PROTECTION, CLEANING AND POINTING.** This Contractor shall provide all items of protection necessary to prevent damage to the Structural Glass at all times during the progress of the work. At completion he shall carefully point up all joints as required, shall clean the glass and leave all surfaces in perfect condition.

**(A-15) GUARANTEE.** This Contractor shall guarantee the entire installation against all defects of workmanship and material, including crazing, absorption of foreign matter, parting from wall, loosening or brecking except from the effects of external force or excessive heat, for a period of eighteen (18) months after the completion of the contract, as evidenced by the issuance of the final certificate, and he shall promptly repair at his own expense any defects that may arise within that period upon written notice from the Owner or Architects.

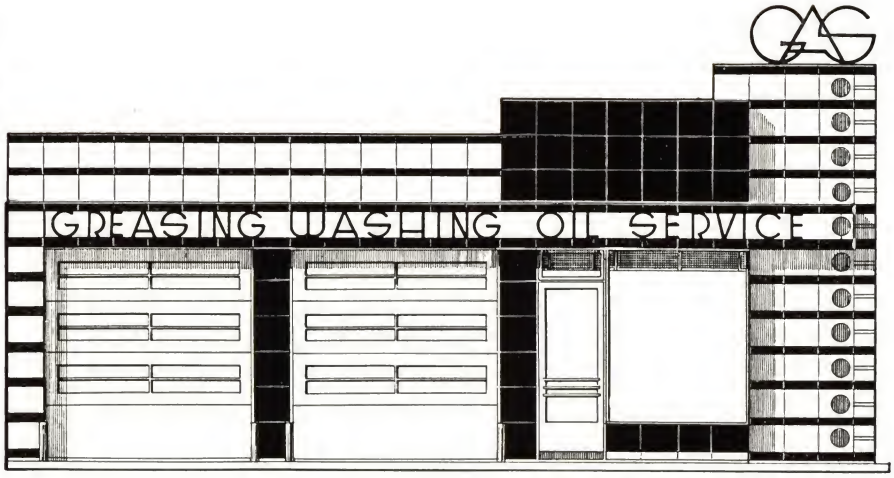






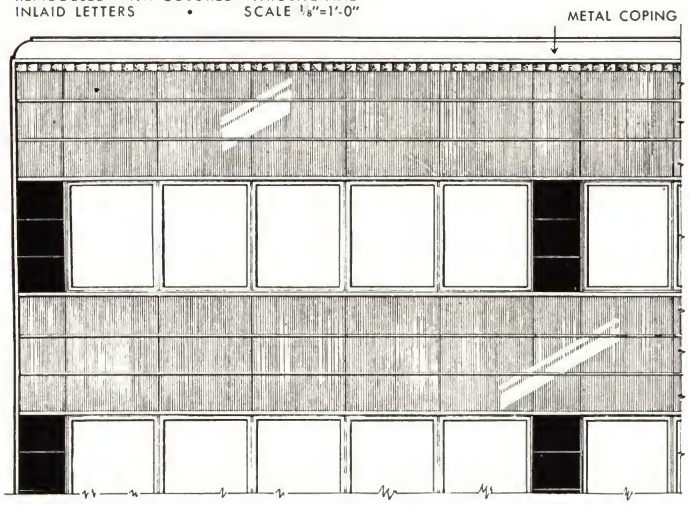

## VITROLITE SHOP FRONT

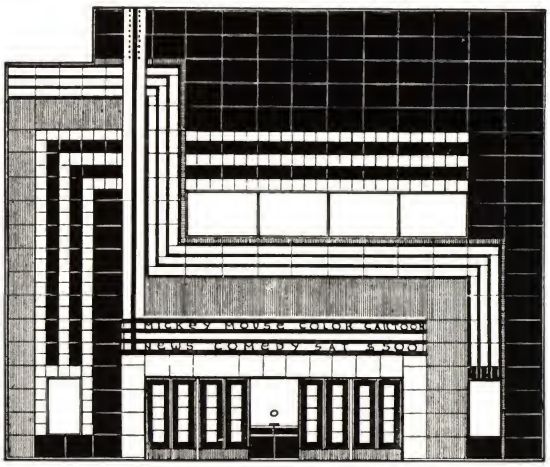
REMODELED WITH COLORED VITROLITE AND INLAID LETTERS • SCALE ⅛"=1'-0"




## GAS AND SERVICE STATION

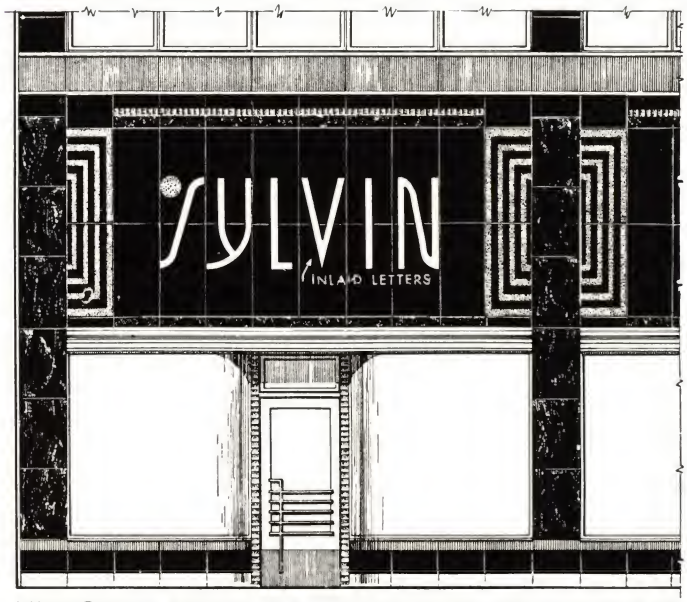
SHOWING EFFECTIVE APPLICATION OF VITROLITE CEMENTED TO MASONRY WALL • SCALE ⅛"=1'-0"



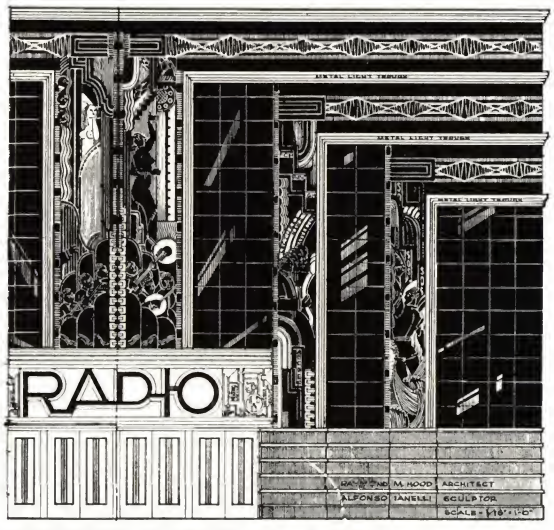

## VITROLITE MOVIE THEATRE FRONT

COMBINATION OF COLORED AND BLACK VITROLITE WITH GLASS BLOCKS IN DECORATIVE PATTERN EFFECT • SCALE 1/16"=1'-0"



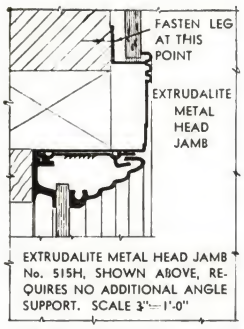

## VITROLITE EXTERIOR TREATMENT OF BUILDING

STOPE FRONT SHOWING CURVED BULKHEADS AND SANDBLAST DECORATION. VITROLITE FOR UPPER STORIES HELD IN PLACE BY MASTIC CEMENT AND METAL MOULDINGS. SCALE ⅛"=1'-0"

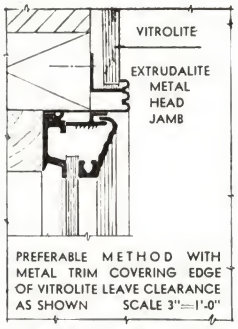



## VITROLITE FACADE OF EXPOSITION BLDG.

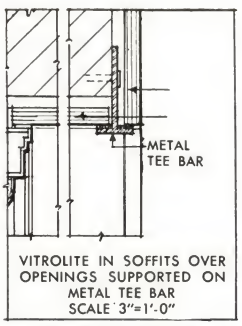
SHOWING USE OF VITROLITE WITH BAS-RELIFF SCULPTURE AND INDIRECT LIGHTING TROUGHS • SCALE 1/16"=1'-0"




EXTRUDALITE METAL HEAD JAMB No. 515H, SHOWN ABOVE, REQUIRES NO ADDITIONAL ANGLE SUPPORT. SCALE 3"=1'-0"

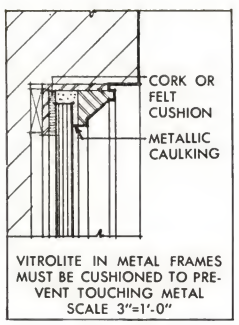



PREFERABLE METHOD WITH METAL TRIM COVERING EDGE OF VITROLITE LEAVE CLEARANCE AS SHOWN SCALE 3"=1'-0"

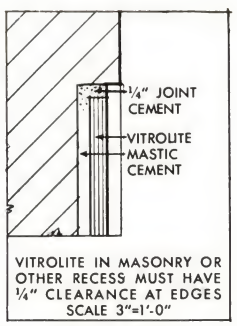



VITROLITE IN SOFFITS OVER OPENINGS SUPPORTED ON METAL TEE BAR SCALE 3"=1'-0"

## SECTIONS THRU HEAD OF SHOW WINDOWS

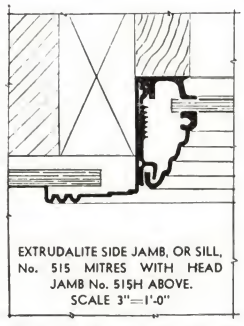



VITROLITE IN METAL FRAMES MUST BE CUSHIONED TO PREVENT TOUCHING METAL SCALE 3"=1'-0"

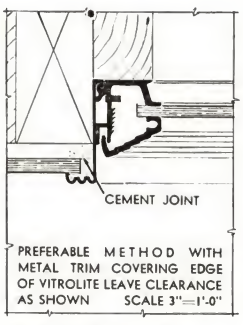



VITROLITE IN MASONRY OR OTHER RECESS MUST HAVE ¼" CLEARANCE AT EDGES SCALE 3"=1'-0"

## SECTIONS THRU SPANDRELS

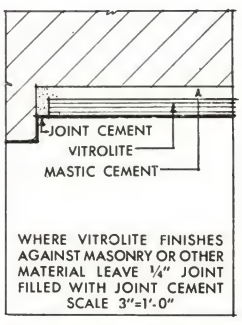


EXTRUDALITE SIDE JAMB, OR SILL, No. 515 MITRES WITH HEAD JAMB No. 515H ABOVE. SCALE 3"=1'-0"

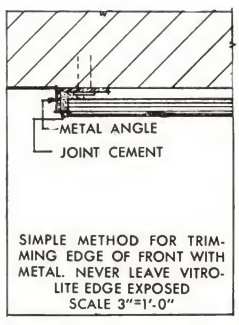



PREFERABLE METHOD WITH METAL TRIM COVERING EDGE OF VITROLITE LEAVE CLEARANCE AS SHOWN SCALE 3"=1'-0"

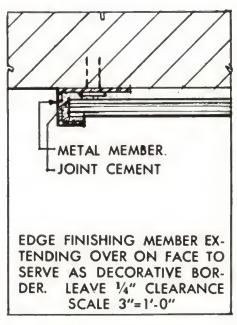
## SIDE JAMB DETAILS




WHERE VITROLITE FINISHES AGAINST MASONRY OR OTHER MATERIAL LEAVE ¼" JOINT FILLED WITH JOINT CEMENT SCALE 3"=1'-0"

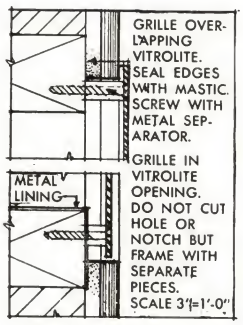



SIMPLE METHOD FOR TRIMMING EDGE OF FRONT WITH METAL. NEVER LEAVE VITROLITE EDGE EXPOSED SCALE 3"=1'-0"

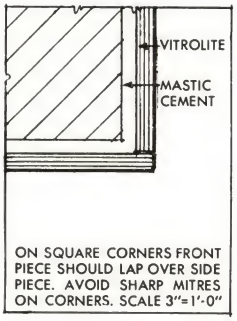



EDGE FINISHING MEMBER EXTENDING OVER ON FACE TO SERVE AS DECORATIVE BORDER. LEAVE ¼" CLEARANCE SCALE 3"=1'-0"

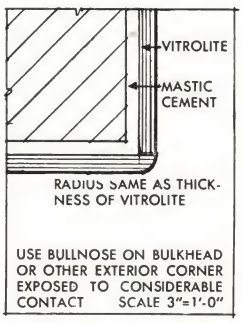
## PLANS THRU EDGES OF STORE FRONT



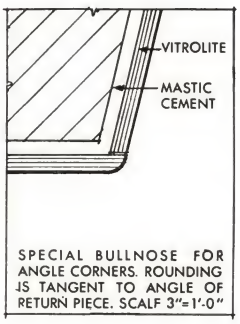

SCALE 3"=1'-0"



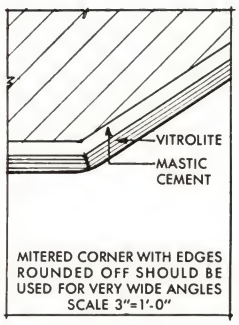

ON SQUARE CORNERS FRONT PIECE SHOULD LAP OVER SIDE PIECE. AVOID SHARP MITRES ON CORNERS. SCALE 3"=1'-0"




USE BULLNOSE ON BULKHEAD OR OTHER EXTERIOR CORNER EXPOSED TO CONSIDERABLE CONTACT SCALE 3"=1'-0"



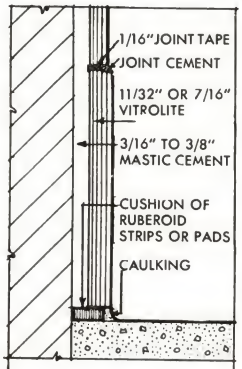

SPECIAL BULLNOSE FOR ANGLE CORNERS. ROUNDING IS TANGENT TO ANGLE OF RETURN PIECE. SCALF 3"=1'-0"



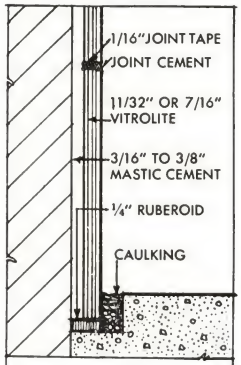

MITERED CORNER WITH EDGES ROUNDED OFF SHOULD BE USED FOR VERY WIDE ANGLES SCALE 3"=1'-0"

## GRILLE DETAILS

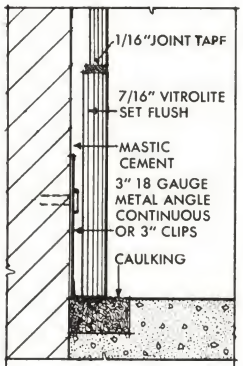
## PLANS THRU VITROLITE AT CORNERS




BASE SHOULD BE SET ABOVE SIDEWALK WHERE POSSIBLE AND SET ON STRIPS OR PADS OF RUBEROID TO PREVENT BREAKAGE FROM EXPANSION OF SIDEWALK. SCALE 3"=1'-0"

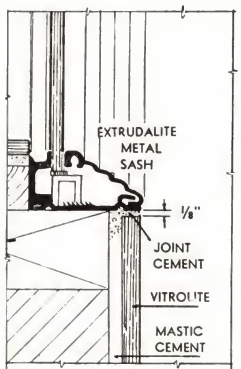



IF SIDEWALK SET AT HIGHER LEVEL AFTER BASE IS SET LEAVE ¼" to ½" CAULKED SPACE TO PREVENT EXPANSION OF SIDEWALK FROM CRACKING VITROLITE SCALE 3"=1'-0"

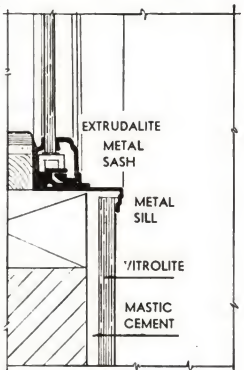



IMPROVED METHOD ESPECIALLY FOR NEW WORK IS TO SUPPORT BASE ON METAL ANGLE AND LEAVE CAULKING SPACE BELOW AND IN FRONT OF BASE SCALE 3"=1'-0"

## SECTIONS THRU BULKHEAD BASE

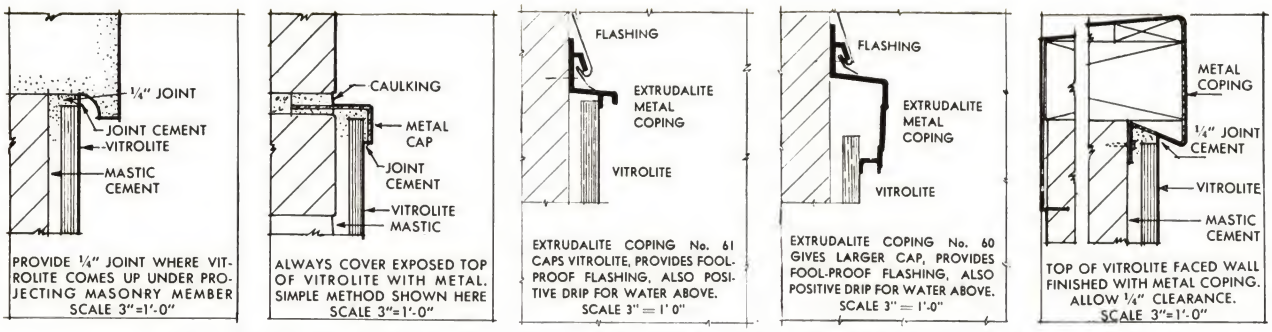



LEAVE ⅛" CLEARANCE BETWEEN TOP OF VITROLITE AND METAL SASH. DO NOT LEAVE VITROLITE EXPOSED AT TOP. SCALE 3"=1'-0"

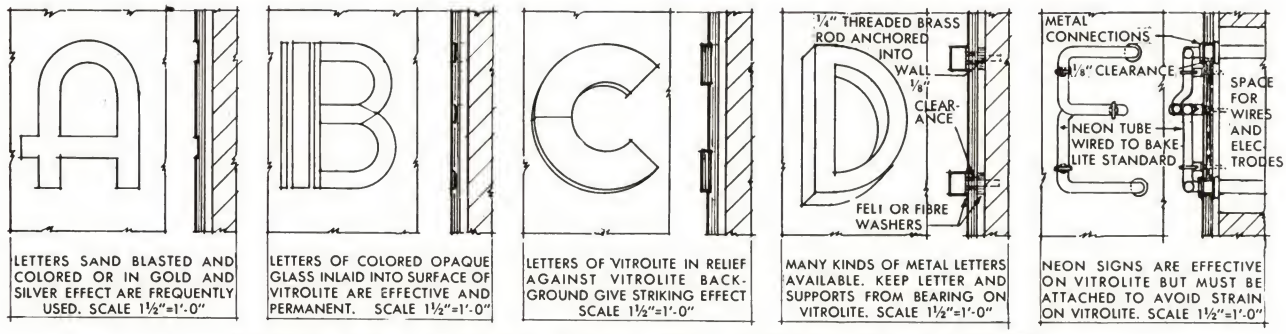



IT IS PREFERABLE TO COVER TOP OF VITROLITE AT BULKHEAD WITH METAL SILL MEMBER TO PROTECT EDGE AND MAKE WEATHER TIGHT. SCALE 3"=1'-0"

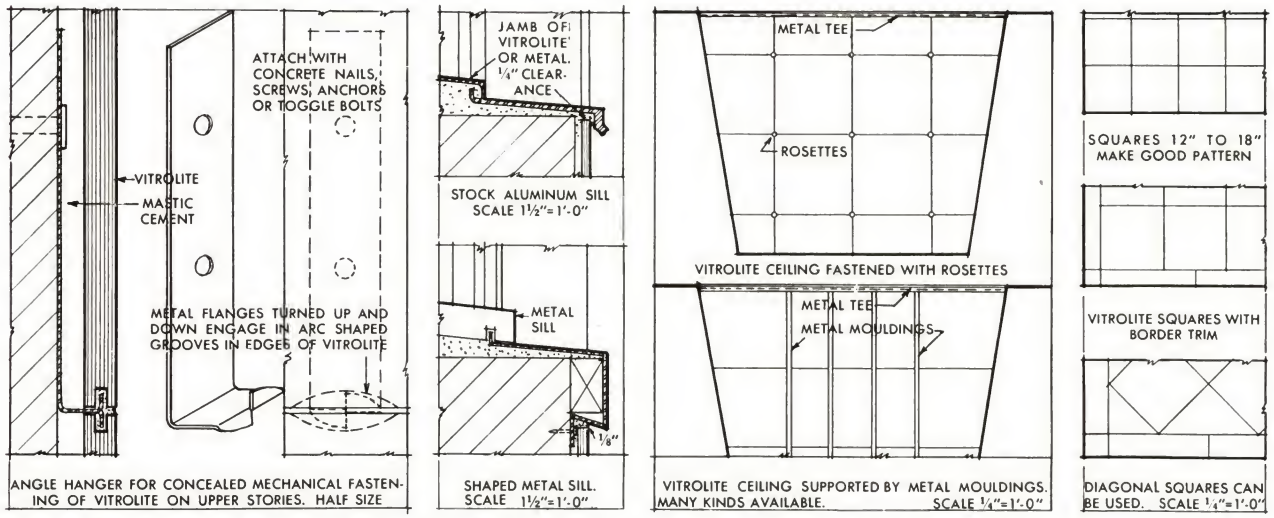
## SILLS OF SHOW WINDOWS




## SECTIONS THRU FINISH AT TOP OF VITROLITE FACING



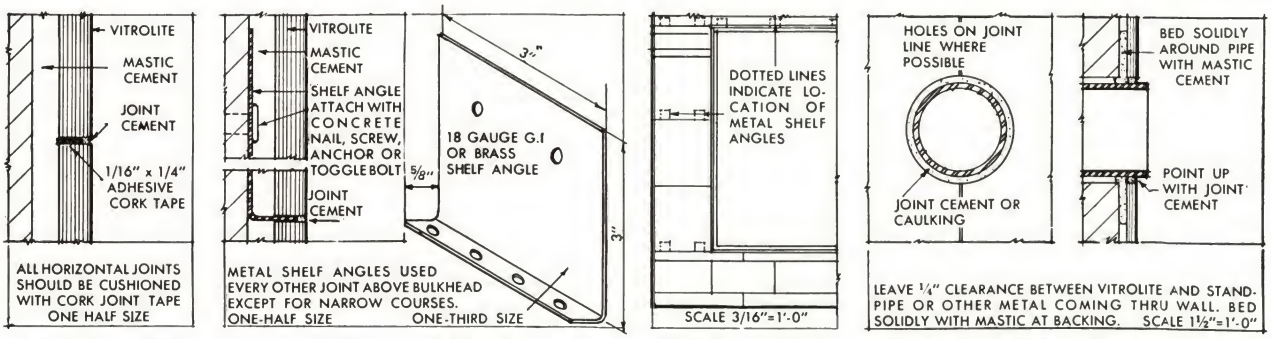

## TYPES OF LETTERS USED ON VITROLITE FRONTS




## HANGER FOR FASTENING WINDOW SILLS

## CEILINGS OVER ENTRY

## Show Wdw. Floors




## JOINT TAPE

## SHELF ANGLE

## PIER ELEV.

## HOLES FOR PIPES, ETC.




# VITROLITE FOR INTERIORS

● Vitrolite Structural Glass has a definite place in today's interior design and architecture that places so much emphasis on functional and decorative values. Interiors now gleam with color. And because Vitrolite is glass, it is inherently clean —it will not absorb odors, moisture or grease.

Vitrolite is ideally suited for the modernization of existing interiors as well as for new construction. It lends an evidence of quality and contributes to the owner's permanent satisfaction.

A sparkling, colorful interior of Vitrolite meets the most exacting requirements of cleanliness and sanitation. Its hard, reflective surface will not deteriorate from the effects of moisture or age. Washing is all that is ever required to maintain its original beauty.

Vitrolite is not only a lasting wall facing material, but because of its beauty of surface and color it is recognized as having a distinctly modern appearance and possessing decorative qualities of a high order.

The following pages contain construction details, specifications and information as to proper installation methods.

Vitrolite may be combined effectively with metal trim and accessories.

A typical building lobby installation of Vitrolite in combination with Vitrolux Color Fused Tempered Plate Glass, is illustrated above. Here the walls and trim are of colorful Vitrolite and the ceiling lighting is artistically concealed and evenly diffused with Vitrolux, set in the new L·O·F Extrudalite metal construction. Where the designer wishes to place metal division strips between Vitrolite panels, specially designed Extrudalite members are available. (See page 9 to 14 for Vitrolux data and pages 23 to 32 for Extrudalite data.) These products provide the architect with fascinating and versatile resources for effective design and color that will undoubtedly exert a strong influence upon the character of interior architecture.

## (B) INTERIORS

**(B-1) WORK INCLUDED.** Same as A-1 Store Fronts.

**(B-2) WORK NOT INCLUDED.** Same as A-2 Store Fronts.

**(B-3) MEASUREMENTS.** Same as A-3 Store Fronts.

**(B-4) DISTRIBUTION.** Same as A-4 Store Fronts.

**(a)** This schedule is not necessarily complete in every detail and shall be used by this Contractor in conjunction with the drawings, this Contractor providing all interior Structural Glass that may be indicated or called for.

"Describe the location and various kinds of the Structural Glass with details of thickness, color, special decorations and similar details".

**(b)** Unless otherwise indicated, all Structural Glass finish shall extend to the wood members at the door jambs, and shall return in window openings to the frames including the stools.

NOTE: Structural Glass should not finish directly against door jamb. It is preferable to use a small molding between jamb and edge of structural glass.

**(c)** In conjunction with all Structural Glass base this Contractor shall form plinths as indicated on the drawings under door casings, pilasters and all other special treatment in the spaces in which the base occurs.

**(d)** Where base, wainscot and other Structural Glass work is specified in a space it shall be taken to include the entire space, including all walls, partitions, columns, returns in openings, alcoves and recesses, together with all pilasters and other features required to carry out designs in the various locations.

**(B-5) SEPARATE PROPOSALS.** Same as A-5 Store Fronts.

**(B-6) SAMPLES.** Same as A-6 Store Fronts.

**(B-7) SHOP DRAWINGS.** Same as A-7 Store Fronts.

**(B-8) COLOR AND FINISH.** Same as A-8 Store Fronts.

**(B-9) MATERIALS.** Same as A-9 Store Fronts.

**(a)** Same as (a)—A-9 Store Fronts.

**(b)** All mastic for attaching Structural Glass and all joint cement shall be of a make as approved by the manufacturer of the Structural Glass and the architect.

**(B-10) FABRICATION.** Same as A-10 (a & b) Store Fronts.

**(B-11) INSTALLATION.** Same as A-11 Store Fronts.

**(a)** All surfaces to which Structural Glass is to be applied shall have a brown coat, or finish coat of plaster which shall be plumb, true and smooth, and shall be executed by the Plastering Contractor.

NOTE: While a plaster base is recommended, Structural Glass for interior work may be cemented against any surface that is dry, rigid, substantial and permanently secure.

**(b)** Same as (c) A-11 Store Fronts.

**(c)** Same as (d) A-11 Store Fronts.

**(d)** All interior surfaces over which Structural Glass is to be applied shall receive a bond coat of approved material by this Contractor.

**(e)** The surfaces of the wall and the back of the Structural Glass shall be perfectly dry.

**(f)** The Structural Glass shall be set in place with cement and all joints shall be hair line joints.

**(g)** Where Structural Glass occurs as wainscot above tubs in bathrooms and on rear and sidewalls of shower partitions, the bottom 2 in. shall be set solidly in mastic. Elsewhere the mastic shall be set in daubs 2 in. to 3 in. in diameter evenly distributed so that 60% of the total area of the glass shall be covered with mastic. All joints of wainscot on walls of showers, enclosures, around tubs, and similar locations shall be buttered with joint cement.

**(h)** In general, the Structural Glass for base, cap and trim shall be 7/16 in. (11/32 in.) thick and shall be of the dimensions indicated. The relation of the cap to the plaster surface above shall be as detailed.

**(i)** Ashlar material shall be 11/32 in. in thickness with an approximate minimum dimension of 8 in. x 12 in. and an approximate maximum dimension of 24 in. x 24 in.

**(j)** Window stools shall be ¾ in. in thickness.

**(k)** Ceiling and soffit slabs shall be 11/32 in. in thickness and shall be secured to 1 in. x 4 in. wood furring strips set in place by this Contractor.

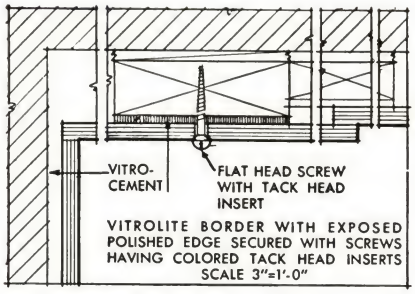
**(l)** The ceiling slabs shall be set in mastic on the furring strips and held in place by rosettes of material and design to be selected and approved by this Architect, set over felt washers and secured with brass wood screws.

**(m)** This Contractor shall furnish and set the following bathroom accessories (Give list and description of accessories desired). They shall be located as indicated on the drawings or as directed by the architects.

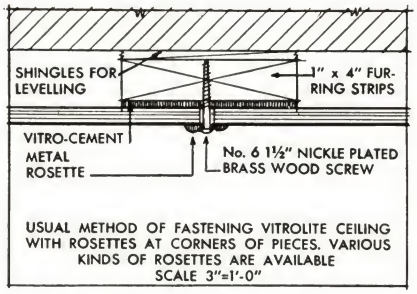
**(B-12) CUTTING, DRILLING AND FITTING.** Same as A-12 Store Fronts.

**(B-13) PROTECTION, CLEANING AND POINTING.** Same as A-13 Store Fronts.

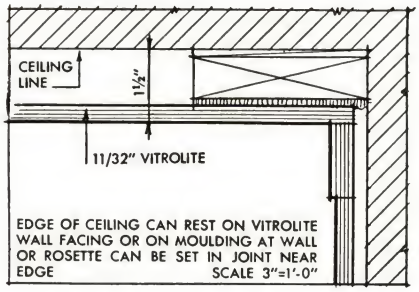
**(B-14) GUARANTEE.** Same as A-14 Store Fronts.




VITROLITE BORDER WITH EXPOSED POLISHED EDGE SECURED WITH SCREWS HAVING COLORED TACK HEAD INSERTS
SCALE 3"=1'-0"

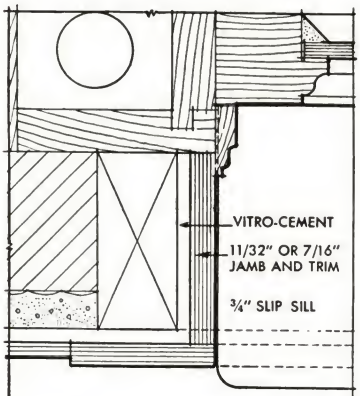



USUAL METHOD OF FASTENING VITROLITE CEILING WITH ROSETTES AT CORNERS OF PIECES. VARIOUS KINDS OF ROSETTES ARE AVAILABLE
SCALE 3"=1'-0"

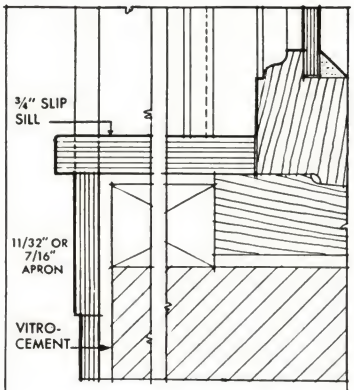



EDGE OF CEILING CAN REST ON VITROLITE WALL FACING OR ON MOULDING AT WALL OR ROSETTE CAN BE SET IN JOINT NEAR EDGE
SCALE 3"=1'-0"

## METHODS OF VITROLITE CEILING CONSTRUCTION

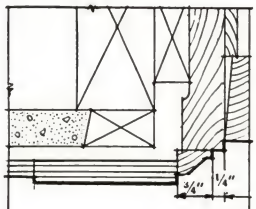



VITROLITE TRIM AND JAMB. IF WOOD JAMB IS USED CARRY MOULDING AROUND OPENING AS SHOWN FOR DOOR
SCALE 3"=1'-0"

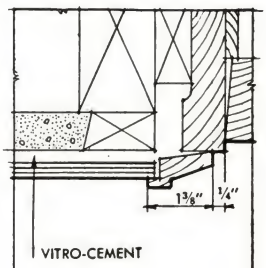



SLIP SILLS PREFERABLE IN VITROLITE. NOTCHED SILLS NOT ADVISABLE. MAKE ENDS OF SILL ROUNDED
SCALE 3"=1'-0"

## VITROLITE TRIM FOR WINDOWS

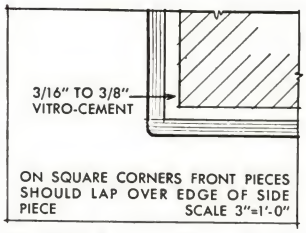



WOOD OR METAL MOULDING SHOULD ALWAYS BE SET BETWEEN EDGE OF VITROLITE AND WOOD JAMB AT DOOR OR WINDOW OPENINGS TO AVOID EXPOSED CEMENT JOINT. SIZE AND SHAPE AS REQUIRED
SCALE 3"=1'-0"

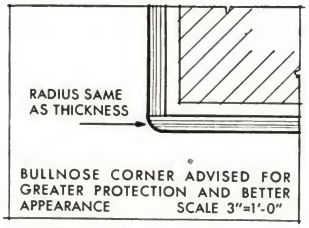



VITROLITE TRIMMED WITH OVERLAPPING WOOD MOULDING. IF TOP OF WAINSCOT BELOW TOP OF DOOR ADDITIONAL WOOD MEMBER CARKIED AROUND OPENING ABOVE WAINSCOT TO COMPLETE TRIM
SCALE 3"=1'-0"

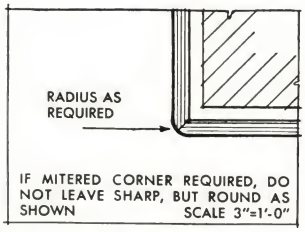
## VITROLITE DOOR TRIM



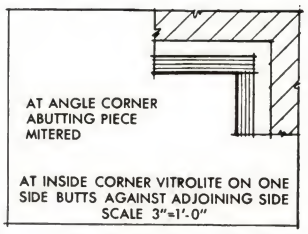

ON SQUARE CORNERS FRONT PIECES SHOULD LAP OVER EDGE OF SIDE PIECE
SCALE 3"=1'-0"




BULLNOSE CORNER ADVISED FOR GREATER PROTECTION AND BETTER APPEARANCE
SCALE 3"=1'-0"

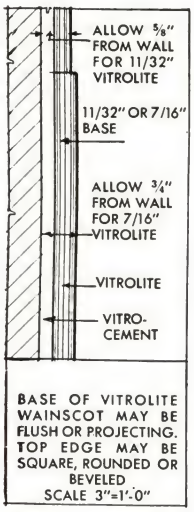



IF MITERED CORNER REQUIRED, DO NOT LEAVE SHARP, BUT ROUND AS SHOWN
SCALE 3"=1'-0"

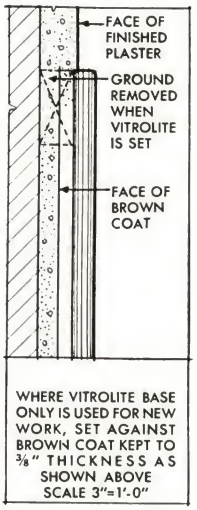



AT INSIDE CORNER VITROLITE ON ONE SIDE BUTTS AGAINST ADJOINING SIDE
SCALE 3"=1'-0"

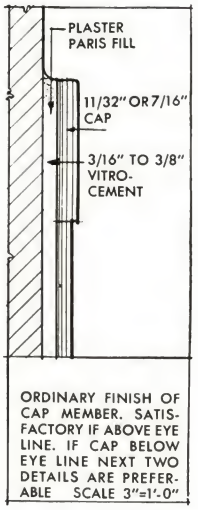
## DETAILS OF CORNERS FOR VITROLITE INTERIORS



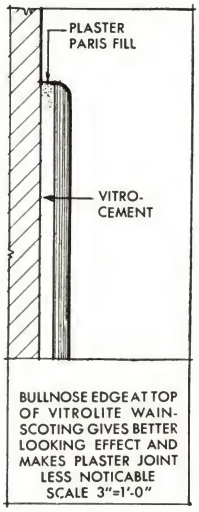

BASE OF VITROLITE WAINSCOT MAY BE FLUSH OR PROJECTING. TOP EDGE MAY BE SQUARE, ROUNDED OR BEVELED
SCALE 3"=1'-0"



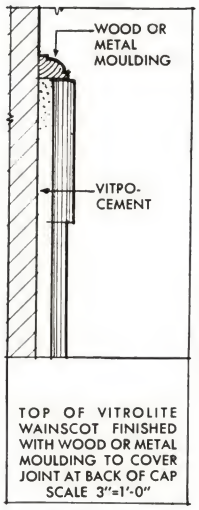

WHERE VITROLITE BASE ONLY IS USED FOR NEW WORK, SET AGAINST BROWN COAT KEPT TO ⅜" THICKNESS AS SHOWN ABOVE
SCALE 3"=1'-0"



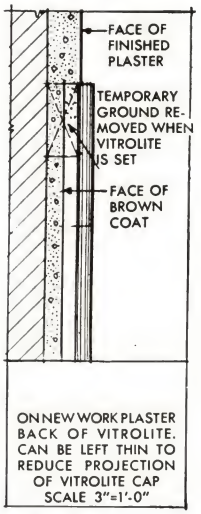

ORDINARY FINISH OF CAP MEMBER. SATISFACTORY IF ABOVE EYE LINE. IF CAP BELOW EYE LINE NEXT TWO DETAILS ARE PREFERABLE
SCALE 3"=1'-0"




BULLNOSE EDGE AT TOP OF VITROLITE WAINSCOTING GIVES BETTER LOOKING EFFECT AND MAKES PLASTER JOINT LESS NOTICABLE
SCALE 3"=1'-0"



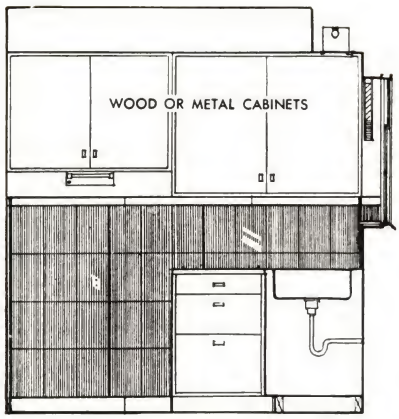

TOP OF VITROLITE WAINSCOT FINISHED WITH WOOD OR METAL MOULDING TO COVER JOINT AT BACK OF CAP
SCALE 3"=1'-0"



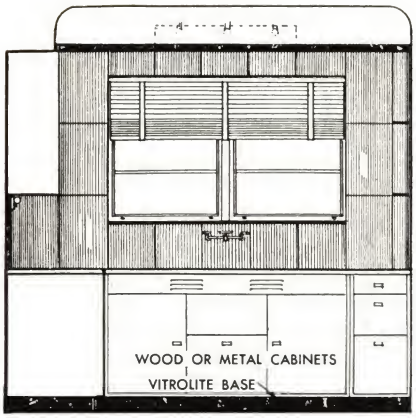

ON NEW WORK PLASTER BACK OF VITROLITE. CAN BE LEFT THIN TO REDUCE PROJECTION OF VITROLITE CAP
SCALE 3"=1'-0"

## SECTIONS OF BASES

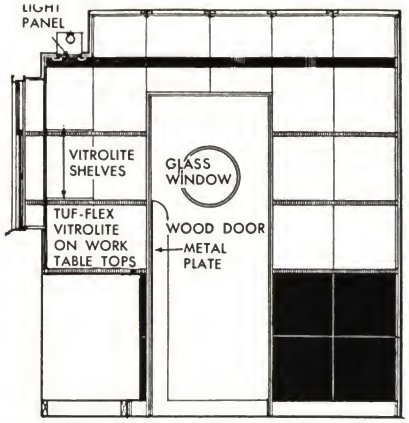
## SECTIONS OF VITROLITE CAPS




VITROLITE WAINSCOT IN ECONOMICAL STOCK SIZES. CAPS OF 2" OR 3" ASHLAR OF 8" x 12" OR 8" x 16" BASE OF 4" OR 6". • SCALE ¼"=1'-0"

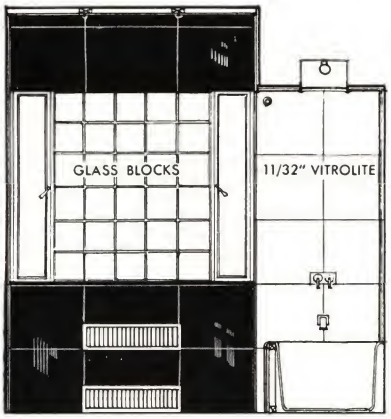



VITROLITE ARRANGEMENT TO FIT WALL CONDITIONS PIECES OF EVEN INCHES UP TO 24" LOWER IN PRICE THAN FRACTIONAL SIZES. • SCALE ¼"=1'-0"

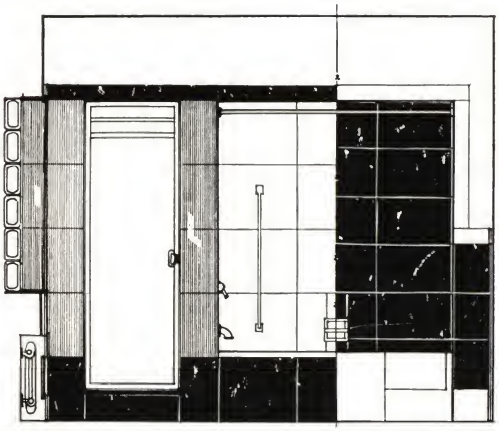



VITROLITE IN VARIETY OF SHAPES CAN BE USED IN INTERESTING COLOR SCHEMES ON WALLS AND CEILING. SCALE ¼"=1'-0"

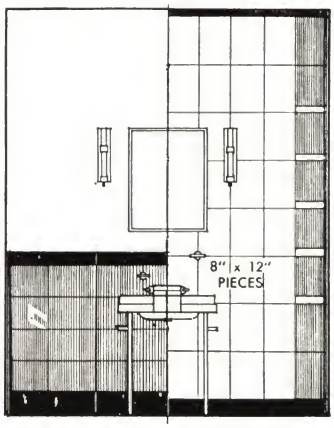
## VITROLITE WAINSCOTING AND WALLS IN KITCHENS




BATHROOM WALLS AND CEILING SCALE ¼"=1-0"

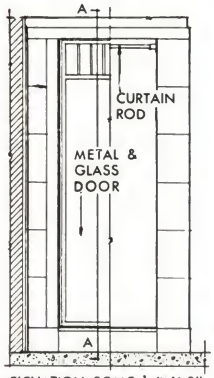


VITROLITE SCHEMES, SHOWER AND TUB RECESS SCALE ¼"=1'-0"

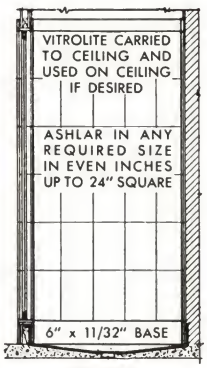



WAINSCOT & WALL IN STOCK SIZES

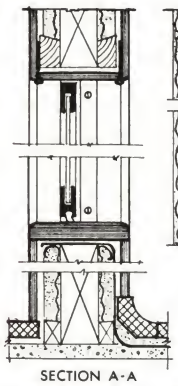
## VITROLITE WALL TREATMENTS IN BATHROOMS



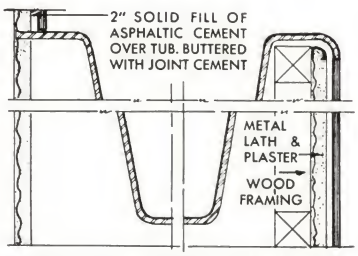

ELEVATION SCALE ¼"=1'-0"



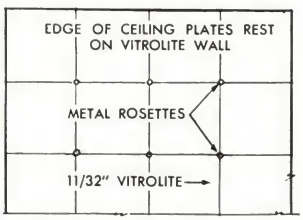

SECTION



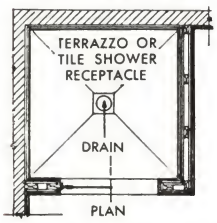
SECTION A-A



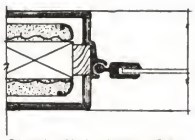

VITROLITE FACING ON TUBS PERMITS CARRYING UNIFORM BASE EFFECT AROUND ROOM. TUBS AS ABOVE SUPPLIED BY MOST BATHROOM FIXTURE MANUFACTURERS SCALE 1½"=1'-0"



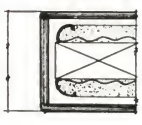

VITROLITE CEILINGS ARE ATTRACTIVE AND EASILY KEPT CLEAN. USUALLY IN SQUARES IN EVEN INCHES UP TO 24" SCALE ¼"=1'-0"




PLAN

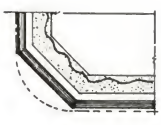


PLAN THRU JAMB OF SHOWER SHOWING FASTENING OF SHOWER DOOR

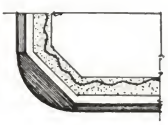


PLAN THRU SHOWER OPENING WITH VITROLITE JAMBS

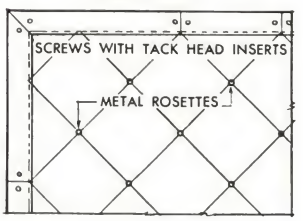
SCALE OF DETAILS 1½"=1'-0"



DIAGONAL CORNER FOR VITROLITE TUB FACING SCALE 1½"=1'-0"



ROUNDED CORNER FOR VITROLITE TUB FACING SAME RADIUS AS RIM SCALE 1½"=1'-0"




CEILINGS WITH BORDER IN RELIEF. VITROLITE MAY ALSO BE HELD WITH METAL MOULDINGS. MANY ARRANGEMENTS ARE POSSIBLE SCALE ¼"=1'-0"

## DETAILS OF VITROLITE SHOWER

## BATHTUB FACING

## CEILINGS

## (C) TOILET PARTITIONS, ETC.

**(C-1) WORK INCLUDED.** Same as A-1 Store Fronts.

**(C-2) WORK NOT INCLUDED.** Same as A-2 Store Fronts.

**(C-3) MEASUREMENTS.** Same as A-3 Store Fronts.

**(C-4) DISTRIBUTION.** Same as A-4 Store Fronts.

(a) Same as (a) B-4 Interiors.

"Describe fully the type of toilet partition required".

**(C-5) SEPARATE PROPOSALS.** Same as A-5 Store Fronts.

**(C-6) SAMPLES.** Same as A-6 Store Fronts.

**(C-7) SHOP DRAWINGS.** Same as A-7 Store Fronts.

**(C-8) COLOR AND FINISH.** Same as A-8 Store Fronts.

**(C-9) MATERIALS.** Same as A-9 Store Fronts.

(a) Same as (a) A-9 Store Fronts.

(b) Same as (b) B-9 Interiors.

(c) Plaster of Paris shall be made from pure Gypsum Rock, which has been thoroughly calcined, fully ground and air separated.

(d) It shall be free from lumps and uniform in fineness and setting quality and shall be of an approved standard brand especially adapted for the setting of Structural Glass.

(e) Portland Cement shall be an approved brand of non-staining white Portland Cement.

**(C-10) FABRICATION.** Same as A-10 Store Fronts.

**(C-11) INSTALLATION.** Same as A-11 Store Fronts.

**TYPE A TOILET PARTITION.** Type A toilets shall have partitions consisting of two 7/16 in. slabs cemented together and reinforced with two metal straps, which shall extend from the edges, which shall be bent and fitted to chromium plated metal sleeves (by this Contractor) to support the center stile and also bent and secured to the rear wall with plaster of Paris fill. (See Vitrolite construction details.)

The stiles shall be 1¼ in. thick and shall be let into the walls and floors 1 in. and set in plaster of Paris. The bottom of the stiles shall be wrapped around with a tight fitting strip of Ruberoid or similar material ¼ in. thick and ½ in. in width which shall be left in place. The lower part of the stiles shall be wrapped with a protective layer of heavy building paper to be cut off at floor line at completion.

**TYPE B TOILET PARTITION.** Shall be similar to Type A except that partition shall not have metal straps but shall have metal tee-iron at the top anchored into rear wall and connected with chromium plated metal fitting at front stile. The stile being joined with square chromium plated metal head rails. The bottom of partitions shall rest on chromium plated metal standards at the back of stile and rear wall. (See Vitrolite construction details.)

**(C-12) HARDWARE.** This Contractor shall note that all hardware will be furnished and installed by the Contractor for "Hardware", or the General Contractor. If this contractor is to install hardware the following will apply:

(a) This Contractor shall obtain templates as required and shall fit and secure all hardware necessary to complete the Structural Glass toilet partition.

(b) He shall install for each toilet stall door, two adjustable reverse spring hinges (or pivot type hinges) to hold door open when stall is unoccupied and which will be equal to (state manufacturer and number).

(c) One bolt equal to (state manufacturer and number).

(d) One strike equal to (state manufacturer and number).

(e) One approved double prong coat hook with rubber bumper (attached to door).

(f) He shall also install for each toilet stall an approved chromium plated cabinet type toilet paper holder (attached to the door).

(In cases where union regulations so require, coat hook and paper holder to be set by plumbing contractor.)

**(C-13) URINALS.** Where indicated the urinal wainscots shall be 11/32 in. ashlar and the divisions shall be 1 in. slabs polished on both sides and let in and cemented into grooves in the floor and walls.

(a) Where indicated, the backs of the urinals shall be constructed of one piece ¾ in. thick slabs set above a terra cotta trough (by others) and in a manner to slope back at the top and fit below a — in. cap.

(b) Where so indicated this Contractor shall construct a Structural Glass cover for a concealed flush pipe.

(c) This shall be built around a (steel) (wood) support (by others), as indicated on the details.

**(C-14) SHOWER STALLS.** Shower stalls shall be built around a metal lath and cement plaster core (by others) using 11/32 in. ashlar, 7/16 in. (11/32 in.) cap finished in accordance with the details. All joints shall be buttered with joint cement.

(a) This contractor shall provide and install to all shower stalls.

(b) 1½ in. diam. nickel metal rods. 26 oz. approved duck curtains 6 ft. 6 in. in length and fitted with nickel metal rings and grommets.

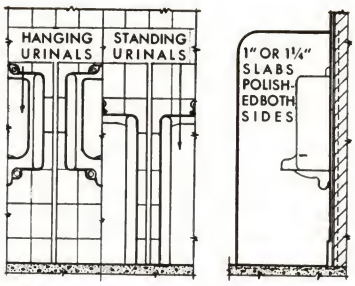
**(C-15) CUTTING, DRILLING AND FITTING.** Same as A-12 Store Fronts.

**(C-16) PROTECTION, CLEANING AND POINTING.** Same as A-14 Store Fronts.

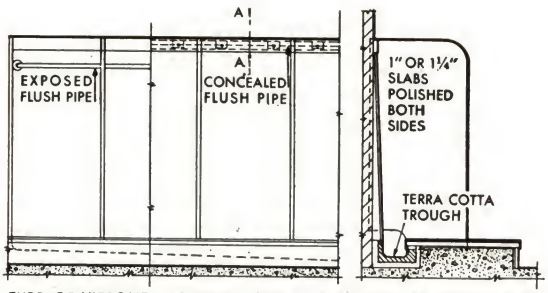
**(C-17) GUARANTEE.** Same as A-15 Store Fronts.

## SHORT FORM OF SPECIFICATION

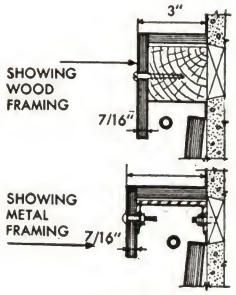
"All Structural Glass for..... shall be "Vitrolite", manufactured by the Libbey·Owens·Ford Glass Company, Toledo, Ohio, and shall be set in accordance with instructions issued by the above Company."




VITROLITE PARTITION SLABS AND WAINSCOTING.
SCALE ¼"=1'-0"

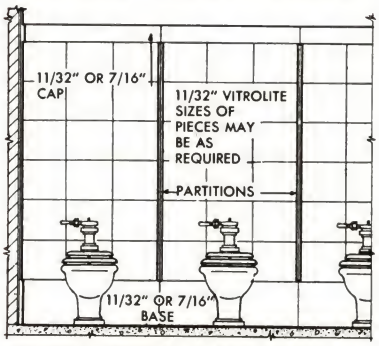



TYPE OF VITROLITE URINALS USED IN STADIUMS, FACTORIES AND INSTITUTIONS. • SCALE ¼"=1'-0"



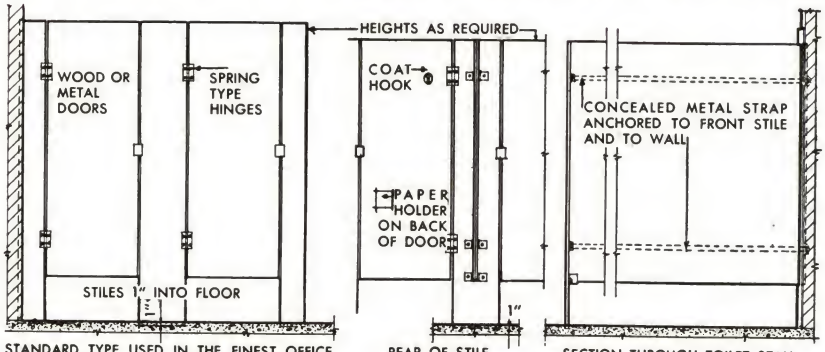

SECTIONS AT A-A
SCALE 1½"=1'-0"

## URINAL PARTITIONS




VITROLITE WAINSCOTING AT BACK OF STALLS.
SCALE ¼"=1"-0"

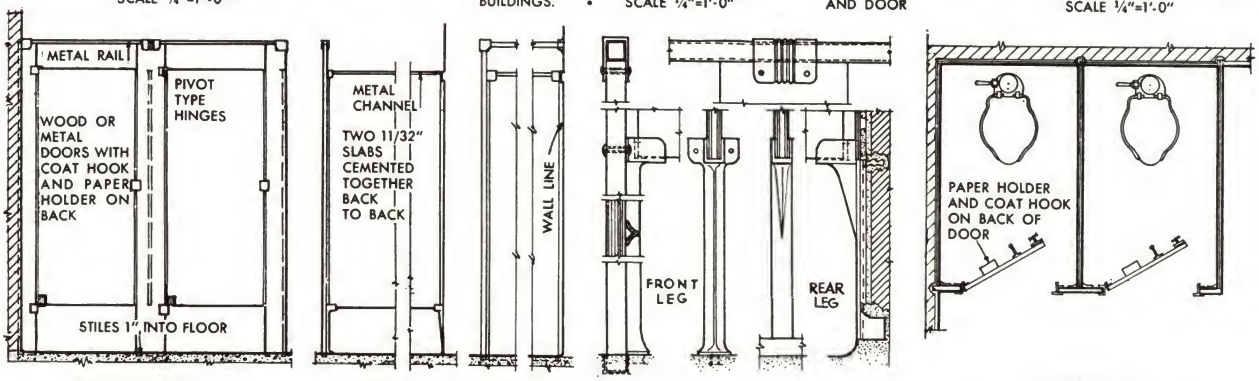
## ALL-VITROLITE URINAL STALLS




STANDARD TYPE USED IN THE FINEST OFFICE BUILDINGS. • SCALE ¼"=1'-0"

REAR OF STILE AND DOOR

SECTION THROUGH TOILET STALL.
SCALE ¼"=1'-0"




FRONT ELEVATION SECTION END ELEVATION

NEW TYPE OF VITROLITE TOILET STALL CONSTRUCTION WITH METAL HEADRAIL TO GIVE RIGIDITY AND WITH FLOATING PARTITION RELIEVED OF ALL STRAIN. SCALE ¼"=1'-0"

DETAILS OF NEW METAL HEADRAIL AND LEG SUPPORTS
SCALE 1"=1'-0"

FLOOR PLAN

WIDTH, DEPTH AND ARRANGEMENT TO SUIT REQUIREMENTS • SCALE ¼"=1'-0"

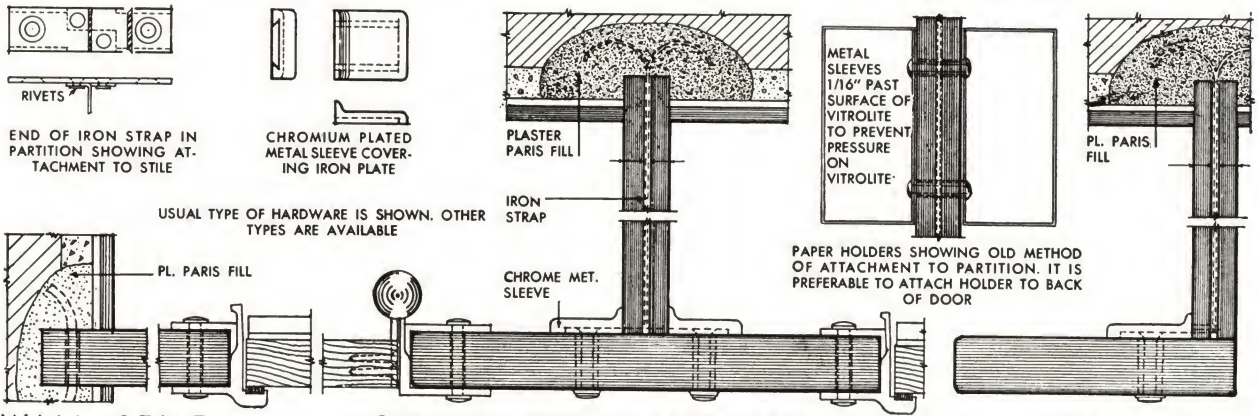
## VARIOUS TYPES OF VITROLITE TOILET COMPARTMENTS




END OF IRON STRAP IN PARTITION SHOWING ATTACHMENT TO STILE



CHROMIUM PLATED METAL SLEEVE COVERING IRON PLATE




PAPER HOLDERS SHOWING OLD METHOD OF ATTACHMENT TO PARTITION. IT IS PREFERABLE TO ATTACH HOLDER TO BACK OF DOOR

WALL STILE CENTER STILE AND PARTITION END STILE

# COLORS AND DECORATIVE PROCESSES

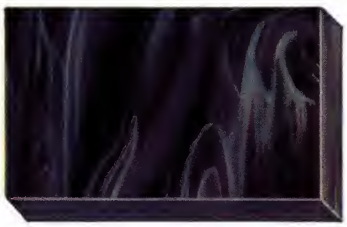

WHITE


BLACK SHADED SANDBLAST


GRAY


IVORY


ORCHID AGATE

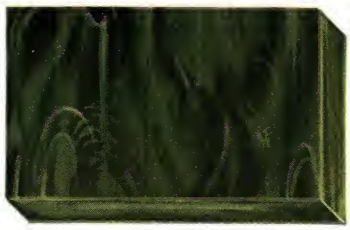

ROYAL BLUE AGATE


YELLOW


JADE AGATE


SUN TAN


WALNUT AGATE


EMERALD AGATE


JADE


COLORED SANDBLAST OR INLAY


BLACK


TROPIC GREEN


RED

THIS chart illustrates standard Vitrolite colors and the principal decorative processes. The agate colors will show a considerable variety in color and amount of veining. The illustrations represent a medium shade. Emerald Agate, Walnut Agate, and Royal Blue Agate are furnished in light, medium, and dark shades, and shade desired should be specified when ordering. There will also be a slight variation in other colors. Samples will be furnished upon request.

The Libbey·Owens·Ford Glass Company owns and operates eight factories. They are strategically located at Toledo, Ohio; Rossford, Ohio; Charleston, W. Va.; Parkersburg, W. Va.; Ottawa, Ill.; and Shreveport, La. Leading glass jobbers, conveniently located throughout the United States distribute the products of these plants. Direct factory sales representatives to serve efficiently the architectural profession are located in New York, Boston, Atlanta, Minneapolis, Milwaukee, Chicago, Philadelphia, Kansas City, Denver, Detroit, Shreveport, Buffalo, San Francisco, Los Angeles, Cincinnati, Seattle, Richmond and Syracuse. The executive offices of the company are located at Toledo, Ohio.




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# GLASS PRODUCTS
OF THE

# PITTSBURGH
PLATE GLASS COMPANY

# PITTSBURGH MAKES 14 OUTSTANDING • •



The Pittsburgh Plate Glass Company is the largest manufacturer of flat glass products in the world. Included among Pittsburgh Glass Products are all the types commonly used for glazing and decoration, as well as many special glasses for special architectural purposes. This manufacturer, in more than half a century of glass making, has developed the most modern and efficient production methods and machinery, has integrated its facilities and operations so succesfully that it has established an unusually high standard of quality in all Pittsburgh Glass Products. This consistent high quality explains the enviable reputation won by Pittsburgh Plate Glass Company in the building trades.

## What Pittsburgh's Exhaustive Research in Glass Making Means to the Architect

Since its founding, this company has been a pioneer in glass research and development. Its resources have been expended generously to improve old glass products and develop new ones, with the result that the architect of today has better glass to work with, and a far wider variety of glass products to assist him in creating buildings more beautiful, useful and durable than ever before.

## Extensive Advertising Has Sold Clients on Pittsburgh Glass

This Company has consistently supported a comprehensive advertising program to acquaint clients and prospective clients of the architect with the qualities and possibilities of Pittsburgh Glass Products. The public familiarity with our glass and its excellence, results in a readier approval of architects' designs and specifications when Pittsburgh Glass is used.

## Pittsburgh Service Is Available for Consultation, Planning and Installation

It has always been the endeavor of the Pittsburgh Plate Glass Company to co-operate to the fullest extent with the architectural profession. To this end, we maintain a special staff of architectural representatives, whose whole duty consists in rendering the architect every assistance possible in connection with the use of glass and paint. And our staff of store front experts is maintained to serve the architect in matters concerning the styling and installation of modern store fronts. We extend a cordial invitation to all architects to take advantage of these services at any time.

## Prominent Installations and Repeat Orders Prove Excellence of Pittsburgh Glass Products

Pittsburgh Glass Products have been used in every type of building, for all glazing and decorative purposes, in outstanding installations throughout the country. A list of the finest modern edifices constructed in the United States would be, to a large extent, a list of buildings in which Pittsburgh Glass Products of some description have been used. And a roster of America's finest architects, standing for architectural achievement of the best kind, would practically be a roster of architects who have specified Pittsburgh Glass not once . . . but again and again and again. This preference for Pittsburgh Glass in the nation's outstanding buildings, this repeated specification of Pittsburgh Glass by architects whose reputations depend not only on their creative genius but also their judgment of materials, is the best proof that could be had of the excellence and satisfactory performance of Pittsburgh Glass.

## OTHER PRODUCTS OF THE COMPANY

Pittsburgh Plate Glass Company, in addition to the products described in this catalogue, also manufactures paints and varnishes of all kinds (See section in Sweet's on Pittsburgh Paints); Pittco Store Front Metal (See section in Sweet's on Pittco Store Front Metal); and serves as distributing agent for Carrara Structural Glass and P-C Glass Blocks which are manufactured by the Pittsburgh Corning Corporation (See Pittsburgh Corning Corporation's section in Sweet's on Carrara Structural Glass and on P-C Glass Blocks).

Paint. PITTSBURGH. Glass
PLATE GLASS COMPANY

*General Offices* GRANT BUILDING • PITTSBURGH, PA.



• *For list of warehouses and map showing warehouses and factories see back cover*

# • • GLASS PRODUCTS

## GUIDE-LIST AND INDEX OF PITTSBURGH GLASS PRODUCTS

For your convenience, we give below a check list and index of Pittsburgh Glass Products in the form of a chart. With this table before you, you will find it a simple matter to compare the various glass products listed, and select those upon which you desire further information. Such further information will be found on the page of this catalogue indicated in the last column of the chart.

| PRODUCT | QUALITIES | THICKNESSES | MAX. SIZES | WEIGHTS | STRENGTH | COLORS | FINISH | PAGE |
|---|---|---|---|---|---|---|---|---|
| Polished Plate Glass | Silvering Mirror Glazing Glazing | 1/8" 13/64" 1/4" | 1/8" 72x123 13/64" 123x216 1/4" 160x220 150x260 | 1/8" 1.75 lbs. [] 13/64" 2.67 lbs. [] 1/4" 3.29 lbs. [] | Tension 6500 lbs. [] Compression 36000 lbs. [] Modulus Elasticity 10,000,000 | Clear | Ground and Polished | 4 |
| Vista Plate Glass | Silvering Mirror Glazing Glazing | 9/64" to 9/64" | 72x123 (Sizes over 7 [] not recommended for exterior glazing) | 1.75 lbs. [] | In direct proportion to the square of the thickness | Clear | Ground and Polished | 6 |
| Heavy Plate Glass | Commercial Selected | 3/8" 1/2" 5/8" 3/4" 7/8" 1" 1-1/4" | 3/8" to 1/2" 72x160 5/8" to 1" 72x130 1-1/4" 70x130 | 3/8" 4.93 lbs. [] 1/2" 6.58 lbs. [] 5/8" 8.22 lbs. [] 3/4" 9.67 lbs. [] 7/8" 11.52 lbs. [] 1" 13.16 lbs. [] 1 1/4" 16.45 lbs. [] | In direct proportion to the square of the thickness | Clear | Ground and Polished | 6 |
| Blue Plate Glass | Selected only | 13/64" | 72x123 | 2.67 lbs. [] | Same as plate glass | Blue | Ground and Polished | 7 |
| Flesh Tinted Plate Glass | Selected only | 13/64" | 72x123 | 2.67 lbs. [] | Same as plate glass | Flesh Tinted | Ground and Polished | 7 |
| Crystalex Plate Glass | Silvering Glazing | 7/64" 1/4" | 123x216 | 7/64" 1.44 lbs. [] 1/4" 3.25 lbs. [] | Same as plate glass | Water White | Ground and Polished | 7 |
| Solex Plate Glass | Glazing only | 1/4" | 72x123 | 3.29 lbs. [] | Same as plate glass | Bluish Green | Ground and Polished | 8 |
| X-Ray Lead Glass | Glazing only | 5.35 to 7.35 m/m | 40x72 | 5 1/2 lbs. [] | Approximately 2/3 as strong as plate glass of equal thickness | Golden Yellow | Ground and Polished | 9 |
| Herculite | Same as glass before tempering | Same as glass before tempering | 48x108 | Same as glass before tempering | Approximately 4 times that of glass of equal thickness which has not been tempered | Same as glass before tempering | Same as glass before tempering | 8 |
| Carrara Structural Glass (Mfd. by Pittsburgh Corning Corp. Dist. by Pgh. Plate Glass Co.) | Selected only | Standard colors 11/32" - 7/16" - 3/4" - 7/8" - 1-1/4" Black also in 1/4" | 72x130 | 1/4" 3.29 lbs. [] 11/32" 4.5 lbs. [] 7/16" 5.76 lbs. [] 3/4" 9.87 lbs. [] 7/8" 11.51 lbs. [] 1 1/4" 16.45 lbs. [] | Approximately same as regular plate glass | Jade, Ivory, Gray, White, Black, Wine, Rembrandt Blue, Orange and Forest Green (All Opaque) | Ground and Polished one side. 7/8" and 1 1/4" also polished both sides | See Pittsburgh Corning catalogue on *Carrara* in Sweet's |
| Multiplate Bullet-Resisting Plate Glass | Commercial | 1/2" 3/4" 7/8" 1" 1-1/8" 2" | 45x84 | 1/2" 6.91 lbs. [] 3/4" 10.30 lbs. [] 7/8" 11.90 lbs. [] 1" 13.57 lbs. [] 1 1/8" 15.23 lbs. [] 2" 27.11 lbs. [] | For recommendations of protection against various firearms, see Page 9 | Clear | Ground and Polished Plate Glass laminated | 9 |
| Pittsburgh Mirrors Plain Copper-Back Structural | Silvering Mirror Glazing Glazing | Fabricated from any thickness of glass | Plain and Structural —Up to maximum glass size Copper-Backed 70x144 | Approximately same as plate glass | Approximately same as plate glass | Plain, Blue, Flesh, Water White, Blue-Green | Silver, gold or gunmetal backing on any color glass | 10 |
| Tapestry Glass | Glazing | 3/16" 1/4" | 60x144 | 3/16" 2.87 lbs. [] 1/4" 3.68 lbs. [] | Equal to or greater than that of regular plate glass | Translucent Semi-Opaque | Plain 3/16" and 1/4" Polished 1/4" only | 10 |
| Pennvernon Window Glass | AA-A-B Greenhouse Picture Heavy Sheet | Single Strength .087 - .095 Double Strength .118 - .133 Heavy Sheet 3/16" - .187 to .200 7/32" - .212 to .225 | Heavy Sheet 3/16" up to 50 [] 7/32" up to 60 [] | Picture 16 oz. [] S.S. 19 oz. [] D.S. 26 oz. [] 3/16" 40 oz. [] 7/32" 45 oz. [] | Same as plate glass of equal thickness | Clear | Fire-finished | 11 |
| No. 1086 Document Glass | Glazing only | 1/4" | 40x72 | 5 1/2" lbs. [] | Approximately 2/3 as strong as plate glass of equal thickness | Canary Yellow | Ground and Polished | 9 |



# POLISHED PLATE GLASS

*The Aristocrat of the Transparent Flat Glass Family*

Polished Plate Glass is ground and polished, mechanically, to a true, flat surface and a perfect brilliance and reflectivity of finish. It is the finest material available for exterior and interior glazing and should be used wherever clarity of vision, beauty and dignity are desired. Objects viewed through polished plate glass, or reflected from it, are undistorted and perfectly natural in shape, form and outline. It imparts to buildings in which it is used a brilliance and luster, a distinction and charm, that enhances their appearance and adds immeasurably to their rental and sales value.










### Physical Characteristics

| QUALITIES | THICKNESSES | MAX. SIZES | WEIGHTS |
|---|---|---|---|
| Silvering | 1/8" | 1/8" 72x123 | 1/8" 1.75 lbs. [ ] |
| Mirror | | 13/64" 123x216 | 13/64" 2.67 lbs. [ ] |
| Glazing | 13/64" | 1/4" 160x220 | 1/4" 3.29 lbs. [ ] |
| Glazing | 1/4" | 150x260 | |

| STRENGTH | COLORS | FINISH |
|---|---|---|
| Tension 6500 lbs. [ ]<br>Compression 36000 lbs. [ ]<br>Modulus Elasticity<br>10,000,000 | Clear | Ground and Polished |

## UNITED STATES GOVERNMENT

### CLASSIFICATION

Polished Plate Glass: silvering quality, glazing quality.

### DEFINITIONS OF THE GENERAL CLASSES OF POLISHED PLATE GLASS

**Plate Glass**—Transparent, flat, relatively thin glass having plane polished surfaces and showing no distortion of vision when viewing objects through it at any angle.

Plate Glass is made at present by casting and rolling large sheets periodically or by rolling a continuous sheet. The sheets are then ground and polished.

### DETAILED SPECIFICATIONS OF POLISHED PLATE GLASS

**General Principles Involved in Grading Glass**—All flat glass contains some imperfections and the principle employed in grading is to exclude all defects that would be objectionable in a given grade. This is difficult to do since there are no sharp lines of demarcation between grades and experienced inspectors will differ in judgment as the quality of the glass approaches the limits of the grades, small lights must be quite free from imperfections, as compared with larger ones, and the center of any sheet should be clear, whereas the edges may contain more pronounced defects.

*Method of Examination*—The method of examination is described in these specifications in order to make the results more uniform, and defines the condition under which glass should be examined because the distance from the glass, the angle between the glass and the line of sight, and the intensity of light all affect the visibility of imperfections.

These specifications should be interpreted by examining the glass in the following manner, with reference to the definitions of defects listed in the glossary:

The glass should be examined when placed in a position similar to that of a glazed light with the observer's eye on a level with the center of the sheet, and looking through the glass from a distance of about 36 in. into the light from a clear sky without any sun or any close background.

The visibility of waves, lines or cords depends chiefly upon the angle of observation, and the intensity of these defects can be classified on this basis. The values given for angles are the angles the line of sight makes with the sheet of glass when in a vertical position. Slight movement of the head horizontally through an angle of two or three degrees will make waves or lines more perceptible.

*Acceptance or Rejection*—Acceptance or rejection of a shipment or delivery shall be based on an examination of the following quantities:

For orders of 100 lights or less, all shall be examined; for orders of 101 to 500 lights, at least 50% shall be examined, for orders of 501 or more lights, at least 25% shall be examined. Boxes shall be selected from the shipment at random.

If not more than 10% of the lights examined are below quality, the shipment shall be accepted provided the lights below the specified grade are not distinctly below the upper limits of the next lower grade.

If, however, an entire shipment of 500 lights or more is examined, not more than 5% may be below quality.



*For list of warehouses and map showing warehouses and factories see back cover*

# SPECIFICATIONS FOR PLATE GLASS FOR GLAZING PURPOSES

## SPECIFICATIONS FOR POLISHED PLATE GLASS

**Sizes and Thicknesses**—The standard of thicknesses of plate glass shall be 1/8, 3/16, 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1 and 1 1/4 in. Sheets are available 1/4 in. thick in sizes having a maximum area of 250 sq. ft. Glass of 1/4 in. thickness may be furnished having almost any desired dimension under the following maximums: 120x280 in., 144x260 in., 160x240 in.

**Tolerance in Thicknesses**—The maximum and minimum thicknesses allowed shall not be more than given thickness plus or minus one-half the difference between the standard thicknesses. The general variation in thickness should not be more than 1/32 in. for individual lights under 10 square feet in thicknesses up to 1/4 in. The variation in lights over 1/4 in. in thickness should not exceed one-half the total tolerance for that thickness.

Polished plate glass 1/4, 1/8 and 3/16 in. thick is carried in stock in the larger cities.

**Tolerance in Dimensions**—Variation from dimensions ordered shall not be more than 1/32 in. per 1/8 in. thickness.

**Grades**—Plate glass shall be furnished for glazing purposes in one of two grades as specified. These grades will be known as silvering and glazing qualities.

Silvering quality is invariably used where the hghest standard of glazing is required and imperfections are discoverable only in close inspection. This quality is rarely sold for glazing purposes in sizes over 20 sq. ft. Glazing quality represents the usual selection of plate glass supplied when quality is not otherwise definitely specified.

As allowable tolerances in quality must vary considerably with size of sheet required, different specifications will apply in each of the following four divisions according to size:

*Division I.* Sheets up to and including 10 sq. ft. in area.

*Division II.* Sheets having an area greater than 10 sq. ft. but not greater than 25 sq. ft.

*Division III.* Sheets having an area greater than 25 sq. ft. but not greater than 75 sq. ft.

*Division IV.* Sheets having an area greater than 75 ft.

**Division I. (Sizes Up to and Including 10 Sq. Ft.)**—*Silvering Quality*—This glass shall not contain any major defects. The central area of this glass may contain only well scattered seeds. Ream, skim, short finish, and scratches which cannot be removed by buffing, are not permissible. The edges may contain coarse seeds, but none shall be larger than 1/32 in. in diameter.

*Glazing Quality*—The central area of this quality may contain numerous scattered seed, including an occasional coarse seed, but no heavy seed. Small bubbles may occur on the edge. Stones, large bubbles, skim, ream, or long or heavy scratches are not permissible. Faint strings in the corners or upper edge of the light are permissible. The polish shall not show areas of short finish.

**Division II. (Sizes from 10 Sq. Ft. to 25 Sq. Ft., Inclusive)**—*Silvering Quality*—The central area of this quality may contain more numerous fine seed than the small sizes and an occasional coarse seed. The edges may contain occasional small bubbles and fine strings. No heavy defects or scratches which cannot be removed by buffing are permissible. The polish must be good and free from visible short finish.

*Glazing Quality*—The central area may contain small bubbles and fine strings or ream which do not give visible distortion when looking straight through the glass, but no long or heavy scratches. The edges may contain bubbles over 3/32 in., visible scratches shorter than 10 in., small areas of ream, strings, and small stones not larger than 1/32 in., but these defects should not be grouped nor interfere with the vision. The polish over the central area should be good, but patches of light short finish may be present about the edges.

*General*—None of the above grades or sizes may contain any heavy or long lines, streaks of ream, any bubbles, larger than 1/8 in., visible poor polish, open bubbles, areas of skim, or stones over 1/32 in. in diameter.

**Division III. (Sizes from 25 Sq. Ft. to 75 Sq. Ft.)**—*Glazing Quality*—Lights of this size may contain numerous visible and larger imperfections not allowed in the smaller lights. But these must not be grouped or so prominent that they noticeably interfere with the vision. The central area of the plate shall be free from these larger defects.

The sheets may contain seed of any size, but not heavy seed except in relatively small patches on the outer border of the sheet, occasional bubbles up to 1/8 in. in the center and up to 3/16 in. on the borders, strings, ream and skim in very limited areas if not causing a deformation of objects viewed through the plate, occasional scratches and small stones under 1/16 in.

Heavy ream, heavy cord, bubbles larger than 3/16 in. in diameter, stones larger than 1/16 in. in diameter, large fire cracks, areas of unpolished glass, easily visible poor polish, large open bubbles, or sand holes, are not permitted. The large defects should be confined to the upper edge and upper corners of the sheet, the lower and central areas to be relatively free from major defects.

**Division IV. (Sizes Greater than 75 Sq. Ft.)**—Sheets larger than 75 sq. ft. may contain defects of almost any kind except that they must not show large areas of heavy seed or bubbles nor have any defects which will cause spontaneous breakage, such as skim or large stones (1/8 in. in diameter) or show any areas of unpolished glass.

## GLOSSARY OF TERMS USED IN THESE SPECIFICATIONS

The following terms shall be used in specifications:

**Plate Glass**—Seeds, short finish, skim, strings, scratches, bubbles, open bubbles, ream, stones, fire cracks, sand holes.

**Bubbles**—Gas inclusions in any rolled glass. These inclusions are practically always spherical and brilliant in appearance. The term applies to all such inclusions larger than 1/32 in. in diameter. The term small bubbles (commonly known as boil) refers to sizes between 1/32 in. and 3/32 in.

**Seeds**—Minute bubbles less than 1/32 in. in diameter. Fine seeds are visible only on close inspection, usully appearing as small specks and are an inherent defect in the best quality of plate glass. Seed about 1/64 in. to 1/32 in. in diameter are usually considered as coarse seed.

**Open Bubbles**—Bubbles which have been broken into by grinding, leaving a hemispherical hole in the glass surface.

**Skim**—Streaks of dense seed with accompanying small bubbles.

**Strings**—Wavy, transparent lines appearing as though a thread of glass had been incorporated into the sheet.

**Cords**—Heavy strings incorporated in the sheet, occurring without any regularity of direction, and appearing to be of considerable thickness rather than on the surface.

**Ream**—An area of unhomogeneous glass incorporated in the sheet producing a wavy appearance.

**Scratches**—Any marking or tearing of the surface appearing as though it had been done by either a sharp or rough instrument. Scratches occur on sheet glass in all degrees from various accidental causes.

**Short Finish**—Insufficient polish or lack of brilliancy; improperly finished surface which has the appearance of being slightly pitted and wavy when the surface is viewed in reflected light. These indentations, which are slight, have a polished rather than a ground surface, but the general effect is a slight dulling of the surface. Poor polish is usually caused by improper grinding.

**Stones**—Any opaque or partially melted particle of rock, clay or batch ingredient imbedded in the glass.

**Fire Cracks**—Small cracks penetrating the surface of the sheet. Usually in the shape of short-hooked crescents. Caused by sudden heating or chilling of the surface.

**Sand Holes**—Rough spots on the polished surface produced during coarse grinding which fine grinding did not later remove; due, to some extent, to coarse grains of grinding sand becoming mixed with finer grades.

**Central Area of Sheet**—This term is used with slightly different interpretation with reference to plate or window glass. In plate glass the central area is considered to form an oval or circle centered on the sheet whose axes or diameters do not exceed 80% of the over-all dimension. This allows a fairly large area at the corners, which may have imperfections not allowed in the central area.

*For complete Architectural Specifications see page Three*





## VISTA PLATE GLASS

### Thin Plate Glass for General Glazing Purposes

Vista Plate Glass was developed to meet a definite need in the building industry . . . the need for a fine plate glass which could be used for general glazing, but which would be low enough in cost to warrant wide use, and which could be glazed in standard sash with standard sash weights.

### Has Advantages of Heavier Plate Glass

Vista Plate Glass meets these requirements. It has all the visual advantages of heavier plate glass. High polish on both surfaces, with the accompanying intrinsic beauty of brilliant luster and reflection. Absolute freedom from distorting defects, with consequent ability to transmit with perfect clarity all objects seen through it. And sufficient strength and durability to assure permanence when it is used in residences or other buildings.

### Increases Resale Value of Houses

The building glazed with Vista Plate has a greater resale value which more than offsets the slight extra cost of Vista Plate over ordinary window glass. Vista Plate is glazed in standard 1⅜ in. sash with ordinary sash weights.




### Physical Characteristics

| QUALITIES | THICKNESSES | MAX. SIZES | WEIGHTS |
|---|---|---|---|
| Silvering<br>Mirror<br>Glazing<br>Glazing | 6/64″ to 9/64″ | 72x123<br>(Sizes over 7 [ ] ] not recommended for exterior glazing) | 1.75 lbs. [ ] ] |

| STRENGTH | COLORS | FINISH |
|---|---|---|
| In direct proportion to the square of the thickness | Clear | Ground and Polished |

## HEAVY PLATE GLASS

### A Practical Decorative Medium for a Hundred Uses

Heavy Plate Glass is a material that the architect will find particularly helpful in modern design and decoration. Only the architect's imagination limits the possibilities for the effective use of this striking and diffusing material.

### Clear, Brilliant, Impervious, Strong

It is clear and affords excellent vision. It has brilliant and mirror-like smoothness of surface which only fine plate glass can offer. It is impervious to moisture, weather, cleaning chemicals, pencil marks and other disfiguring agents. It is easily cleaned. And above all, while possessing the strength that protects and endures, it also lends to the furniture or fixtures in which it is the dominant material a beauty, dignity and modern touch which perhaps no other medium can offer.

### Specific Uses

A few of the uses in which Heavy Plate Glass has proved eminently successful are: Book Shelves, Decorative Panels and Partitions, Shower Bath Enclosures, Bank Fixtures (Deal Plates), Glass Roofs, Glass Flooring, Porte Cochere Roofs, Skylights, Semi-enclosed Telephone Booths, Theater Marquises, Valances, Lighting Fixtures, Radio Acoustic Chambers, Refrigerator Doors, Show Cases, Soda Fountain Counters, Aquariums, Aquatic Tanks, Bulkheads, Counter Tops, Table Tops, Modernistic Furniture, Shelves and Mausoleums.



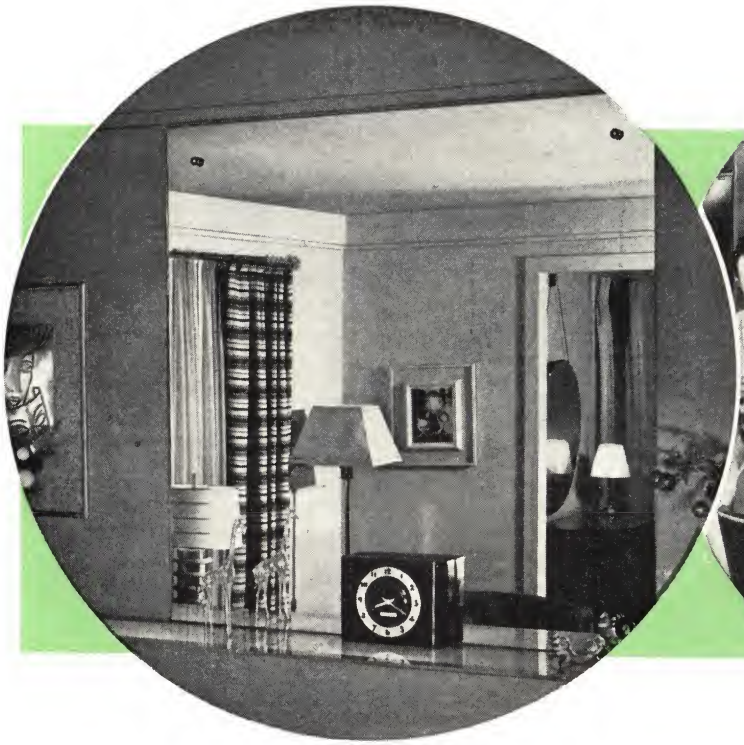

### Physical Characteristics

| QUALITIES | THICKNESSES | MAX. SIZES | WEIGHTS |
|---|---|---|---|
| Commercial<br>Selected | 3/8″<br>1/2″<br>5/8″<br>3/4″<br>7/8″<br>1″<br>1¼″ | 3/8″ to 1/2″ 72x160<br>5/8″ to 1″ 72x130<br>1¼″ 70x130 | 3/8″ 4.93 lbs. [ ] ]<br>1/2″ 6.58 lbs. [ ] ]<br>5/8″ 8.22 lbs. [ ] ]<br>3/4″ 9.67 lbs. [ ] ]<br>7/8″ 11.52 lbs. [ ] ]<br>1″ 13.16 lbs. [ ] ]<br>1¼″ 16.45 lbs. [ ] ] |

| STRENGTH | COLORS | FINISH |
|---|---|---|
| In direct proportion to the square of the thickness | Clear | Ground and Polished |



*For list of warehouses and map showing warehouses and factories see back cover*





# BLUE AND FLESH TINTED PLATE GLASS

## For Striking Decorative Effects

### Flesh Tinted Plate Glass

Flesh Tinted Plate Glass is a medium becoming increasingly popular with architects to assist in obtaining decorative effects. This glass approximates in color the shading commonly found in the skin of a Caucasian person. The color is slight in surface section, considerably stronger in transverse section. Used in mirrors, Flesh Tinted Plate Glass produces reflections which minimize blues and violets and emphasize flesh colors, thus offering flattering images.




### Blue Plate Glass

Blue Plate Glass, another popular product of the PITTSBURGH PLATE GLASS COMPANY, is a glass of rich blue color, ideal for decorative use in modern building. Like Flesh Tinted Plate Glass, this Blue Plate Glass is extraordinarily attractive when fabricated into mirrors.




### Specific Uses

Flesh Tinted Mirrors or Blue Mirrors can be used with great success in home decoration to add color, warmth and sparkle to all types of rooms. They also are exceedingly ornamental in bars, stores, and public and commercial buildings of all sorts. Both types of Plate Glass also serve very well as unusual table tops, desk tops, book shelves, sill covers, etc.

### Physical Characteristics

| QUALITIES | THICKNESSES | MAX. SIZES | WEIGHTS |
|---|---|---|---|
| Selected only | 13/64" | 72x123 | 2.67 lbs. [\|] |

| STRENGTH | COLORS | FINISH |
|---|---|---|
| Tension 6500 lbs. [\|]<br>Comp. 36,000 lbs. [\|]<br>Modulus Elasticity 10,000,000 | Blue and Flesh | Ground and Polished |

# CRYSTALEX PLATE GLASS

## For Faithful Transmission of Natural Colors

Crystalex Plate Glass was developed primarily for use in multiple-glazing, as in refrigerator cases, and in double-glazing of windows for purposes of insulation and air conditioning. This is the only type of glass so far developed which does not effloresce or "bloom" when hermetically sealed with an air space between two sheets.

### Water White Glass, Colorless in Surface and Transverse Sections

Crystalex Plate Glass is a true water white glass, colorless both in surface and in transverse section. Since its transmission value for all the colors of the spectrum is very nearly uniform (88% to 92%), its transmission of the violet and blue light rays is much higher than that of ordinary plate glass. And as a result it is able to transmit very faithfully the natural colors of objects seen through it without changing the relative intensities of the colors, no matter how delicate the differentiation of tone and shade may be.




### Specific Uses

Architects will find this glass excellent also for use in display cases of all kinds, and in mirrors where it is desired to obtain as nearly true reflections as possible, such as in dress shop and beauty shop interiors, etc.

### Physical Characteristics

| QUALITIES | THICKNESSES | MAX. SIZES | WEIGHTS |
|---|---|---|---|
| Silvering Glazing | 7/64"<br>1/4" | 123x216 | 7/64" 1.44 lbs. [\|]<br>1/4" 3.25 lbs. [\|] |

| STRENGTH | COLORS | FINISH |
|---|---|---|
| Tension 6500 lbs. [\|]<br>Comp. 36,000 lbs. [\|]<br>Modulus Elasticity 10,000,000 | Water White | Ground and Polished |

*For complete Architectural Specifications see page Three*





## SOLEX PLATE GLASS

### A Heat Absorbing Plate Glass

Solex is made by a special process which gives it the valuable quality of absorbing heat without interfering with the transmission of visible light. Thus, while it admits 70% to 75% of the sun's total light, it transmits less than 43% of the total solar heat.

### Greatly Reduces Sunheat in Rooms

When windows, skylights, etc., of a building are glazed with Solex, the solar heat entering that building through such openings is greatly reduced. Persons sitting adjacent to Solex windows are far more comfortable, and the glare resulting from high light intensity is considerably lessened.

### Specific Uses

Solex is well fitted for a wide variety of uses. It may be employed to advantage in southern and western exposures of all types of buildings, whether schools, residences, factories, hotels or office buildings, and will result when so used in greater bodily and visual comfort for building occupants. And when used to glaze textile factories or warehouses, Solex prevents fading and bleaching of delicate colored fabrics from exposure to sunlight.




### Physical Characteristics

| QUALITIES | THICKNESSES | MAX. SIZES | WEIGHTS |
|---|---|---|---|
| Glazing only | ¼" | 72x123 | 3.29 lbs. [\|] |

| STRENGTH | COLORS | FINISH |
|---|---|---|
| Tension 6,500 lbs. [\|]<br>Comp. 36,000 lbs. [\|]<br>Modulus Elasticity 10,000,000 | Bluish Green | Ground and Polished |

## HERCULITE PLATE GLASS

### A Tempered Plate Glass of Great Strength and Shock Resistance

Herculite is polished plate glass which has been specially processed by heat and chilling. It will support a weight four times as great as ordinary plate glass. It will bend four times as far without breaking. Its resistance to impact is 7 to 8 times greater.

### Unaffected by Varying Surface Temperatures

Herculite is not affected by varying surface temperatures, being able to stand, without breaking, a temperature of 650 degrees F. on one surface, while the other is at ordinary atmospheric temperature. It resists shocks and impacts as well at 15 degrees below zero F. as at ordinary temperatures.

### Shattering Qualities

When Herculite, under terrific impact, *does* shatter, it does not break into sharp fragments like ordinary glass, but disintegrates into innumerable small fragments which are comparatively blunt edged.

### Specific Uses

Obviously, the uses of Herculite are almost limitless where strength and safety are important considerations. It proves extraordinarily satisfactory when used for aquariums, cell doors, deck lights, doors, fire screens, flooring, gas cooker doors, glass bottom boats, gauge guards, kitchen equipment, laboratory equipment, partitions, portlights, road traffic signs, shelves, show cases, sight glasses, table and dresser tops, underwater lighting, etc.




### Physical Characteristics

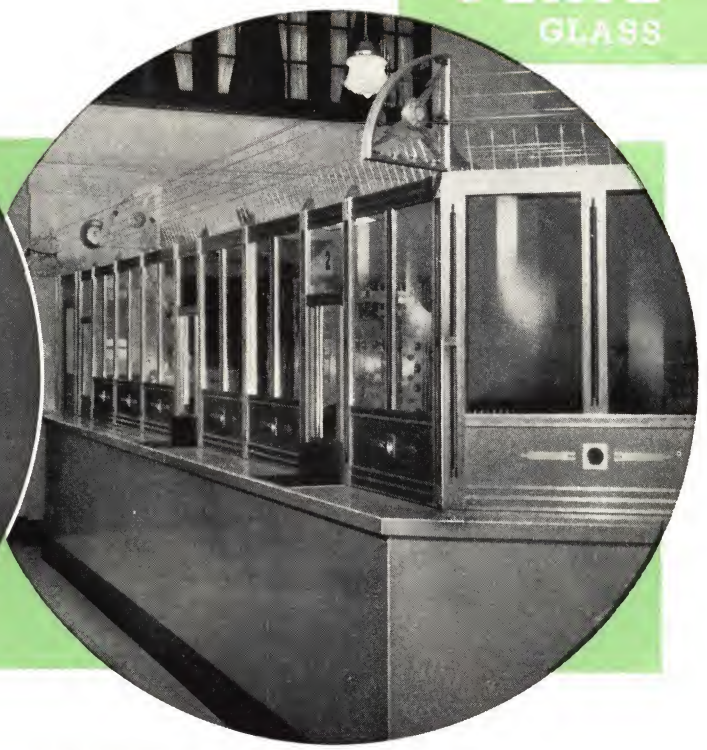
| QUALITIES | THICKNESSES | MAX. SIZES | WEIGHTS |
|---|---|---|---|
| Same as glass before tempering | Same as glass before tempering | 48x108 | Same as glass before tempering |

| STRENGTH | COLORS | FINISH |
|---|---|---|
| Approximately 4 times that of glass of equal thickness which has not been tempered | Same as glass before tempering | Same as glass before tempering |



*For list of warehouses and map showing warehouses and factories see back cover*





# X-RAY LEAD GLASS

The Pittsburgh Plate Glass Company now offers a domestic source of supply for X-ray Lead Glass which meets in every respect the requirements of various governmental departments.

X-ray Lead Glass was developed primarily to protect operators and their assistants against continuous exposure to X-rays. While affording protection, the glass also allows clear vision of the X-ray apparatus and patient. X-ray Lead Glass may be used both for interior and exterior glazing.

### Protection

Protection against very high X-ray intensities may be secured by the lamination of several lights. The single thickness gives protection against X-ray tubes operating under an impressed voltage of 100 k.w.

### Lead Coefficient

The actual glass thickness multiplied by the "lead coefficient" gives the equivalent sheet lead thickness. The "lead coefficient" of Pittsburgh X-ray Lead Glass is at least .30.

# NO. 1086 DOCUMENT GLASS

No. 1086 Document Glass is a clear canary yellow plate glass developed for the preservation of manuscripts, valuable documents, stamps, and old printed matter of every description. Special ingredients in the glass minimize the harmful effects of those light rays which cause paper and ink to fade and discolor. Architects will find No. 1086 Document Glass especially valuable for designing museums, libraries and buildings of similar types where valuable documents are displayed, and where the display cases form an integral part of the building.

### Physical Characteristics

| QUALITIES | THICKNESSES | MAX. SIZES | WEIGHTS |
|---|---|---|---|
| Glazing only | X-Ray 5.35 to 7.35 m/m<br>Document—¼″ | 40x72 | 5½ lbs. [ ] |

| STRENGTH | COLORS | FINISH |
|---|---|---|
| Approximately ⅔ as strong as plate glass of equal thickness | X-Ray Golden Yellow<br>Document Canary Yellow | Ground and Polished |

# SAFETY GLASS

### Multiplate Bullet-Resisting Glass

This glass is a laminated plate glass developed by the Pittsburgh Plate Glass Company for use where special protection is required, usually protection against firearms. In a bank, for example, Multiplate protects employees as well as funds and permits them to sound alarms and use defensive arms without fear of injury, in the event of a hold-up or attempted robbery.

### Protective Qualities of Various Thicknesses

1⅛ in. Multiplate, called Super-Multiplate and the thickness most commonly used, will withstand without penetration numerous scattered shots from a Thompson Sub-machine gun, and from 4 to 10 shots from the common sidearms, such as .22, .32, .38, and .45 caliber revolvers, with the exception of the new Smith and Wesson .357 Magnum Revolver which is the hardest-hitting sidearm so far developed. For protection against this weapon, 1½ in. Multiplate, called Hi-Resist Multiplate, has been developed and will successfully resist scattered shots from it. Against scattered shots from a thirty-thirty rifle, we recommend 2 in. Multiplate, called Hi-Power Multiplate, as effective protection. This glass will also effectively withstand one direct shot from the terrifically powerful 30-06 Army Springfield, or several scattered shots fired from an angle.

### Regularly Checked and Tested by Underwriters Laboratories

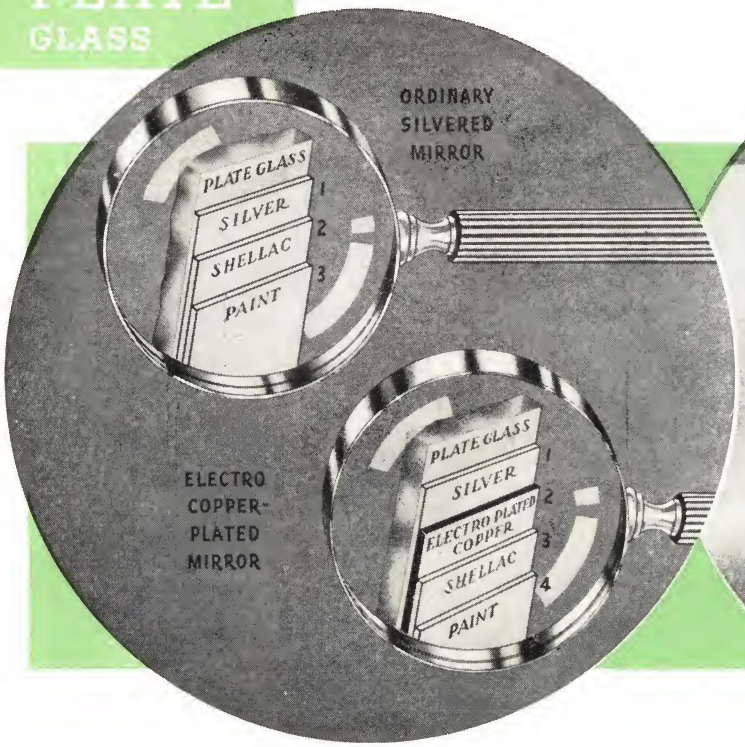
The majority of banks in the United States using Bullet-Resisting Glass in connection with other safety devices, standardize on Multiplate. This glass offers to architects a bullet-resisting medium which is checked and tested regularly by the Underwriters' Laboratories and listed by them.

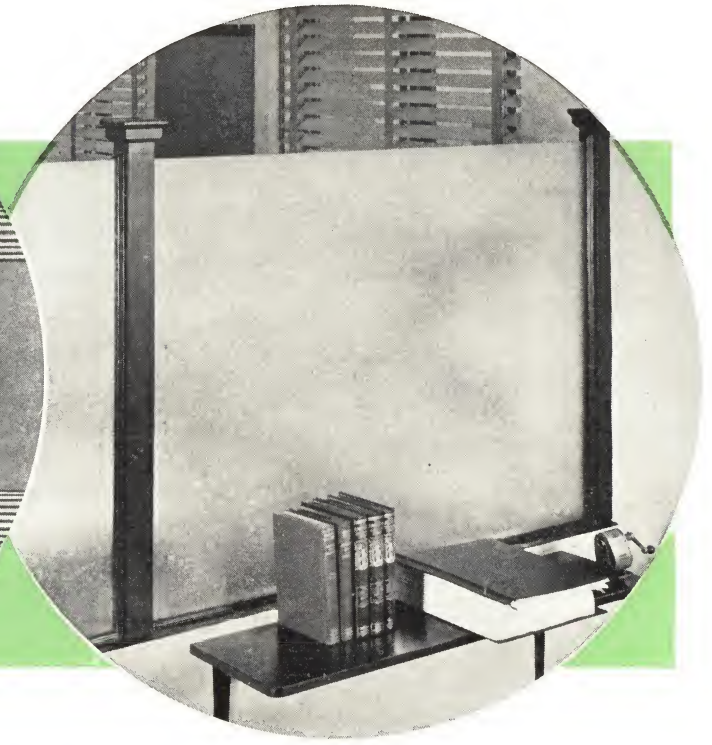
### Physical Characteristics

| QUALITIES | THICKNESSES | MAX. SIZES | WEIGHTS |
|---|---|---|---|
| Commercial | ½″<br>¾″<br>⅞″<br>1″<br>1⅛″<br>2″ | 45x84 | ½″ 6.91 lbs. [ ]<br>¾″ 10.30 lbs. [ ]<br>⅞″ 11.90 lbs. [ ]<br>1″ 13.57 lbs. [ ]<br>1⅛″ 15.23 lbs. [ ]<br>2″ 27.11 lbs. [ ] |

| STRENGTH | COLORS | FINISH |
|---|---|---|
| For recommendations of protection against various firearms, see above | Clear | Ground and Polished Plate Glass laminated |

*For complete Architectural Specifications see page Three*



# PITTSBURGH MIRRORS

## For Every Structural and Decorative Purpose

Pittsburgh Mirrors include mirrors for every architectural need. Whether used structurally in a building, or as purely decorative media, Pittsburgh Mirrors are consistently of high quality and afford superior reflectivity. Especially recommended are Pittsburgh Copper Back Mirrors, which are specially protected against deterioration.

## Treated to Special Process

Pittsburgh Copper Back Mirrors receive, during manufacture, a coating of copper, electro-plated over a heavy film of silver . . . and this copper backing forms an efficient protection against the usual effects of varying climatic and atmospheric conditions. Since these specially protected mirrors retain their beauty and usefulness year after year, their use practically eliminates the need for replacements.

## Colors and Types Available

All Pittsburgh Mirrors are available made from regular polished plate glass. Also, for the achievement of original effects, Pittsburgh Mirrors may be made from Flesh Tinted, Blue, Crystalex or Solex Plate Glass, and fabricated as silver, gold or gunmetal mirrors.




### Physical Characteristics

| QUALITIES | THICKNESSES | MAX. SIZES | WEIGHTS |
|---|---|---|---|
| Silvering<br>Mirror Glazing<br>Glazing | Fabricated from any thickness of glass | Plain and Structural—Up to maximum glass size<br>Copper-Backed 70x144 | Approximately same as plate glass |

| STRENGTH | COLORS | FINISH |
|---|---|---|
| Approximately same as plate glass | Plain, Blue, Flesh, Water White, Blue-Green | Silver, gold or gunmetal backing on any color glass |

# TAPESTRY GLASS

## A Translucent, Semi-Opaque Glass

Tapestry Glass is a product ideally suited for use where the architect desires to glaze in such a way as to admit the light but obstruct the view. For this glass, while transmitting and diffusing the maximum amount of light, is able, because of its peculiar surface texture, to obscure vision.

The glass is really a unique combination of transparency and opacity. Objects placed quite close to the surface of the glass can be seen through it almost as plainly as through transparent glass. But objects decrease in visibility and eventually become entirely shadowed and obscured when they are removed from close proximity to the glass.

## Attractive in Appearance

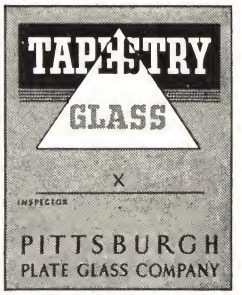
Tapestry Glass is unusually attractive in appearance, too. Its silvery, rich-looking surface, glinting and sparkling in a curiously live fashion when light touches it, creates an effect as pleasing as it is distinctive.

## Decorative Possibilities

And since Tapestry Glass can be strikingly decorated by sand-blasting, chipping or mitering upon its surface, the architect will find it a remarkably helpful medium in executing decorative plans.

## Finish

It is furnished with both surfaces in Tapestry finish or one in Tapestry finish and the other polished.




### Physical Characteristics

| QUALITIES | THICKNESSES | MAX. SIZES | WEIGHTS |
|---|---|---|---|
| Glazing | 3/16"<br>1/4" | 60x144 | 3/16" 2.87 lbs. [ ]<br>1/4" 3.68 lbs. [ ] |

| STRENGTH | COLORS | FINISH |
|---|---|---|
| Equal to or greater than that of regular plate glass | Translucent Semi-Opaque | Plain 3/16" and 1/4"<br>Polished 1/4" only |



*For list of warehouses and map showing warehouses and factories see back cover*




# PENNVERNON WINDOW GLASS

## A Quality Sheet Glass for General Glazing Purposes

Pennvernon Window Glass represents an extraordinarily high development in sheet glass making. This glass is manufactured by a special process, in which it is drawn vertically and held absolutely flat from molten metal to finished sheet. During the drawing process, no rolls or foreign substances of any kind touch the surface of the glass until it has cooled sufficiently to be beyond injury. Consequently, Pennvernon has an unusually brilliant, reflective and unmarred surface finish on both sides of the sheet.

### Advantages

Other superior qualities distinguish this fine window glass, too. Because it is made only from the purest and most carefully selected ingredients, it is remarkably transparent and retains its clarity indefinitely.

Pennvernon's durability also recommends it. Because the texture of its surfaces is so smooth, wear and abrasion affect it less than ordinary window glass, and its beauty and utility last longer.

Because of these qualities, architects everywhere find Pennvernon Window Glass the most satisfactory sheet glass to specify.

### Qualities

Pennvernon is graded at the factory by experts, in accordance with U. S. Government standards, and a label indicating quality is affixed to each light, as follows:

**AA**—This is the best quality of window glass obtainable. Because Pennvernon "AA" is higher in quality than is commercially necessary, it is made only on special order and priced accordingly.

**A**—The highest grade of window glass for special commercial uses. Contains no imperfections that can perceptibly interfere with straight vision.

**B**—Window Glass free from noticeable defects, but containing imperfections which prohibit its being graded as "A" quality.

**Greenhouse**—A special quality selected to eliminate defects injurious to growing plants. Available in sizes 16x18 in., 16x24 in. and 18x28 in. only.

**Picture Glass**—Pennvernon Picture or 16-oz. Glass is a very thin glass, especially made and graded for picture framing.

**Heavy Sheet Glass**—Available in thicknesses of $\frac{3}{16}$ in. and $\frac{7}{32}$ in., and in Select or Factory Run Qualities. Select Quality of Pennvernon Heavy Sheet Glass approximates "A" Quality in single and double strength Pennvernon; Factory Run Quality approximates regular "B" Quality.

### Packing

Pennvernon Window Glass is packed with a sheet of special type separator paper between each light to prevent scratching, marring or staining. Lights are then placed in a specially constructed corrugated carton, which is safe and convenient to handle, and which is lined with asphalt paper to protect glass against moisture. This carton is inserted for shipment in a sturdy, lightweight wood crate, upon which the Pennvernon trademark always appears for easy identification.

### Physical Characteristics

| QUALITIES | THICKNESSES | MAX. SIZES | WEIGHTS | STRENGTH | COLORS | FINISH |
|---|---|---|---|---|---|---|
| AA-A-B<br>Greenhouse<br>Picture<br>Heavy Sheet | Single Strength<br>.087 - .095<br>Double Strength<br>.118 - .133<br>Heavy Sheet<br>$\frac{3}{16}$" - .187 to .200<br>$\frac{7}{32}$" - .212 to .225 | Heavy Sheet<br>$\frac{3}{16}$" up to 50 [ ]<br>$\frac{7}{32}$" up to 60 [ ] | Picture 16 oz. [ ]<br>S.S. 19 oz. [ ]<br>D.S. 26 oz. [ ]<br>$\frac{3}{16}$" 40 oz. [ ]<br>$\frac{7}{32}$" 45 oz. [ ] | Same as plate glass of equal thickness | Clear | Fire-finished |

*For complete Architectural Specifications see page Three*

# Distributing and Manufacturing Facilities of the

# Paint • PITTSBURGH • Glass
## PLATE GLASS COMPANY

AKRON, Ohio
674 Carroll St.
ALBANY, N. Y.
47 N. Ferry St.
ALLENTOWN, Pa.
827 N. 12th St.
AMARILLO, Texas
720 E. 13th St.
ATLANTA, Ga.
172 Marietta St., N. W.
BALTIMORE, Md.
8 S. Paca St.
BIRMINGHAM, Ala.
912 N. 20th St.
BOSTON, Mass.
300 Babcock St.
BRONX, N. Y.
441 Exterior St.
BROOKLYN, N. Y.
Jay, Water & Plymouth Sts.
BUFFALO, N. Y.
101 Seneca St.
BUTTE, Mont.
840 Utah Ave.
CHARLOTTE, N. C.
201 E. Sixth St.
CHICAGO, Ill.
451 St. Clair St.
CINCINNATI, Ohio
Broadway, Court & Eggleston Aves.

CLEVELAND, Ohio
3849 Hamilton Ave.
COLUMBUS, Ohio
324 E. Second Ave.
DALLAS, Texas
Santa Fe Terminal Bldg.
DAVENPORT, Iowa
414 Scott St.
DENVER, Colo.
2519 Walnut St.
DES MOINES, Iowa
108 E. Fourth St.
DETROIT, Mich.
6045 Hamilton Ave.
EL PASO, Texas
1106 E. Overland St.
FORT WORTH, Texas
1825 Main St.
GRAND RAPIDS, Mich.
21 Ionia Ave., S. W.
HARRISBURG, Pa.
611 S. 17th St.
HARTFORD, Conn.
40 Chapel St.
HIGH POINT, N. C.
1 S. Hamilton St.
HOUSTON, Texas
101 Crawford St.
INDIANAPOLIS, Ind.
59 S. State Ave.

JACKSONVILLE, Fla.
601 N. Myrtle Ave.
KANSAS CITY, Mo.
125 W. Fifth St.
KNOXVILLE, Tenn.
207 Humes St.
LITTLE ROCK, Ark.
112 N. Scott St.
LOS ANGELES, Calif.*
Box S, Florence Branch
LOUISVILLE, Ky.
1601 W. Main St.
MEMPHIS, Tenn.
435 Madison Ave.
MIAMI, Fla.
1200 Biscayne Blvd.
MILWAUKEE, Wis.
820 N. Market St.
MINEOLA, N. Y.
49 Windsor Ave.
MINNEAPOLIS, Minn.
616 South Third St.
MT. VERNON, N. Y.
556 S. Fulton Ave.
NASHVILLE, Tenn.
1102 Grundy St.
NEWARK, N. J.
290 Elizabeth Ave.
NEW HAVEN, Conn.
26 Mill St.

NEW ORLEANS, La.
1500 Poydras St.
OAKLAND, Calif.*
1125 Castro St.
OKLAHOMA CITY, Okla.
101 E. California Ave.
OMAHA, Nebra.
1402 Jones St.
PEORIA, Ill.
915 S. Washington St.
PHILADELPHIA, Pa.
3034 N. 16th St.
PITTSBURGH, Pa.
632 Duquesne Way
RICHMOND, Va.
302 Seventh St., S.
PORTLAND, Ore.*
1235 N. W. 15th Ave.
ROANOKE, Va.
14 Pleasant Ave., S. E.
ROCHESTER, N. Y.
362 Exchange St.
SAGINAW, Mich.
103 Fitzhugh St.
ST. LOUIS, Mo.
3900 Chouteau Ave.
ST. PAUL, Minn.
459 Jackson St.
SAN ANTONIO, Tex.
1420 S. Alamo St.
SAN FRANCISCO, Calif.*
1230 Market St.

SAVANNAH, Ga.
Central of Georgia Terminals
SCRANTON, Pa.
823 Wyoming Ave.
SEATTLE, Wash.*
316 Westlake Ave., N.
SHREVEPORT, La.
90 Fannin St.
SOUTH BEND, Ind.
1138 S. Lafayette St.
SPRINGFIELD, Mass.
40 Albany St.
SYRACUSE, N. Y.
838 Erie Blvd., W.
TAMPA, Fla.
102 Madison St.
TOLEDO, Ohio
2410 Albion St.
TULSA, Okla.
301 E. Archer St.
UTICA, N. Y.
615 Eagle St.
WASHINGTON, D. C.
4th & Channing Sts., N. E.
WILKES-BARRE, Pa.
54 Scott St.
YOUNGSTOWN, Ohio
25 N. Watt St.

*Carrying Pittsburgh Paint Products only

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W. P. FULLER & CO., Distributors of glass products of the Pittsburgh Plate Glass Co., have convenient warehouses located in the following cities, with additional store and dealer accounts throughout the Northwest:

Phoenix, Arizona
Tucson, Arizona
Salt Lake City, Utah
Oakland, Calif.
Seattle, Washington
Tacoma, Washington
Spokane, Washington
Sacramento, Calif.
Missoula, Montana
Butte, Montana
Portland, Oregon
Fresno, Calif.
Los Angeles, Calif.
Santa Barbara, Calif.
San Diego, Calif.
San Francisco, Calif.
Walla Walla, Washington
Yakima, Washington

## MAP BELOW INDICATED ★ WAREHOUSES ● FACTORIES



# SECTION 18

CONTINUED ⟶

# MISSISSIPPI GLASS COMPANY

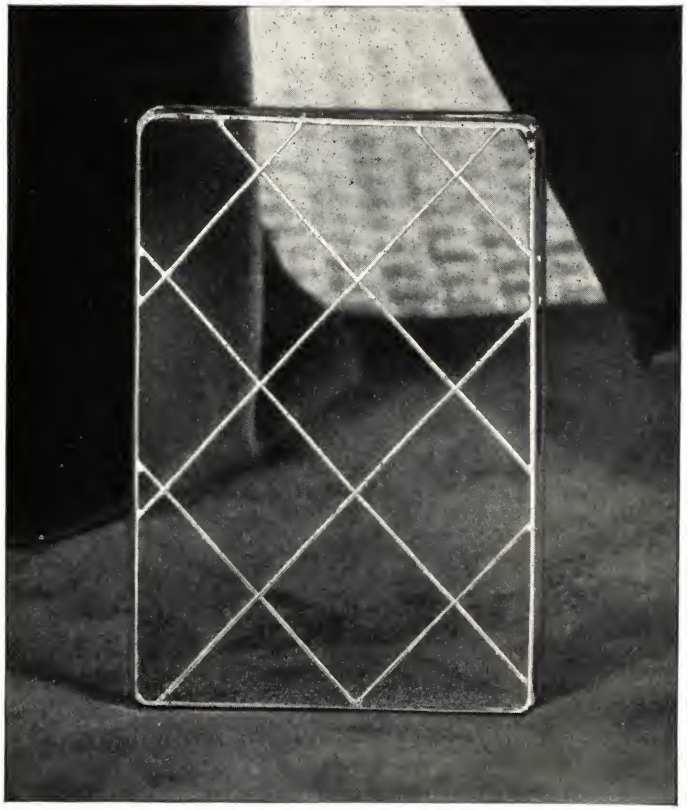
220 Fifth Avenue
NEW YORK, N. Y.

ST. LOUIS MISSOURI
FULLERTON, CALIFORNIA
CHICAGO, ILLINOIS

## MISCO WIRE GLASS POLISHED

"Misco" is the latest development in Wire Glass brought about as a result of many requests from the Architectural and Engineering professions for something as efficient as the old type Wire Glass but more attractive in appearance. "Misco" was submitted to the Underwriters' Laboratories for test and received their full approval equaling the old type Wire Glass in every respect as a fire retardant.

"Misco" can be obtained not only in Wire Glass Polished, as illustrated, but in several of the more popular surface patterns manufactured by the MISSISSIPPI GLASS COMPANY. To be sure of getting this new glass, specify it by name—"Misco."



*Pattern Actual Size*

**Misco Wire Glass Polished**

*Approved Fire Retardant No. 32*
*Each Intersection of Wire is Welded*

## MISSISSIPPI FIGURED AND WIRE GLASS

*The oldest American manufacturers* of Rolled Figured and Wire Glass and the largest manufacturers of these products in the world. Mississippi Products are carried in stock by all the leading glass jobbers for the convenience of those who specify Mississippi where especially good quality is required, or the maximum of natural illumination is desired. Architects throughout the country have for many years recognized Mississippi as standard and specify definite patterns for definite purposes. Mississippi Wire Glass is the product upon which the Underwriter's standard was founded and is identified as Fire Retardant No. 32.

Our policy of developing certain patterns to accomplish certain results has been a great help to the architect and engineer in planning his structure. He knows that for skylights in industrial buildings there is no other glass which will give him the wide distribution of light and the high transmission factor of Pentecor or the uniform distribution of light afforded by Factrolite in vertical openings.

*(Further information on light distribution through Mississippi Glass may be obtained from the Research Department,* MISSISSIPPI GLASS COMPANY, *220 Fifth Avenue, New York City.)*

## A Standard for Every Architectural and Engineering Daylighting Requirement

**Strength**—The wire mesh in Wire Glass does not add to the tensile strength, but simply holds the glass together when broken. It has been proven by test that so long as the wire mesh is properly sealed by the glass, its location in relation to the surface has no effect on the tensile strength of the product.

It is conceded that Wire Glass with the wire mesh slightly nearer one surface than the other, as a result of the vastly improved method of manufacture employed by the MISSISSIPPI GLASS COMPANY, for the purpose of producing a uniformly flat sheet of Wire Glass which will fit properly in a frame without more tension at one point than another, is a decided factor in reducing breakage to a minimum after installation.

### Misco

A new development, the result of architects' suggestions, is Misco Wire Glass with the rectangular mesh of electrically welded wire which is architecturally and mechanically an improvement on the so-called chicken wire. (Misco Wire Glass is thoroughly approved by the Underwriters' Laboratories.)

### Coolite

(Type H) heat absorbing glass, another new development for reducing solar heat radiation without sacrificing light. Transmits 68% solar light and only 51% solar radiation. With double glazing and proper ventilation, Coolite in outside windows reduces maintenance cost of air conditioning in some installations over 30%.

### Shingles

Wire Glass shingles with finished edges and holes drilled to fit different types of construction (write for details).




Identification Label on Mississippi Glass

### Vita Glass

Ultra violet transmitting glass having a permanent final transmission of approximately 50% of the short ultra violet rays in natural light (the rays which tan the skin), is made in the following types:

Polished Plate
Clear Sheet
Cathedral (Hammered)
Rough Wire Glass

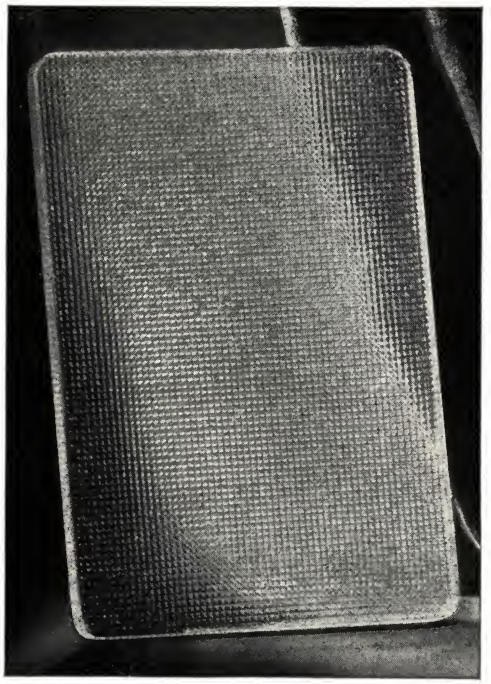


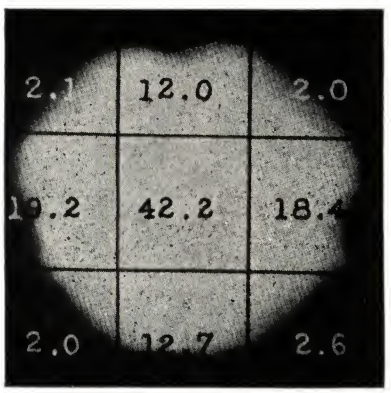

Identification Label on Mississippi Wire Glass

## USE DAYLIGHT TO BEST ADVANTAGE WITH THE FOLLOWING TYPES OF MISSISSIPPI GLASS

### 1—FACTROLITE FOR SIDEWALL SASH

Especially designed for use in vertical openings of industrial buildings to break up the direct rays of the sun and diffuse them equally in all directions, which cuts down the sun's intensity at the window and builds up the illumination 25 feet from the window about 72% when compared with rough glass.

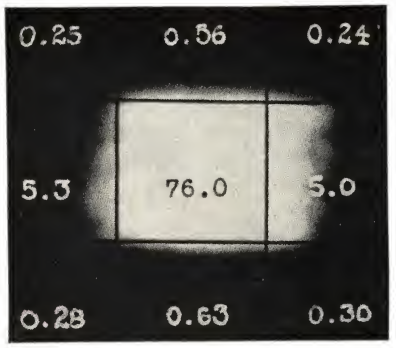


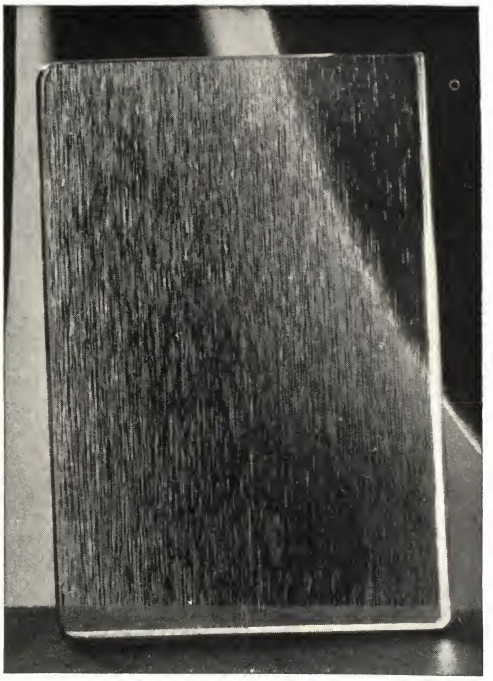


MISSISSIPPI GLASS COMPANY

## 2—HYLITE FOR SAWTOOTH ROOFS

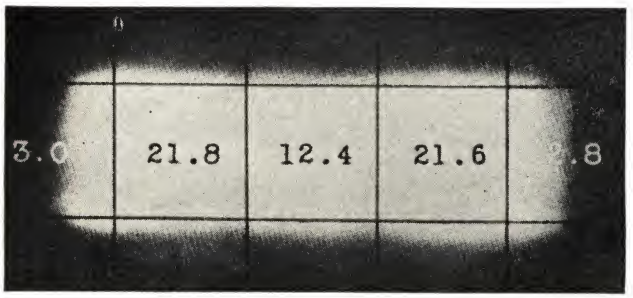
This glass was originally designed for sawtooth skylights to transmit the diffused north light. It, however, is a very practical and attractive glass for many uses.



## 3—PENTECOR FOR SKYLIGHTS

Undoubtedly the most efficient glass designed especially for skylights. Pentecor is made in both plain and wire glass. The ribs are cut at an angle which permits the maximum light transmission with the least possible loss from total reflection. Note from the chart how illumination is built up on each side of the light source—so that at a point 50 feet from the light source the illumination is increased over 100% as compared with rough glass. Pentecor also conducts condensation.






## SERVICE

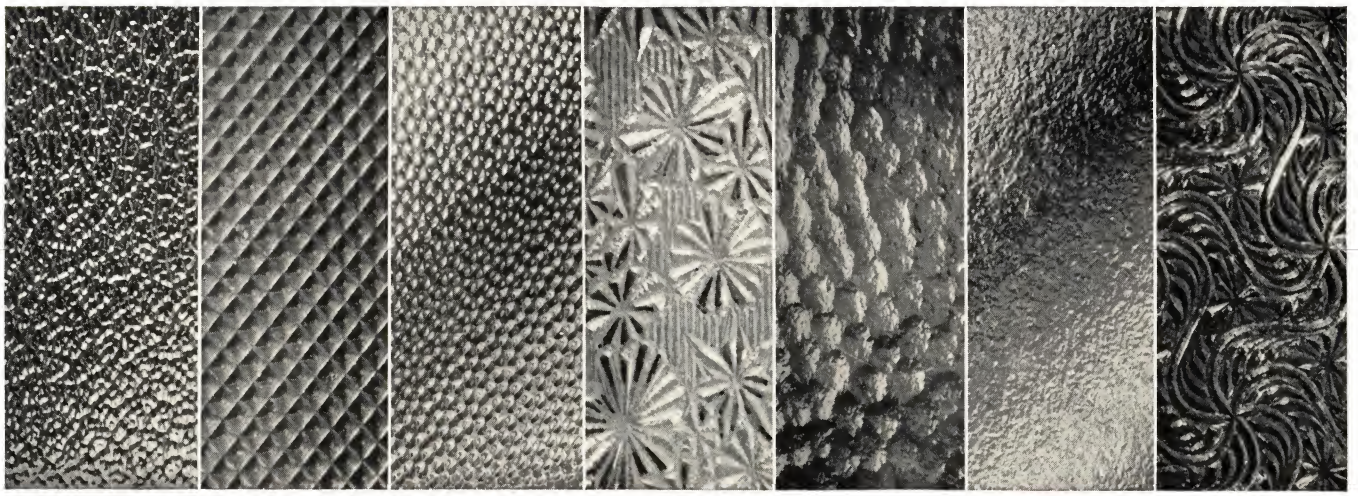
Our Research Department is equipped to furnish special information on problems which may be difficult for you to solve, covering such subjects as light transmission and distribution, heat transmission and absorption, transverse strength (wind pressure) thicknesses, sizes and weights of glass.

Do not hesitate to let us assist you on any glass problem you may have. Address "RESEARCH DEPT."

## SAMPLES AND LITERATURE

Samples and copy of catalogue and architects' file sheets should be on file in every architect's and engineer's office. If yours have been mislaid, please advise us.

*For Light Distribution Data Write for Copy of Illumination Report No. 131586*



Artex | Aurora | Dewlite | Florentine | Hammered | Luxlite | Maze

## CLASSIFICATIONS

| To be sure of obtaining the Pattern Desired Specify Name Below | Thicknesses and Maximum Sizes Average Weights — Plain — Standard | | | | | Plain — Polished | | Plain — Coolite | | Wire Glass — Standard | | | | | Wire Glass — M.sco | Wire Glass — Coolite |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1/8 | 3/16 | 1/4 | 3/8 | 1/2 | 1/4 | 1/4+ | 1/8 | 1/4 | 1/4 | 3/8 | 1/2 | 5/8 | 3/4 | 1/4 | 1/4 |
| Apex | | | | | | | H | | | | | | | | | |
| Aurora | I | K | L | | | I | | | | | | | | | | |
| Artex | F | F | G | | | F | | | | | | | | | | |
| Astralite | F | F | G | | | | | | | J | | | | | | |
| Dewlite | F | F | G | | | | | | | | | | | | | |
| Factrolite | F | K | L | | | | | | | J | | | | | | |
| Florentine | F | K | | | | | | | | | | | | | | |
| Hammered | F | K | L | L | L | | | D | C | J | J | E | B | B | J | A |
| Hylite | F | K | L | | | | | | | J | | | | | | |
| Luxlite | F | F | G | | | | | | | G | | | | | | |
| Maze | F | K | | | | | | | | J | | | | | | |
| Magnalite "A" | | | K | | | | | | | J | | | | | | |
| Magnalite "B" | | | K | | | | | | | J | | | | | | |
| Pentecor | F | K | | | | | | | | J | | | | | | |
| Prestlite | F | F | G | | | F | | | | | | | | | | |
| Ribbed | F | K | L | L | L | | | D | C | J | J | E | B | B | | A |
| Syenite | F | K | | | | I | | | | J | | | | | J | |
| Translite | | K | | | | | | | | | | | | | | |
| Polished | | | | | | | | | | I | | E | B | B | I | |

Key to Maximum Sizes

First dimension = Width

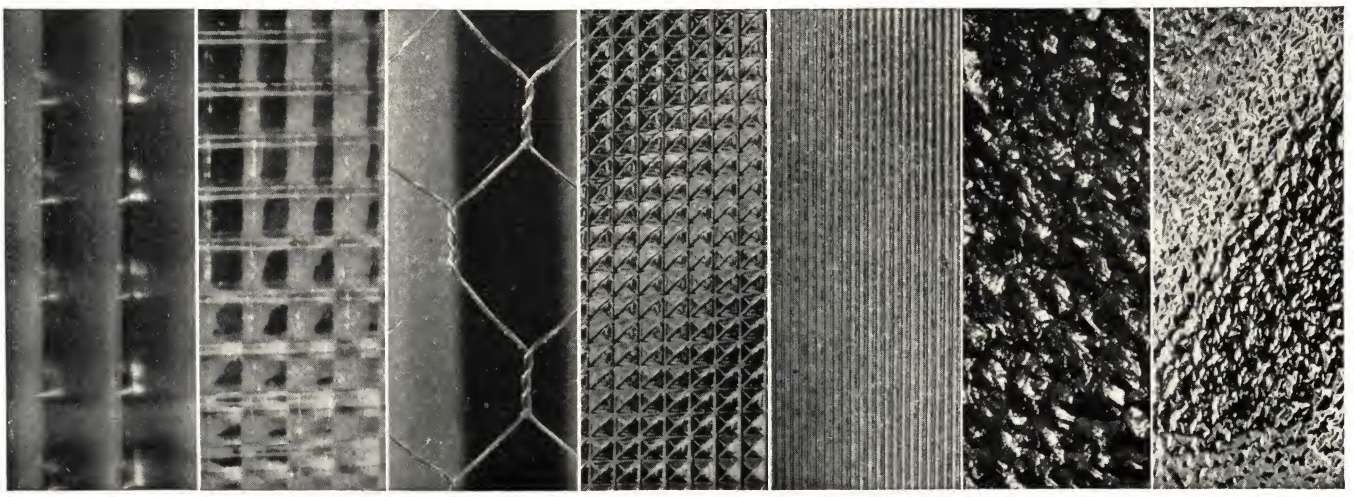
Second = length

All ribs and twists in wire run with length

Sizes up to Key Wide Long

A = 24 x 84
B = 30 x 72
C = 32 x 84
D = 32 x 96
E = 48 x 120
F = 48 x 132
G = 48 x 144
H = 50 x 100
I = 56 x 132
J = 56 x 144
K = 60 x 132
L = 60 x 144

Specify Width First



Magnalite "A" | Magnalite "B" | Polished | Prestlite | Ribbed | Syenite | Astralite

MEMORANDA

# PENNSYLVANIA WIRE GLASS COMPANY

FRANK L. MARTIN, President

EXECUTIVE OFFICE

1612 Market Street, PHILADELPHIA, PA.

WORKS, DUNBAR, PA.

### Products

SKYLIGHTS and GLAZED ROOFING; MARQUISES; GLAZED CANOPIES; SIDEWALLS, etc.

SOLID FLAT WIRE GLASS—Rough, Ribbed, Hammered.

ORIGINAL SOLID CORRUGATED WIRE GLASS — White and Actinic.

ACTINIC GLASS—Rough and Ribbed, without wire; Rough and Ribbed Wire.

Also Glass without wire netting, in various patterns and thicknesses, to suit every requirement.

For complete details of *Original Solid Corrugated Wire Glass Skylights* refer to our 20-page catalog in Skylight Section (see File Index).

TRADE-MARK

### Service and Samples

We offer gratuitous engineering advice on all glass problems. With reference to our Solid Corrugated Wire Glass service, upon receipt of rough sketches or details, we shall be glad to offer our suggestions for CWG skylights, roofs, etc.

Samples of any type of Glass we manufacture will gladly be mailed upon request.

## FLAT WIRE GLASS

### Process

Solid wire glass, made by the Pennsylvania continuous process, is completely formed by one pouring and one rolling.

### Fire Protection

Wire Glass is a valuable fire retardant. It prevents flames from attacking adjacent buildings. It admits free access to the building or part on fire, as a small opening for the hose can be made and firemen can fight the flames from the outside without any injury. Wire glass confines the fire to the place of origin.

### Approval (Distinguishing Mark)

All of our wire glass, ¼ in. and over in thickness, has the full approval of the National Board of Fire Underwriters as a fire retardant, which requires a distinguishing mark to identify the glass.

Our distinguishing mark is our *cabled strand,* appearing every 10 in. across the sheet and the full length of each sheet.

### Specifications

Architects should always specify "Solid Wire Glass manufactured by the PENNSYLVANIA WIRE GLASS COMPANY" (give kind desired).

## ACTINIC GLASS

*Type "H" Glass—Heat-intercepting or Resisting—U. S. Government Specification—DD-G-451*

### An Aid to Industry

### Why Needed

The main purpose of Actinic Glass in windows and skylights is to moderate the heat and glare of sunlight in buildings not equipped with shades. A noteworthy feature of numerous factories built in recent years is the superior distribution of moderated natural light which architects have accomplished by skillful design and by the use of large and continuous areas of Actinic Glass. These buildings contrast happily with others where adequate provision against glare and radiant solar heat were not made in the original plans and where occupants have been compelled to resort to such uneconomical and unsatisfactory makeshifts as painting of the ordinary glass used.

### How It Differs from Ordinary Glass

Without going into technical details, the reasons why it reduces glare and also the heat of sunlight lie in its special chemical composition. As to appearance, it looks like ordinary rolled glass except for a characteristic tint which might very loosely be described as brown or amber and which was developed under the advice of an eminent specialist on color in lighting.

### Aids Workers by Reducing Eye Strain

Merely as one of many common illustrations, white interior walls (which at night facilitate electric lighting) may often be so glaringly illuminated by sunlight as to be actually painful to the eyes. The use of Actinic instead of ordinary glass obviates such difficulties without unwarranted sacrifice of light. Numerous other instances of relief from glare could be mentioned.

Since glare is a well-known cause of fatigue, headaches, etc., both workers and employers profit by relief from it.

A good idea as to the gain in eye comfort may be had by certain easily made comparisons, using 12x12-in. specimens. Such samples will be sent free upon request.

### As to Solar Heat

A person in front of a window or under a skylight of ordinary glass, upon which the summer sun is shining, not only experiences whatever discomfort may arise from high air temperature, but suffers also distress and loss of effectiveness due to solar radiant heat (the cause of sunstroke). This affliction is relieved by Actinic because it intercepts the major portion of such radiation. (Details for different thicknesses furnished on request.) As an illustration, a well-known consulting engineer, on a typical summer day, found by actual measurement that the temperature of a wood floor (not air temperature) was 20° F. lower under a skylight of Original Solid Actinic Corrugated Wire Glass than beneath an adjacent skylight of ordinary wire glass. Not only is the discomfort of hot floors and hot feet well known, but such tests give a good conception of the greater personal comfort in other respects.

For best results various factors in design should be taken into account. Consult us for suggestions.

### Facilitates Air Conditioning

By assisting in the exclusion of solar heat, Actinic helps to cut both the initial cost of cooling equipment and also the expense of operation. Technical details will be furnished upon request.

### Economy

Actinic costs so little more than ordinary glass that price is not a barrier. By its use, many factories have obviated the necessity for shades or awnings, which are expensive both in first cost and in maintenance.

### Other Advantages

More cheerful illumination in the absence of direct sunlight.

Retards fading. Used in buildings where important documents, antiques, etc. are displayed.

Retards other undesirable chemical changes in various manufacturing industries.

Concerning special applications, write us for technical advice.

### Designs and Thicknesses

Actinic Glass is made in the following designs and thicknesses: ⅛ in. plain rough and ribbed; ¼ in. plain rough and ribbed; ¼ in. rough and ribbed wire; Original Solid Corrugated Wire Glass.

# PRESSED PRISM PLATE GLASS COMPANY

## Manufacturers of Imperial Ornamental Plate Glass Products

33 North LaSalle Street
CHICAGO, ILL.

551 Fifth Avenue
NEW YORK, N. Y.

### Products Manufactured

"Imperial" Ornamental Plate Glass Style O-1, O-2, O-3, O-4, O-5; Rubanite O-6; Texture O-7 and other special patterns; "Imperial" Prism-Plate Glass in large plates; "Imperial" Prism-Skylight Glass (unit plates 18x60 in.)

### Quality and Dimensions

"Imperial" Ornamental Plate Glass is made in one standard plate glass quality and furnished in standard plate glass thickness $\frac{1}{4}$ to $\frac{5}{16}$ in. The maximum size is 72x84 inches.

### Samples and Literature

We have illustrated herewith four specimen patterns in full size. Samples of these and others in stock or in course of manufacture will be furnished on request. Correspondence regarding new or special designs is solicited.

### Distinguishing Characteristics

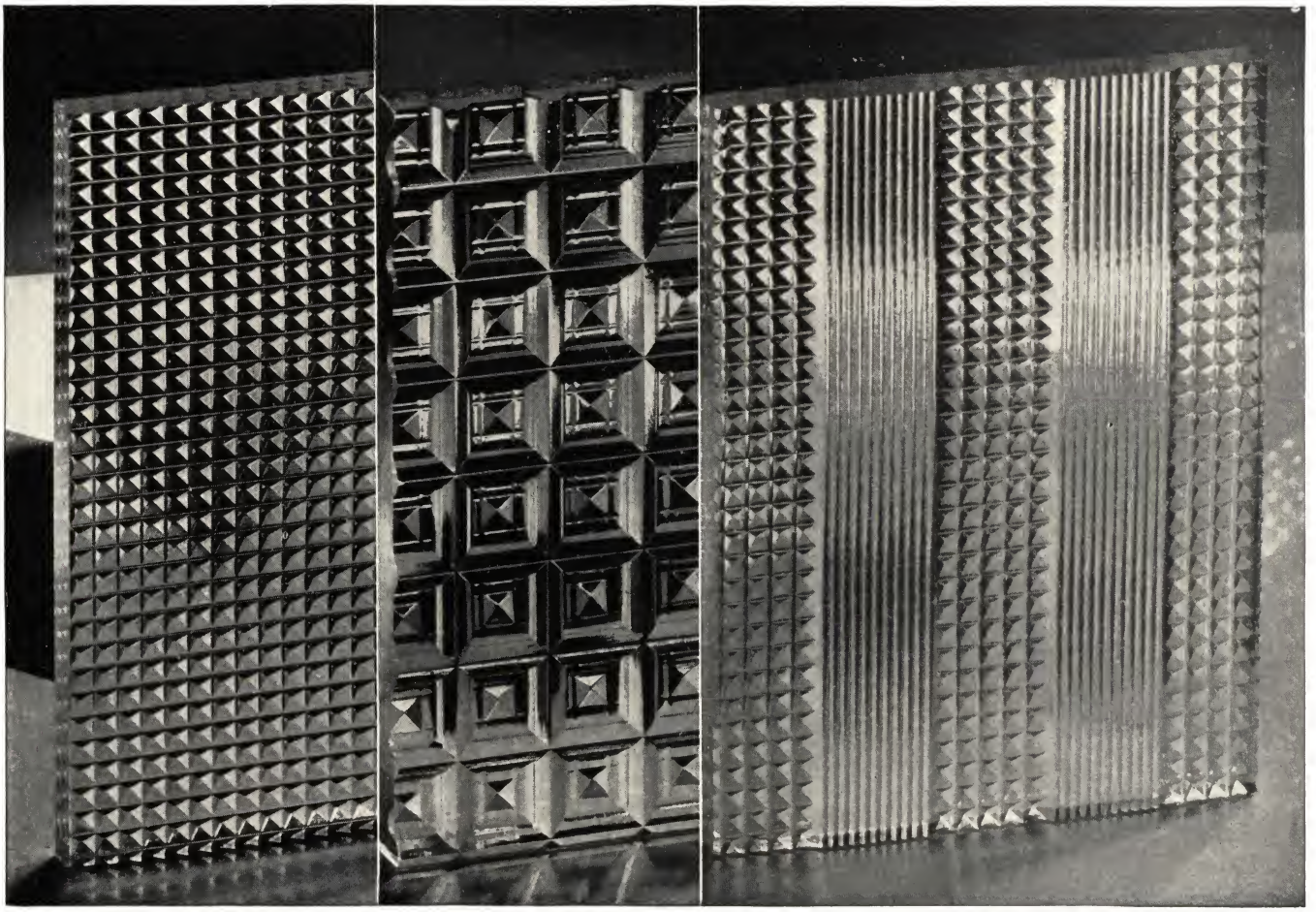
The how and why of the difference between "Imperial" and the other Ornamental Glasses lies in the special process by which the brilliant patterns of "Imperial" are made. The process combines the essential features of polished plate glass manufacture with a die-pressure method of forming the characteristic ornamental prismatic surfaces.

Glass in fluid form is rolled in uniform flat sheets approximately ½ in. thick. While still red hot the upper surface of the sheet is brought into contact with a steel die, which forms the entire surface at once into the pattern required. The die is very accurately machined and polished and under the pressure of many tons the top surface of the glass becomes a matrix copy of the die retaining all the accuracy of the machined steel plus the brilliance of a fire finished glass surface.

After being annealed and trimmed the reverse side of the glass is ground and polished so as to reduce the plates to commercial thickness and at the same time give them the flat highly polished surface, with true reflections, which is characteristic of all polished plate glass products.

### "IMPERIAL" ORNAMENTAL PLATE GLASS

*The Illustrations Are Only Typical—Send for Other Samples*

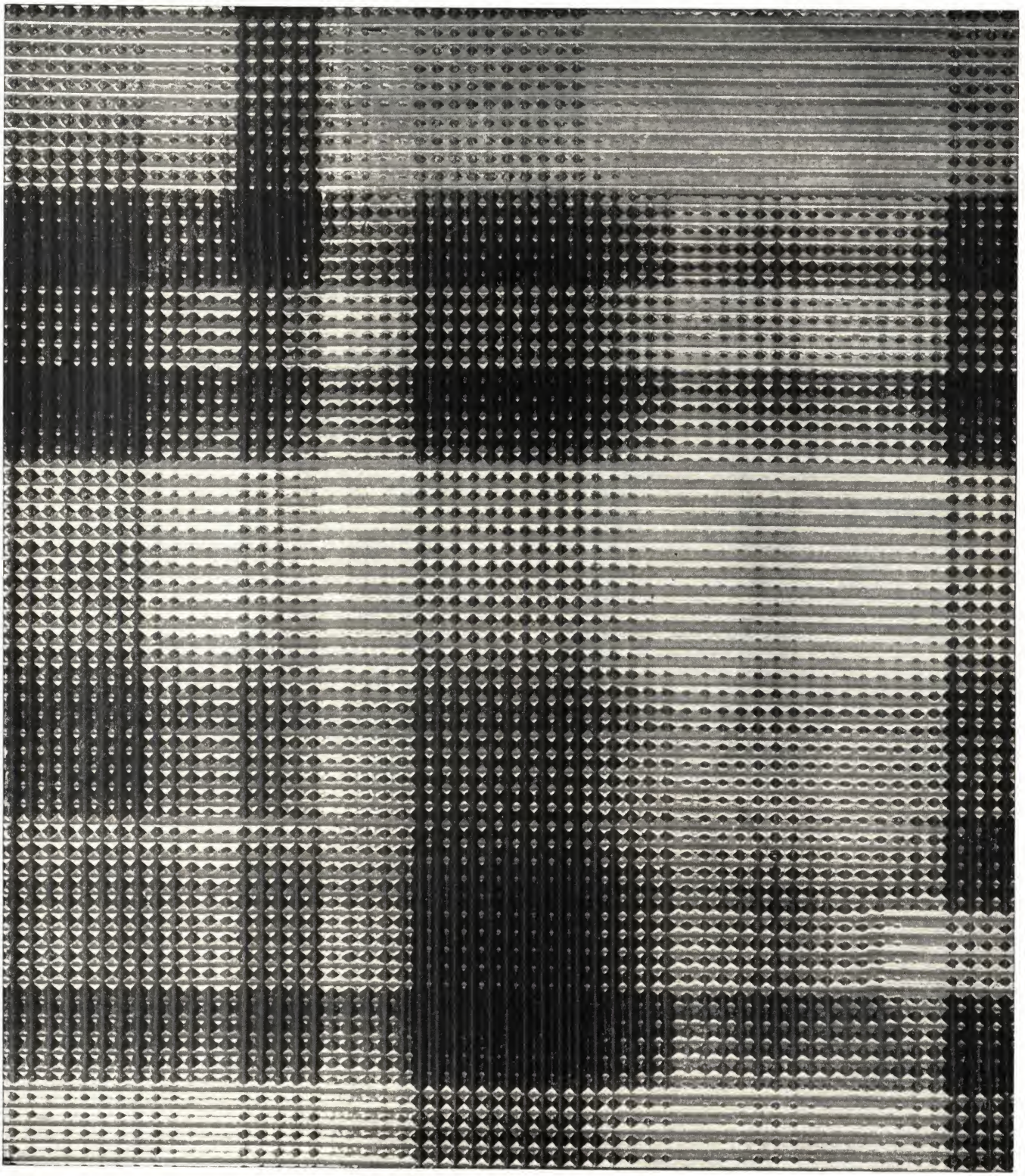


"Imperial" Style O-1 "Imperial" Style O-2 "Imperial" Rubanite O-6

## "IMPERIAL" TEXTURE O-7

### Texture in Plate Glass Made by Interweaving Prisms

A changeable moving pattern that accents texture rather than line, there is no repeating pattern, the same high grade plate glass quality as on previous designs



*Illustrated in full scale*

"Imperial" Texture O-7

*Maximum size 72 by 84 in.*

**J. MERRILL RICHARDS**
119 West First Street
BOSTON, MASS.

**AMERICAN 3 WAY-LUXFER PRISM CO.**
2139 West Fulton Street, CHICAGO, ILL.
517 West 45th Street, NEW YORK, N. Y.

# Magnalite—Diffusing Glass

(Registered U. S. Patent Office)

## For Better Interior Vision

SOLD BY LEADING GLASS DEALERS EVERYWHERE

For Semi-vacuum Skylights, see File Index

### Interior Vision

It is recognized that good interior lighting is not necessarily dependent on high illumination and that too much light is objectionable. Certain light intensities (foot candles) are recommended for different kinds of work as, for instance, 10 to 20 foot candles for reading normal print, 20 to 30 for fine print, sewing, etc., and 30 to 50 for severe visual work over long periods. Under 10 foot candles is considered inadequate for critical seeing.

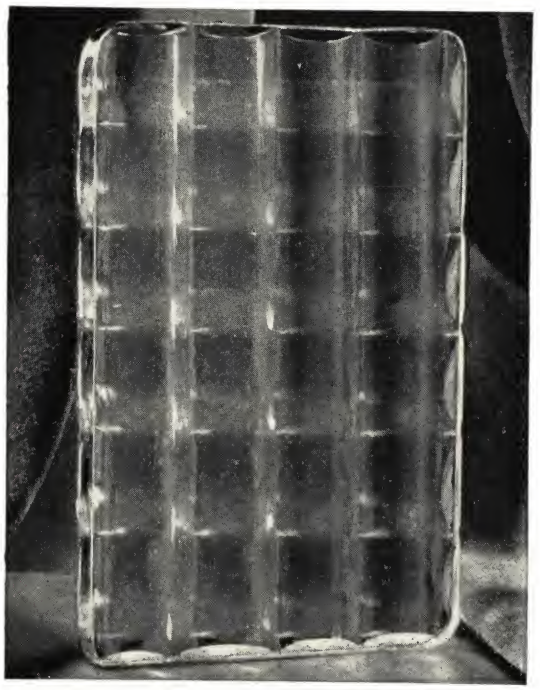
Interior vision is improved by eliminating objectionable contrasting areas of light and shadows or, in other words, securing a working plane of even light intensities.

MAGNALITE will accomplish this desirable result.

### Efficient Results

Smaller glass openings, glazed with MAGNALITE, will positively improve interior vision and:—

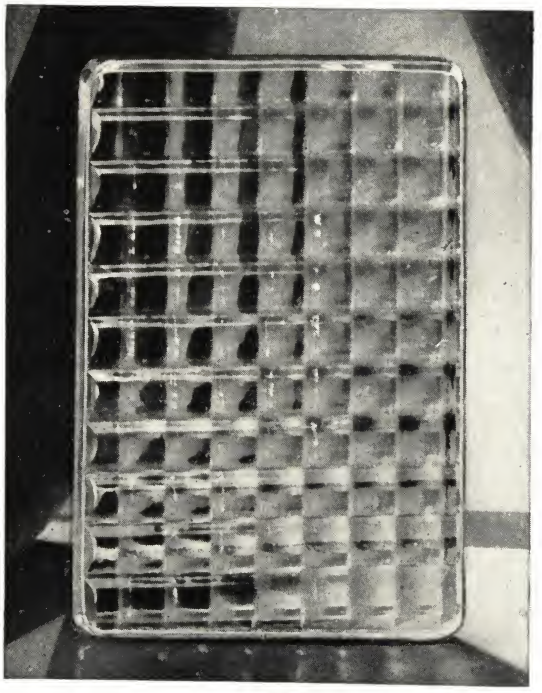
Reduce heat losses in Winter.
Exclude more Summer heat.
Diffuse solar heat over the diffusion image.
Produce a desirable white work light.
Reduce sunlight intensities 90%, under normal conditions, in direct line with sun's rays.
Easily cleaned surfaces will maintain original efficiency.



**Magnalite Type "A"**
Principally for use in large openings and in locations distant from vision. Generally used in Ceiling Lights

### Description

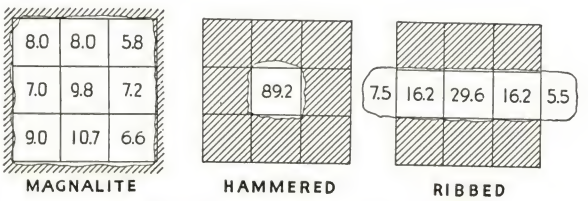
MAGNALITE is a clear water white sheet glass with both surfaces smooth and crossed by scientifically designed cylindrical lenses at right angles to each other on either surface. Type "A" MAGNALITE is manufactured with the lenses approximately ½ in. on centers, and Type "B" approximately ¼ in. on centers.



**Magnalite Type "B"**
For general use, where a smaller design than Type "A" is more Architecturally correct, and in locations close to vision

### Principle of Magnalite Four-Way Diffusion

One set of lenses *spreads light evenly* at right angles to their axes. The other set spreads light in the opposite direction to cover an area *the shape of the glass opening.* The total diffusion angles average about 32°.




**Comparative Light Diffusion Images**
Figures are in relative percentages showing even light diffusion through Magnalite



Sun Spots with Ordinary Glass



Even Light with Magnalite Glass

### Light Transmission

The diffusing lenses are scientifically designed to prevent excessive kick-back of light and the transmission value is high for the wide degree of even light diffusion.

### Adaptability

Magnalite is adaptable for and has been installed in all types of buildings.

**Skylights and Monitors** — (Generally Type "B" wired).

**Ceiling Lights**—Magnalite forms a perfect screen and hides all super-structure and flood light equipment, thoroughly diffusing the light from illuminating units as well as daylight.

**Windows**—Magnalite will cut off shadows of pilasters at a short distance from wall and improve interior vision, particularly, if sash is not continuous.

**Transoms and Partitions**—Magnalite is so obscuring that absolute visual privacy is assured.

### Magnalite Diffusing Design

Magnalite Diffusing Design is available in our flat type and Thermag Semi-Vacuum Skylights of low heat transfer.

Magnalite Design has been incorporated in certain "Insulux" Semi-Vacuum Glass Building Blocks as manufactured by the Owens-Illinois Glass Company. Where a sheet glass is required Magnalite will perfectly match and harmonize with these Blocks.

### Manufacture

Magnalite is manufactured, by the continuous process, by the Mississippi Glass Company.

### Suggestion

Think of Magnalite glazed openings as being electric lighting units and space them accordingly. For instance, in a skylight layout when the roof heights are low the openings should be smaller and their number increased. When roof heights are high, skylight openings can be made larger and fewer in number as determined by diffusion angles. No set rules can be definitely given to determine the ratio of glass area to floor area on account of latitudes and requirements for which a building is intended. However, your usual skylight sizes can be appreciably reduced to give even better interior vision if Magnalite is used.

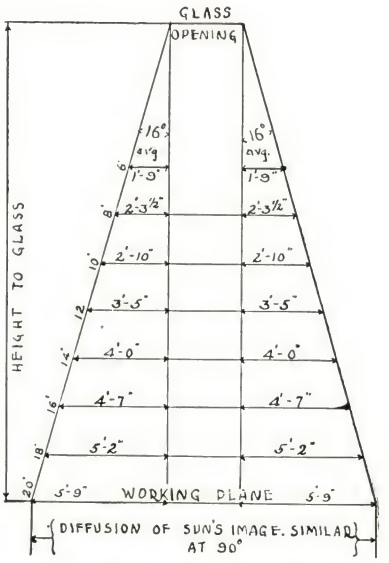



**Diagram Showing Four-Way Diffusion**
To assist in layout of skylights and other glass openings

### THICKNESS, SIZES AND WEIGHTS

| Type | Approximate thickness, in. | Approximate shipping weight per sq. ft., lbs. |
|---|---|---|
| A Plain | ¼ | 3½ |
| A Wired | 5/16 | 4½ |
| B Plain | 3/16 | 3½ |
| B Wired | 5/16 | 4½ |

Maximuum size stock sheets 48 in. wide by 132 in. long. Special widths over 48 in. wide, subject to prior sale.

### NOTES

Glaze skylights with underside lenses to serve as condensation leads. Keep curbs low as practical to permit light to spread. In general, glaze outside sash with lenses vertical to the weather or have horizontal lenses towards most accessible side.

In art galleries, assembly rooms, auditoriums, rooms for critical seeing, and other structures of similar nature, it is recommended that shades or vanes be installed for controlling sunlight. On receipt of information giving type of building, structural data, roof heights, latitude, etc., we will be pleased to recommend daylight openings.

### Specification

Magnalite Light Diffusing Glass (Type "A" or "B" Plain or Wired).

ESTABLISHED 1872

# HENDERSON BROS., INC.

Designers and Craftsmen in Leaded and Stained Glass in the Antique and Modern Styles

TELEPHONE
Murray Hill 4-6586

771 First Avenue, NEW YORK, N. Y.




## HENDERSON'S LEADED GLASS

Henderson's Leaded Glass is carefully made and fabricated by modern methods. We can economically produce the special glazing sizes and forms used in the Tudor, Spanish, Colonial and Georgian period designs.

Adequate manufacturing facilities, combined with quantity purchases of raw materials, enable us to produce quality work at minimum prices. Skilled workmanship with careful supervision from first to last, insure a finished product of uniformly highest quality and enable us to guarantee Henderson's Leaded Glass against leakage and warpage.

Leaded glass, carefully and systematically made of substantial materials, as is Henderson's Leaded Glass, will last indefinitely.

### Construction Features

**Lead Cames**—Heavy in thickness. Leaf of the lead is $\frac{3}{64}$ in. thick; heart, $\frac{3}{32}$ in. thick. Only pure virgin lead is used in our cames.

**Reinforcing**—All leads running the narrow dimension are reinforced with steel bars embedded in the heart of the lead. For panels, in which the narrowest dimension is more than 18 ins., we advise the use of Henderson's Reinforced Steel Stay Bar Came (described below) at intervals not to exceed 24 ins.

**Soldered Joints**—Soldered joints are heavy and solder is uniformly applied over the entire joint extending beyond the corners.

**Cementing Compound**—The compound is applied between the lead and the glass on both sides of the glass. A special mastic compound is used and applied in a careful and uniform manner. After completion, the leaded glass is kept in our shop for two weeks in order that the cement shall be thoroughly dry before shipping.

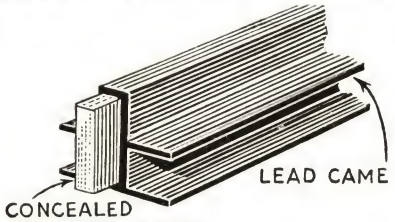
## HENDERSON'S REINFORCED STAY BAR CAME

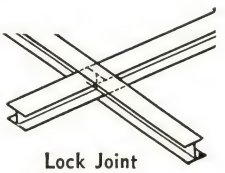
*Added Strength without Extra Cost*

In the Henderson Stay Bar Came the steel reinforcing bar is embedded in the lead pocket, protected against rust and is an *integral* part of the leaded glass panel. The prevailing practice has been to suspend the glass from the stay bar by means of wire and solder. In this type of construction, the glass eventually sags and bulges with resultant leakage. This is entirely eliminated in Henderson Reinforced Steel Stay Bar Came which is particularly valuable where the leaded glass is subjected to jarring.


REINFORCED

Made $\frac{3}{8}$ to 1 in. wide, with pocket to receive reinforcing rod $\frac{1}{8}$ in. thick and from $\frac{3}{8}$ to 1 in. in height.



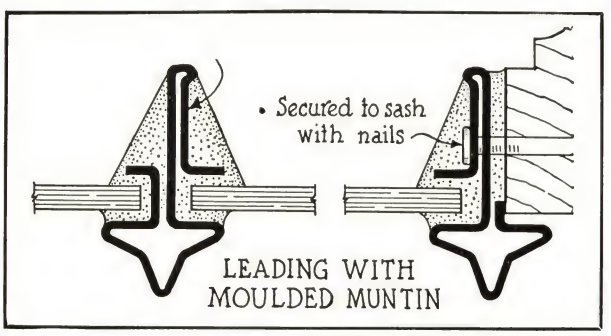
**Lock Joint Construction**
**(Patented)**

Showing metal continuous at joint—no solder required. Furnished in chromium, aluminum, etc.

## MODERN EFFECTS IN METAL AND GLASS

*Suitable for Ceilings, Partitions, Etc.*
*Diffused Lighting*

The lock joint construction shown at the left is ideal for modern glass effects. It is available in all bright metals and provides unusual strength and rigidity. We will be glad to consult with architects at any time regarding this type of construction.




Henderson's Old Style Colonial Leading



Henderson's Metal and Glass Ceiling
Turkish Bath, Biltmore Hotel, New York, N. Y.

# THE PAYNE-SPIERS STUDIOS, INC.

Fine Stained Glass Craftsmen for Fifty Years

Memorials in Bronze

50 West 15th Street, NEW YORK, N. Y.

Telephone: GRamercy 7-5626

### Products

CHURCH and MAUSOLEUM WINDOWS.

BRONZE MEMORIALS, TABLETS, MARKERS, etc.

GLASS MOSAICS.

LEADED GLASS for residences and institutions.

ANTIQUE MEDALLIONS.

HAND WROUGHT LEADWORK.

CAST LEAD ORNAMENTS.

WINDOW FRAMES and CHURCH VENTILATORS.

### Experience and Service

This firm is a combination of the 62-year-old Payne Studios of Paterson, N. J., and Richard N. Spiers & Sons of New York established 1889, with the finest designers and craftsmen of each firm. We have executed church windows in 42 States in the Union and numerous foreign countries including Canada, France, India, Japan, Central America, Haiti and the West Indies.

Special water color sketches, samples and estimates, submitted without obligation upon receipt of information giving quantities, sizes, style and subject matter desired.

Window setting details also furnished.



**Chancel—Church of the Ascension**
**Montgomery, Ala.**
CRAM & FERGUSON, Architects

*A list of nearby churches or other buildings where our windows may be viewed will be sent on request*

### Suggested Specifications

**General**—All leaded glass shall be executed to conform with patterns shown on drawings or special design submitted and approved by architect. (The width of lead, plain, irregular or antique and the type of glass, imported or domestic, antique, cathedral or opalescent should be specified.)

Leading shall be soldered thoroughly on both sides and all flanges filled with a cement containing 50% pure white lead putty, 30% whiting, 10% litharge and 10% red lead mixed with pure linseed oil so as to make glass perfectly watertight.

**Reinforcing and Setting**—For setting in wood sash, use pure white lead putty for bedding and beading after sash has been primed.

Reinforcing to be formed of galvanized steel bars inside the leads or soldered to face of lead as determined by the width and design of the lights. The maximum width for inside reinforcement to be 18 in.

For setting in steel sash, use an approved steel sash putty. Reinforcing as noted above to apply here also. (Sash should be furnished with mouldings for most substantial construction.)

Where glass is set in stone reglet, it shall be bedded thoroughly in white lead putty after shellacing stone, and a margin of lead must show evenly around edge of opening. It shall be reinforced by means of galvanized iron bars sunk deeply into the stone groove and tied to glass with a sufficient number of copper wires. Grooves are to be pointed up thoroughly, both inside and out.

Leave glass clean and whole on completion.



St. Anthony's R. C. Church, Hawthorne, N. J.



Bishop Weed Window, St. John's Episcopal Church, Jacksonville, Fla.



St. Theresa's R. C. Church Providence, R. I.

# OWENS-ILLINOIS GLASS COMPANY

## Industrial & Structural Products Division
## Manufacturers of Insulux Glass Block

### TOLEDO, OHIO

For Complete Description, Test Data and Details, see File Index

Owens-Illinois Glass Block are hollow, partially evacuated, water-clear units of pressed glass. The exclusive Owens-Illinois method of manufacture produces a block of uniform wall thickness, containing dry, rarefied air at a partial vacuum which gives the block its exceptional heat insulating properties. In addition to their heat-retarding characteristics, Insulux Glass Block offer a wide range of light transmission values and decorative possibilities.

Insulux Glass Blocks are laid up by the mason and brick layer. See complete specifications in Insulux section.

**IN HOTELS**
**Shoreland Hotel, Chicago**
JAMES F. EPPENSTEIN, Architect



### Uses for Insulux Glass Block Include

**1.** Continuous bands or panels of translucent, heat insulating walls for industrial buildings, department stores, office buildings, apartment houses, hotels, schools, hospitals, food plants, service stations and similar structures.

**2.** Corridor walls and partitions where borrowed light and sound insulating properties are desirable.

**3.** Translucent replacement panels in modernization and air conditioning improvements.

**4.** Store fronts and store front bulkheads — for decoration and basement illumination and where special floodlighting effects (with or without color) are desired.

**5.** Interior decorative work in restaurants, bars, cafeterias, dress shops, commercial display rooms and similar uses.

**6.** In residences for light, privacy and interesting design.

**IN HOSPITALS**
**St. Mary's Hospital, St. Louis**
O'MEARA & HILLS, G. E. QUICK Associate, Architects



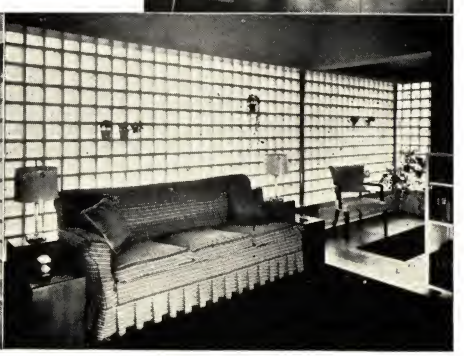
*Light* **THE MODERN WAY . . .**



**IN SCHOOLS**
**Tippecanoe School, Milwaukee**
G. E. WILEY, Architect



**IN OFFICES**
**Office Building, Milwaukee**
EDWIN J. KRAUS, Architect



**IN HOMES**
**Residence in Benton Harbor, Mich.**
PASQUALE IANNELLI, Architect



**IN FACTORIES**
**Bauer & Black Plant, Chicago**
Designed by own Engineering Department



**IN THEATERS**
**Landis Theater, Vineland, N. J.**
WM H. LEE, Architect




**IN STORES**
**Weiboldt Department Store, Oak Park, Ill.**
HOLABIRD & ROOT, Architects

# THE ARMSTRONG COMPANY

Plastic Cements–Putties–Specialties

241 South Post Avenue
DETROIT, MICHIGAN

4065 South La Salle Street
CHICAGO, ILLINOIS

---

*Manufacturers of Armstrong and Tharco Products for More Than a Quarter of a Century*



**Cold Strip Mill Building, Ford Motor Company**

## ARMSTRONG'S ELASTIC GLAZING COMPOUND

*A Better Glazing Material for Steel and Wood Sash*

On this Ford Cold Strip Mill, the glaziers averaged 180 lights per day — proving the ease and speed with which Armstrong's Elastic Glazing Compound can be applied.

This Compound will not shrink, sag or crack and will remain in a plastic condition.

Armstrong's Elastic Glazing Compound reduces glass breakage—as it cushions vibration and allows for expansion and contraction. Because of its elasticity, glass is easily removed.

This Compound adheres to steel, wood, brick and stone.

## OTHER PRODUCTS MANUFACTURED BY THE ARMSTRONG COMPANY

| "Tharco" | Armstrong's | Specialties |
|---|---|---|
| Tharco Steel Sash Putties | Armstrong's Casement Putty | Armstrong's Caulking Compound (gun grade) |
| Tharco Stove Putty | Armstrong's Wood Sash Putties | Armstrong's Caulking Compound (knife grade) |
| Tharco Boiler Putty | Government Specification Putties | Armstrong's Greenhouse Putty |
| Tharco Furnace Cement | Special Specification Putties | Armstrong's Structural Glass Cement |

# H. B. FRED KUHLS

OFFICE AND FACTORY
6411-6423 Third Avenue, BROOKLYN, N. Y.

REPRESENTATIVES

CHARLESTON, S. C., Wm. M. Bird & Co.
CHICAGO, ILL., Fred J. Barker, 9 So. Clinton St.
CLEVELAND, OHIO, Upson Walton Co., 1310 W. 11th St.
DALLAS, TEX., Macatee, Inc., P. O. Box 245
PITTSBURGH, PA., Fort Pitt Mfg. & Supply Co., 116 Seventh St.
PORTLAND, ORE., E. E. Gilmer, 316 S. E. Madison St.
SEATTLE, WASH., McCune Merifield Co., 303 Washington Mutual Bldg. and Tourtellotte-Bradley, Inc., 4th Floor, Whit Bldg.
SAN FRANCISCO, CAL., McCune Merifield Co., 231 Sansome St.

For Kuhls' Elastic Waterproofing Compositions and Coatings, see File Index

## KUHLS' ELASTIC GLAZING AND CAULKING COMPOSITIONS

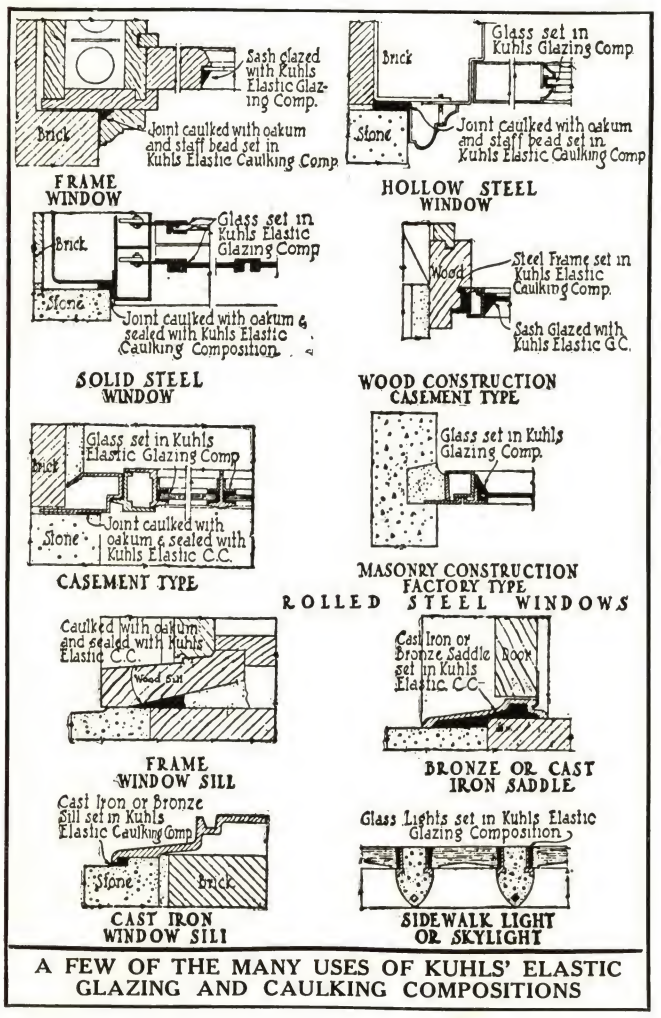
### Kuhls' Elastic Caulking Composition




*Manufacturers Since 1889*

A *non-staining* elastic composition for caulking between masonry and window or door frames of wood and steel. It is made in any color to harmonize with that of the adjoining material. Stock color is light gray. When set, a smooth tough skin is formed on the surface which remains elastic at all times. It yields slightly to atmospheric conditions, yet always makes a tight joint. It is not affected by vibration, heat, cold or moisture. Adheres strongly to wood, metal glass, etc., bedding perfectly and always making a tight joint. Acid fumes have no affect on it. Furnished in two consistencies:

**Knife Grade**—Shipped in 1, 2 and 5-lb. cans; 12½, 25, 50 and 100-lb. pails and drums.




**A FEW OF THE MANY USES OF KUHLS' ELASTIC GLAZING AND CAULKING COMPOSITIONS**

**Gun Grade**—Shipped in drums of 1, 3½, 5 and 7-gal.; also in ½-bbl. (35-gal.) and 1-bbl. (60-gal.)

### Specifications for Kuhls' Elastic Caulking Composition

**Caulking Exterior Wood Windows and Door Frames**—For new or old frames, the staff bead shall be removed and the joint between the frame and the masonry on all sides, jamb, head and sill, shall be completely filled with Kuhls' Elastic Caulking Composition so that it will project out beyond the masonry. The staff bead, when placed in position, shall be pressed into the Elastic Caulking Composition.

If the joints are wide and deep on old work, they shall be caulked with oakum to within ¾ in. of the surface; then the remainder of the joints shall be filled with Kuhls' Elastic Caulking Composition as for new work.

**Caulking Steel or Metal Frames**—When metal frames are set in masonry after opening has been built, the inside edge of the masonry opening or the frame shall be buttered with Kuhls' Elastic Caulking Composition and the frame pressed into place and secured.

Where frames are already set, Kuhls' Elastic Caulking Composition shall be used to thoroughly caulk between the frame and the masonry, at head, jamb and sill.

### Kuhls' Elastic Glazing Composition

For glazing skylights, conservatories, bedding and glazing of glass in steel or sheet metal frames and all other glass construction work. It is an ideal material for this purpose as it is elastic and its elasticity is retained indefinitely; it never sets hard or becomes brittle. This feature prevents breakage of glass—especially important in the case of wire glass. Its use is economical as it is double the bulk of white lead putty and because it lasts indefinitely. Furnished in *Knife Grade* and *Gun Grade* in same quantities as Kuhls' Elastic Caulking Composition previously described.

### Specifications for Kuhls' Elastic Glazing Composition

**For Bedding and Setting Glass in Sash, Doors, Skylights, Conservatories, Marquises, etc.**—Kuhls' Elastic Glazing Composition shall be used in the same way as ordinary putty in bedding and puttying glass. For wood sash and doors the wood shall first be primed; or, on old work, the wood sash and doors shall be scraped and painted before setting the glass. For metal or metal covered sash and doors, the glass shall be bedded in the glazing composition and then secured in place with metal clamps, sprigs or mouldings, or the composition smoothed off, depending on the construction.

**General Specification (Under Glazing)**—All glass, unless otherwise specified, required for sash and doors of metal, metal covered or wood, shall be bedded and set or puttied with Kuhls' Elastic Glazing Composition (manufactured by H. B. Fred Kuhls, Third Avenue and 65th Street, Brooklyn, N. Y.). It shall be secured either by clamps or metal or wood mouldings, sprigs, supplied by other contractors, or puttied as required.

The Elastic Glazing Composition shall be delivered at the job or factory, where glazing is to be done, and is not to be opened until after the inspection and approval of the architect.

ESTABLISHED 1922

# PLASTIC PRODUCTS COMPANY

Glazing Compounds—Putty—Caulking Compounds

6475 Georgia Avenue, DETROIT, MICHIGAN

FACTORIES: CHICAGO, ILL.; DETROIT, MICH.; JERSEY CITY, N. J.

Glazing compounds, putty, and caulking compounds are a small part of the cost of building construction. But the dissatisfaction, annoyance and expense caused, if these materials do not prove satisfactory, can be large and out of proportion to their original installation cost. The first consideration therefore in their selection is dependability.

**Plastoid** (REGISTERED)

Many of this country's largest and finest buildings—office, factory and residence types—have been glazed and caulked with Plastoid products.

## STEEL SASH PUTTY

A durable, easy-working putty for all types of factory and other interior glazed metal sash. An easy glazing material which dries promptly, adheres readily to glass and all metals and will not sag or form oil pockets.

## METAL CASEMENT PUTTY

A faster-drying putty is necessary for use on metal sash which are glazed outside. Plastoid Metal Casement Putty dries quickly with a hard, smooth surface which can be painted without delay. Formulated to withstand external weather conditions.

## MONITOR PUTTY

For use on monitors where extreme weather conditions, excessive vibration and disturbance make it particularly difficult to keep putty from leaking and breaking away.

## GLAZING COMPOUND NO. 18

For glazing all types of metal and wood sash; use where conditions demand highest possible quality and price is secondary. Made with bodied oils, dries slowly, sets firm but remains tough and rubbery. Not affected by extremes of heat, cold, moisture or vibration. Ideal for laundries, textile and tobacco plants.

## SUPERIOR WOOD SASH PUTTY

Superior to a pure linseed oil putty in that it glazes easier, sets more quickly—may be painted sooner and is not dependent on priming.

## ALUMINUM PLASTIC

An aluminum base, patented, elastic material used for pointing, caulking, glazing, and wherever contraction or expansion is a factor. Excellent adhesive qualities, may be used on chrome, stainless steel, aluminum and any building materials. Made in six different consistencies—each to meet specific conditions.

## ACID-RESISTING PUTTY

Can be used to advantage wherever unusual acid conditions are present, such as distilleries, acid and alkali plants, boiler rooms, etc. The inert materials used in this product provide a putty that has proven exceptionally satisfactory in this difficult class of work.

## GREENHOUSE PUTTY

Designed primarily for greenhouse and sludge bed enclosure glazing. Both knife or gun consistency. This material forms a tough surface skin underneath which remains permanently plastic.

## CAULKING COMPOUNDS

Supplied in both knife and gun grades and in all colors. Adheres permanently, without staining, to all types of building materials. Will not crack, wrinkle, sag or dry out, and will adjust itself to ordinary warping, expansion and contraction.

## PAINTING OF PUTTY

For long and satisfactory service putty should be painted as soon as it has set firmly, and then be kept painted like any other building material.

## CONSULTATION SERVICE

The PLASTIC PRODUCTS COMPANY welcomes inquiries from architects, regarding any special problems or unusual conditions to be considered, and places at their disposal varied and extensive experience.

## OTHER PRODUCTS

Structural Glass Pointing Compounds—Specially compounded to point all types of structural glass. Available in all structural glass colors.

**Aquarium Cement**—Particularly formulated for glazing aquariums.

In addition to the products specially mentioned above, this company can supply materials for all classes and types of glazing from standard formulas or to buyer's specifications.

## THE PLASTOID GUARANTEE

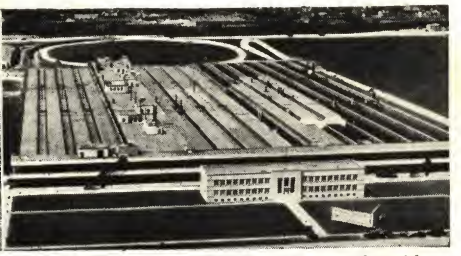
PLASTIC PRODUCTS COMPANY fully guarantees its materials to give satisfaction when properly applied under conditions for which they were designed, according to standard practice, and kept protected by paint.



Armory at Springfield, Ill.—Plastoid



Specify Plastoid for Residential Work



General Motors, Lyndon, N. J.—Plastoid

118J

MEMORANDA

# STORE FRONTS 19
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Section Number 1/5 Catalog Number

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# ALUMINUM COMPANY OF AMERICA

Member of The Producers' Council, Inc.

Manufacturers of Alcoa Aluminum and Its Alloys

1844 Gulf Building
PITTSBURGH, PA.

For Sales Offices, see Metals Section
For Other Pages on Alcoa Aluminum, Its Alloys and Uses, see File Index

## ALCOA ALUMINUM FOR STORE FRONTS

Rolled, extruded, or cast construction is possible when store fronts are made of versatile aluminum.

Besides the qualities of light weight, strength, and easy workability, the designer has at his disposal the Alumilite* finish which heightens aluminum's natural resistance to corrosion and keeps it bright and shiny. Thus maintenance costs are practically nil.

Leading store front manufacturers regularly supply aluminum fronts. Complete details may be obtained from them, or our experienced engineers are available for consultation.

*Patented.







*Courtesy of: Pittsburgh Plate Glass Co.*

MEMORANDA




THE TRADE MARK OF
SUCCESSFUL STORES *EVERYWHERE*-
MODERN, BRILLIANT

# BRASCO

## STORE FRONTS

Brasco MODERN STORE FRONTS

# A COMPLETE LINE FROM SIDEWALK TO COPING

## In Both SOLID ROLLED and EXTRUDED Constructions

Brasco furnishes all units of the modern store front — sash and bars, jamb and sill covers, concealed awning boxes, awning hoods, flush all-metal bulkheads, showcase doors, entrance doors, transom covers of various widths, pilaster and post covers, panels and entrance ceilings, metal facia, push bars, grilles in standard or special pattern, transom ventilator sash, door frames, metal display letters, ornaments, thresholds, kickplates, and other complementary items.

**ALL MODERN METALS AND FINISHES**

Including:

**SOLID STAINLESS STEEL**

**SOLID BRONZE**

**SOLID ALUMINUM**
(in ALUMILITE, Polished or Satin Finishes)

**SOLID COPPER**

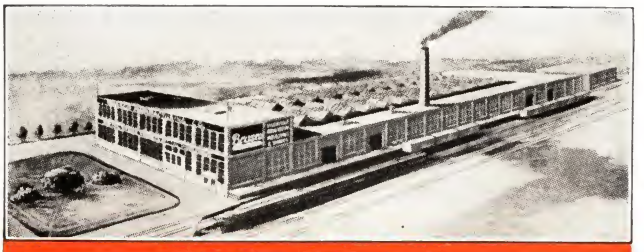
**EXTRUDED ALUMINUM**
(in ALUMILITE, Polished or Satin Finishes)

**EXTRUDED BRONZE**

Many of the Extruded shapes can be successfully used in conjunction with the Rolled members. The SOLID ROLLED and the EXTRUDED Constructions are so designed as to be largely interchangeable.

## Special Shapes to Specifications

The growth of the ultra-modern trend in store fronts has created a demand for highly specialized treatments. While the Brasco line comprises a most comprehensive array of standard shapes, metals and finishes, we are also in position to execute special work of all descriptions. Special finishes are available as well, thus making possible installations of outstanding character and individuality.



Modern Plant of Brasco Mfg. Co., Harvey, Illinois. Manufacturers of Brasco Store Front Constructions, Fabricated Metal Work, and Rolled Metal Mouldings and Shapes in All Metals and Finishes.

**BRASCO MANUFACTURING CO.**

HARVEY *(Chicago Suburb)* . . . . . ILLINOIS
EASTERN SALES OFFICE: . . . . . 507 FIFTH AVENUE, NEW YORK CITY

Distribution and Complete Stocks Throughout United States and Canada, Assuring Prompt and Effective Installation

**DETAILS AND SAMPLES:** Write for complete Portfolio of Details (15 sheets) showing both Rolled and Extruded Constructions. Life-sized samples also available.

CATALOG NO. 39
(Copyright 1938, Brasco Mfg. Co.)

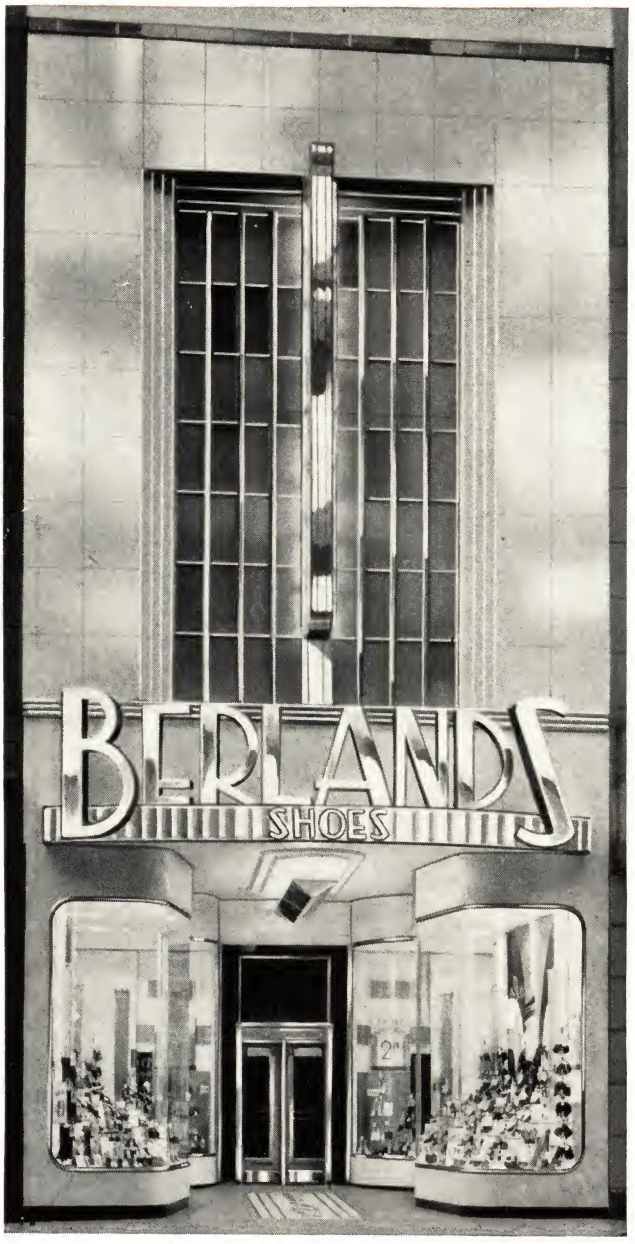
Printed in U. S. A.

# FOR STRENGTH · SAFETY · BEAUTY · PERMANENCE

Brasco Construction is characterized by its adaptability to the requirements of modern design, chiefly because of the completeness of the line.

From *Berlands*, shown below, utilizing a series of completely factory-fabricated second floor windows, to the unusual height requirements of the *Child's* installation, the varied curves of *Stover's* (center photograph) and the attractive Alumilited plaque and facia coverings shown on the flush-type *Kopelman* front, the variety of application is apparent.

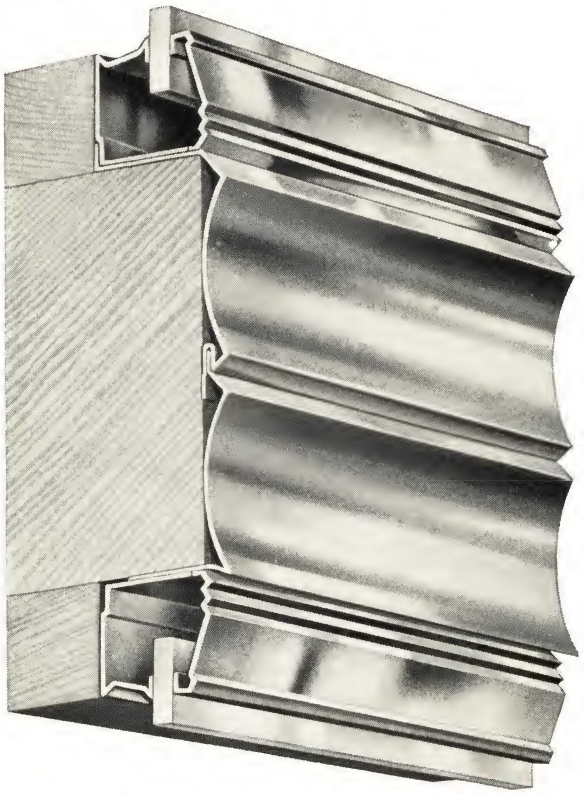


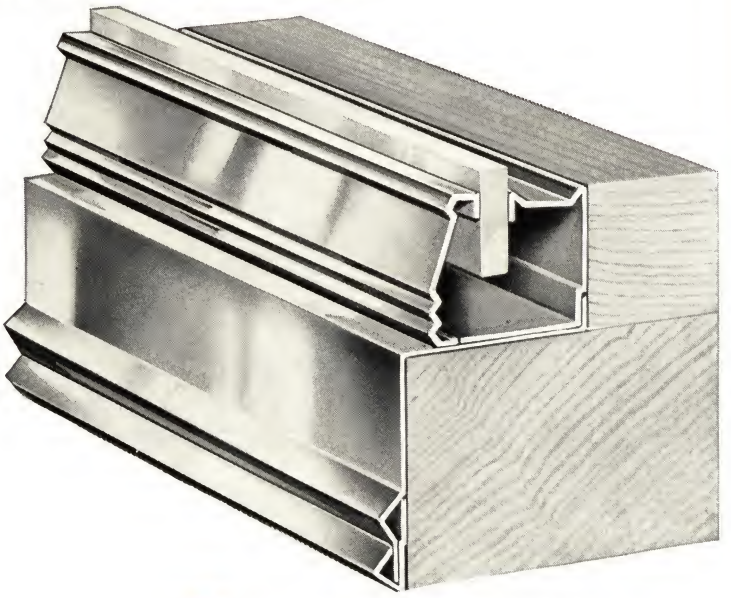





# DISTINCTIVE, PERMANENT STYLE AND BEAUTY



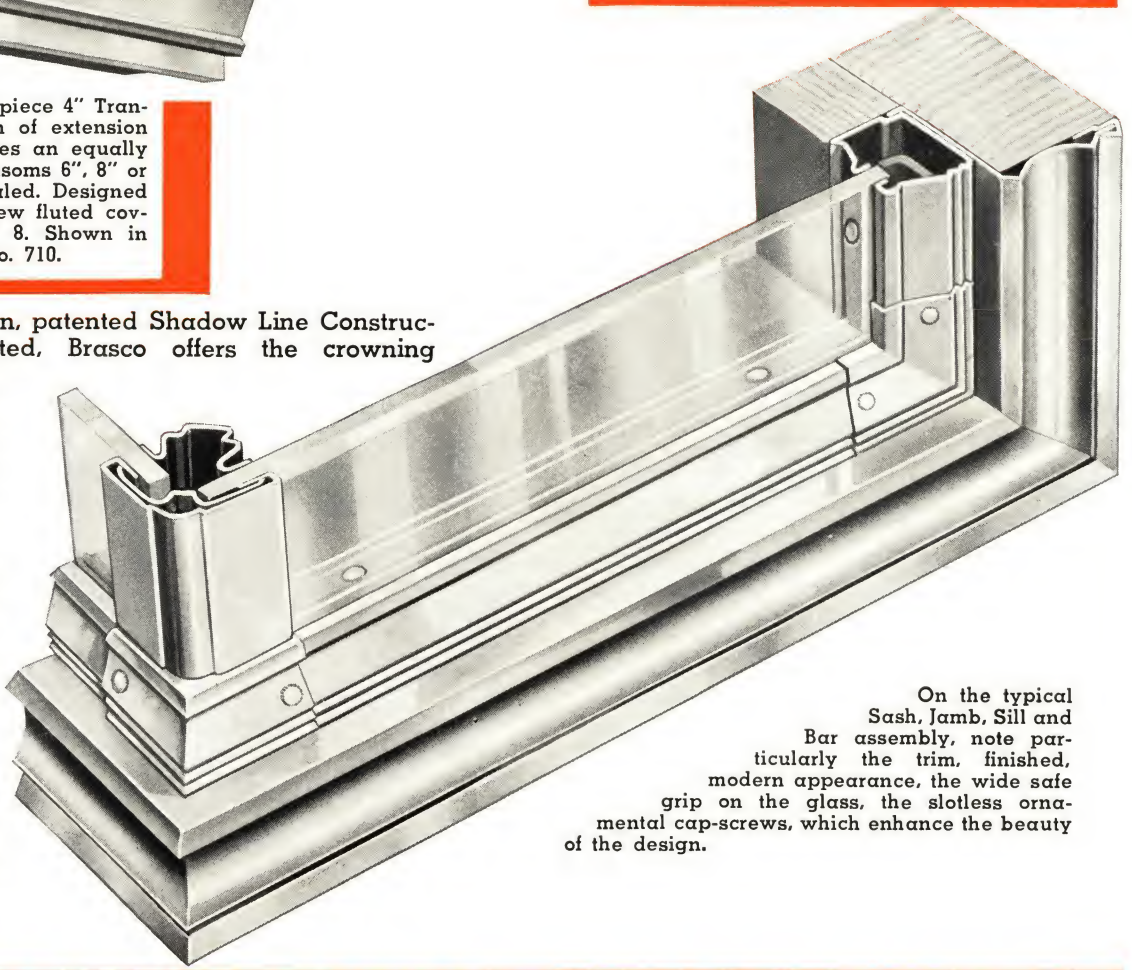
The distinctive No. 745 2-piece 4" Transom Cover. The addition of extension moulding No. 746 provides an equally unusual covering for transoms 6", 8" or wider. All screws concealed. Designed to harmonize with the new fluted coverings on pages 5 and 8. Shown in conjunction with Sash No. 710.



Standard Sill Covering No. 717, adjustable in width from 1⅝" to 1¾", shown with Sash No. 710. Other Sill Coverings are provided in the complete Brasco line, including one-piece members and the new fluted coverings.

In this ultra-modern, patented Shadow Line Construction here presented, Brasco offers the crowning achievement of more than thirty years of store front manufacture. Designed throughout in the modern spirit, the distinctive charm of its clean-cut, parallel lines and new fluted members, give immediate character to any store front.

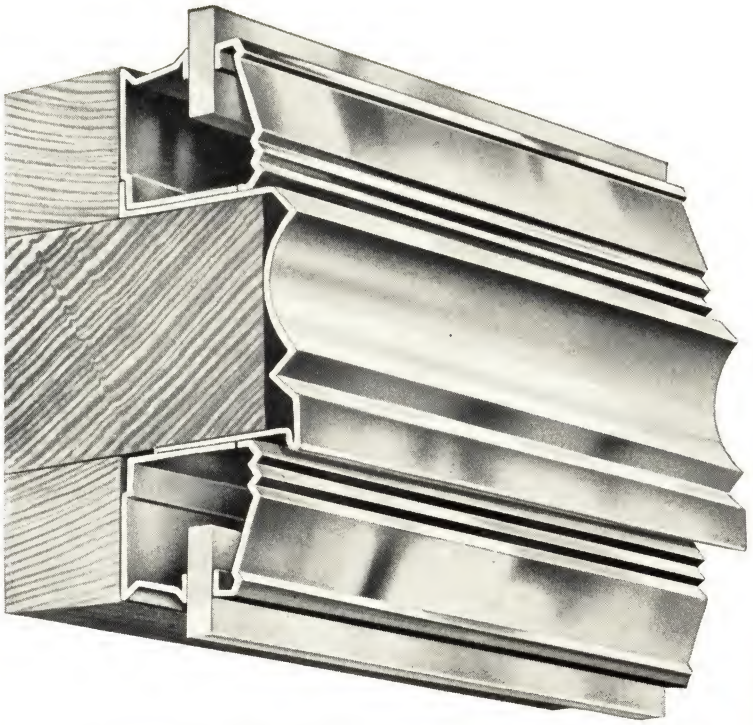
Built on sound principles of construction, with proven features assuring special strength and unusual glass safety, Brasco is characterized by outstanding durability.



On the typical Sash, Jamb, Sill and Bar assembly, note particularly the trim, finished, modern appearance, the wide safe grip on the glass, the slotless ornamental cap-screws, which enhance the beauty of the design.

DETAILS AND SAMPLES—Write for complete Portfolio of Details (15 sheets) showing both Rolled and Extruded Constructions. Life-sized samples also available.

# A COMPLETE UNIFIED LINE



Above—No. 7038 1⅝" Transom Cover, shown with No. 710 Sash top and bottom.



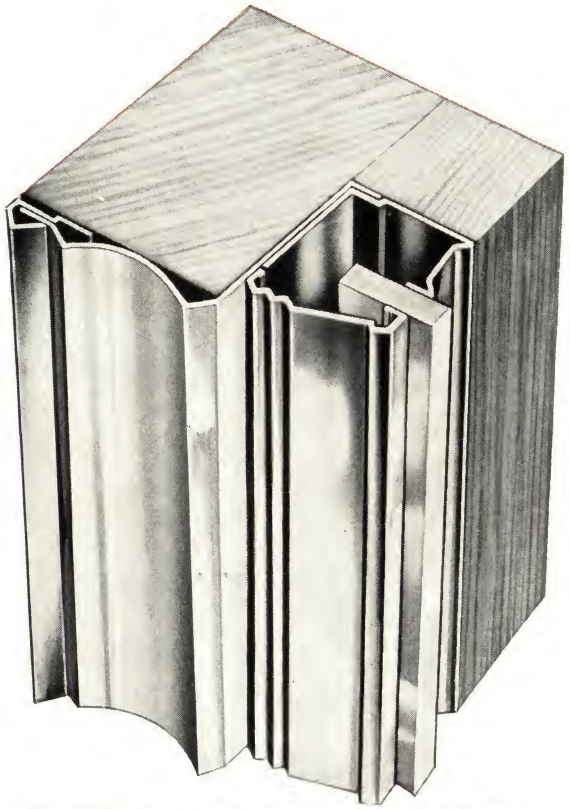
Above—No. 7017 new fluted Sill, providing for width variation of 1⅝" to 1¾", shown here with No. 710 Sash. A one-piece fluted Sill member No. 7039 is also available.

New, attractive stock Covering Members in fluted, modern design.

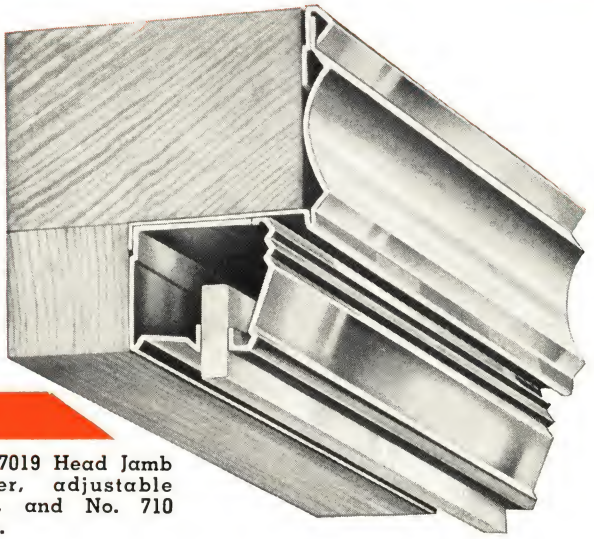
Shown here are several of the essential members which form part of a complete, unified line. A few additional sections are shown on page 8. (For the complete list, see our Portfolio of Details.)

These new members complement the established Brasco line of standard Covering Members.

Prompt and effective installation of modern, brilliant Brasco Store Front Construction is assured by national distribution.



No. 7017 Side Jamb Covering, adjustable from 1⅝" to 1¾", with No. 710 Sash.

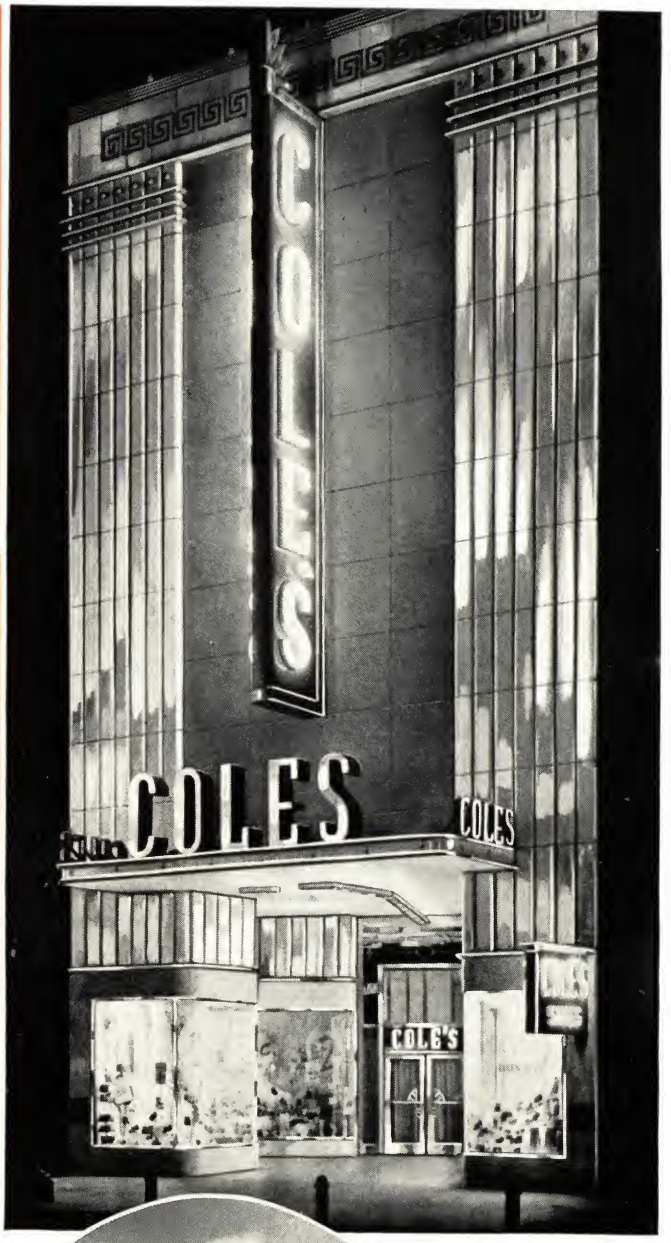


No. 7019 Head Jamb Cover, adjustable type, and No. 710 Sash.

BRASCO MANUFACTURING CO.

# MODERN STORE FRONTS FOR EVERY SERVICE—











**Brasco**
**MODERN STORE FRONTS**

# OF EVERY SIZE—IN EVERY METAL—AT EVERY PRICE









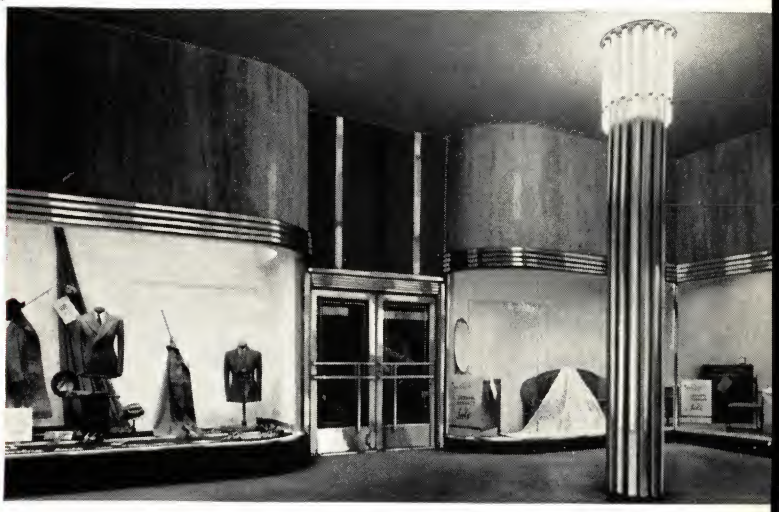




The illustrations shown on these pages are practical proof of the individuality and distinction afforded by brilliant Brasco Construction.

Note particularly the outstanding use of second floor display windows in the photographs at upper right and center left, and the unusual attractiveness of the broad Brasco-fabricated metal coverings and marquee.

The *Coles* front provides striking day and night attraction value, the close-up emphasizing the sales appeal of the display entrance. The lower right hand photograph illustrates the surprising depth and generous proportions of the arcade entrance to the *Liebman Store* shown immediately above.



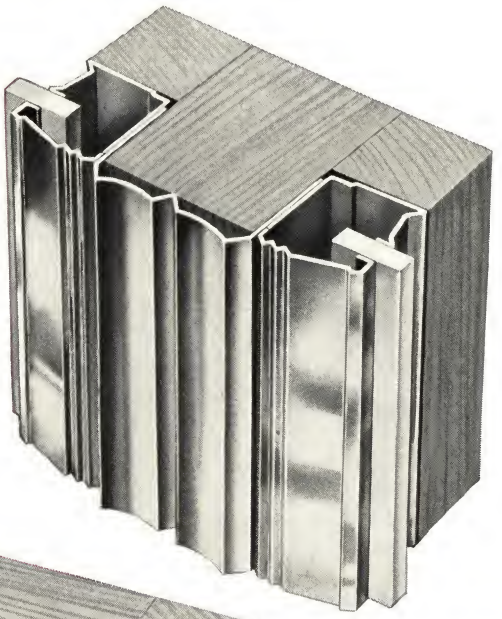
BRASCO MANUFACTURING CO.

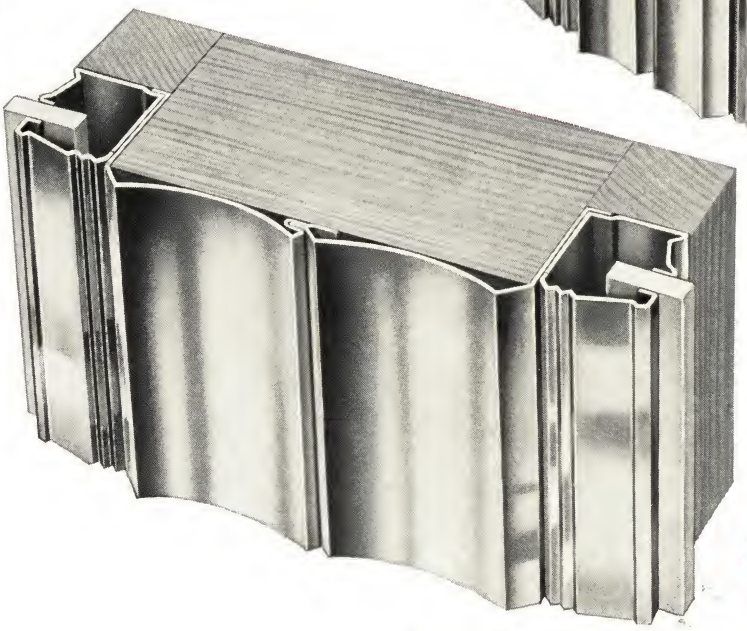
# BACKED BY THE EXPERIENCE OF OVER 30 YEARS



Hooded type Awning Transom Bar No. 721, 12" high. Recessed boxes also available. Note the unusually attractive facia.

New 1⅝" Mullion Cover No. 747 shown in conjunction with No. 710 Sash. Designed to harmonize with fluted coverings shown on pages 4 and 5.





Standard 4⅜" Mullion Cover made up of No. 745A and No. 748, designed to harmonize with fluted sections shown on pages 4 and 5. This can be increased in width by the use of 2" fluted Filler member No. 746, providing outstanding beauty for wide coverings.

DETAILS AND SAMPLES:

Write for complete Portfolio of Details (15 sheets) showing both Rolled and Extruded Constructions. Life-sized samples also available.

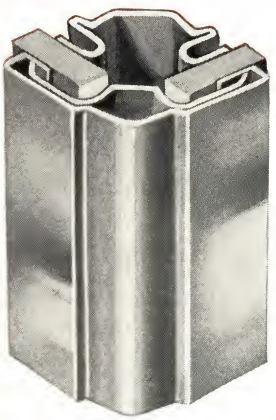
BRASCO BARS

Continuous steel reinforcement inside the face member is an outstanding feature of all Brasco Bars, AND HAS BEEN FOR 30 YEARS, providing extra strength and glass safety.

In addition to this reinforcement, two sizes of detachable back reinforcements are also available.

No. 440 is shown without back reinforcement; No. 451 with back reinforcement No. S-445; No. 463 with back reinforcement No. 447.

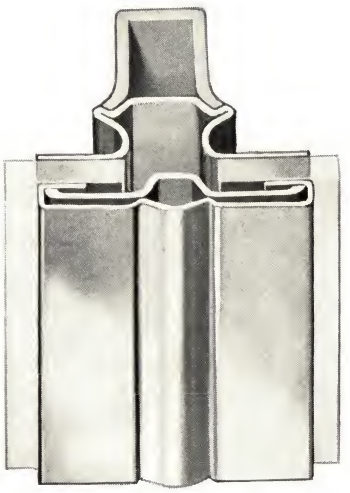
Anchors are available and recommended for all bars.



No. 440 Corner Bar



No. 463 Reverse Bar



No. 451 Division Bar

# BRASCO MODERN STORE FRONTS MEAN BUSINESS!




Above: The Hanan Store. What a difference! A miracle of modernization from the old-fashioned front to the new and modern, brilliant, sales-compelling Brasco Store Front.







Brasco
MODERN
STORE FRONTS





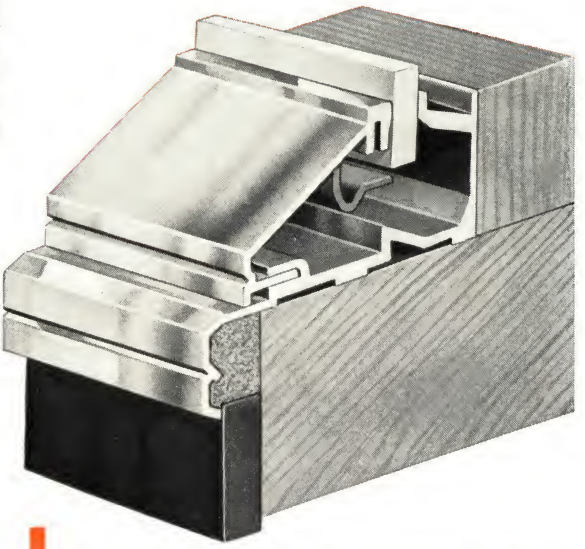

# MODERN CLEAN-CUT DESIGN

## BRASCO EXTRUDED CONSTRUCTION

In addition to the long established lines of Solid Rolled Construction, Brasco has offered complete stock Extruded systems for over ten years. On these two pages are shown only a few illustrations of typical units of the new, beautiful Brasco Extruded lines. *(Patents allowed and pending.)*



Extruded Awning Bar No. 2041, hooded type, 12" high, with cast end cap. For other types, including recessed awning boxes, see detail sheets of our complete Extruded Construction.



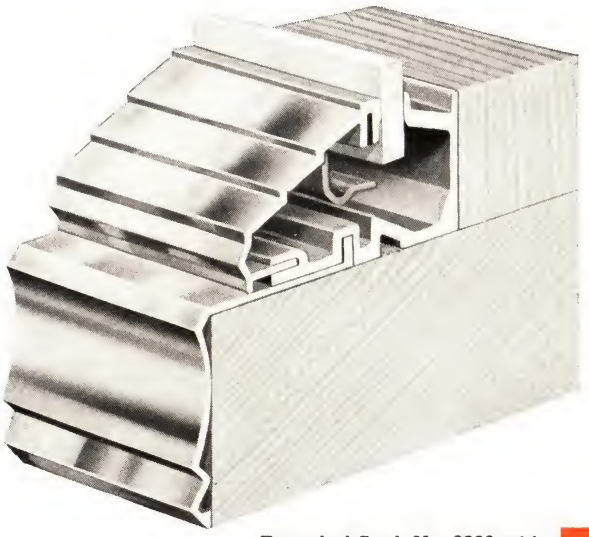
Extruded Sash and Sill Combination No. 2004. Note that complete covering is provided in this member of only two pieces.



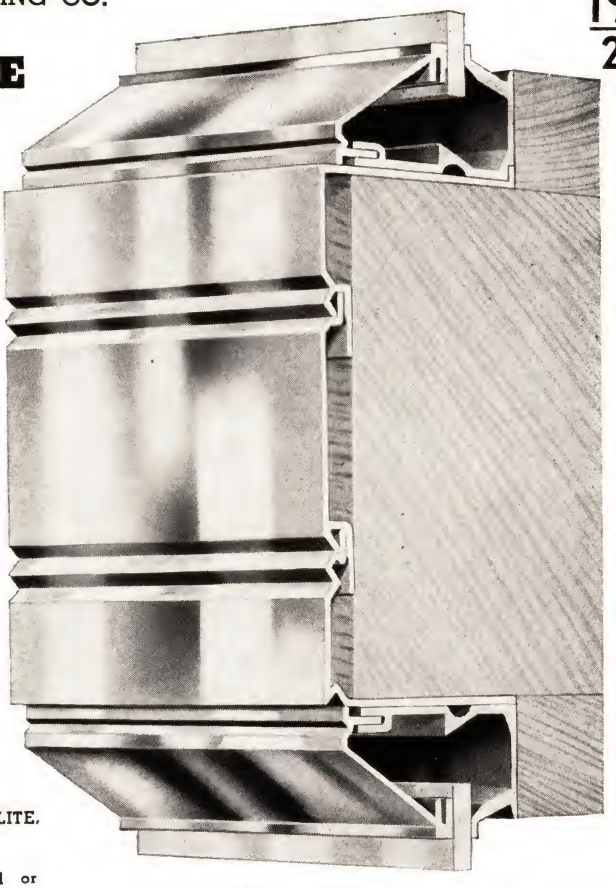
Typical assembly of Extruded Sash, Sill, Jamb and Corner Bar. Shown are Sash and Sill Combination No. 2005 (only two pieces to the complete unit) and Corner Bar No. 2054. Note the interesting modern lines and pleasing proportions.

Brasco MODERN STORE FRONTS

# SOUND STRUCTURAL VALUE



Extruded Sash No. 2002 with Sill Cover No. 310. This Sill for standard 1⅝" covering is one of many similar members of the complete line.



Extruded Adjustable Transom Bar Section shown with Sash No. 2000. Intermediate Filler members may be added to build up unusually attractive covers of varying widths.

A complete line of similar covers for vertical use including pilaster facings, are also provided in stock members.

**EXTRUDED ALUMINUM** (in ALUMILITE, Polished or Satin Finishes) AND

**EXTRUDED BRONZE** (in Any Standard or Special Finish)

Whether in bronze or aluminum, a complete line of unified Extruded members is available from stock. Three types of Sash are furnished, used with a wide assortment of covering members of all descriptions and for every purpose.

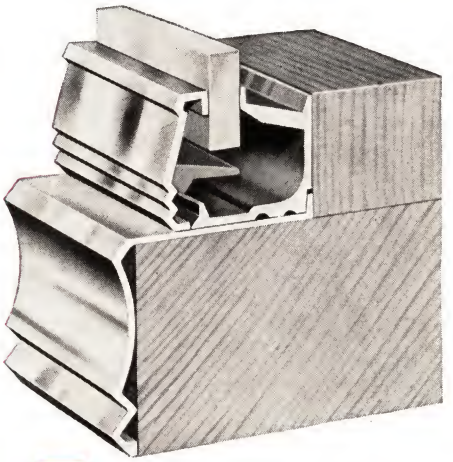
The same sound engineering which has so long characterized Brasco Rolled Construction is incorporated in the Brasco Extruded lines.

The Extruded Constructions and Solid Rolled Lines are so designed as to be largely interchangeable.









Extruded Sash No. 300 with Sill Cover No. 310. This combination illustrates the flexibility of the Brasco line, utilizing the smaller concealed screw, flush-type Sash No. 300, instead of the larger broad-faced sash, as illustrated above.

7 SHEETS OF COMPLETE EXTRUDED DETAILS

Write for complete Portfolio of Details (15 sheets) showing both Rolled and Extruded Constructions. Life-sized samples also available.

# BRASCO

★ A BRILLIANT NAME IN STORE FRONTS

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# CAPITOL BRONZE CORPORATION

## A Complete Line of Store Front Construction and Accessories in All Metals and Finishes

525 Union Avenue, BROOKLYN, N. Y.

Please Address All Communications to P.O. Box 105, Lefferts Station, Brooklyn, N. Y.

Stock Carried and Distributed by Selected Glass Contractors Throughout the Country

## CAPITOL STORE FRONT CONSTRUCTION




This organization has been pioneering and improving store front construction since 1905.

The result is a product of distinction in design and quality of which we are justly proud, and which merits the consideration of discriminating architects when writing store front specification.




**Recent Capitol Installation**

We show herewith some recent Capitol installations —For full particulars, write for full size details and catalog of Capitol construction.



World Wide Photos

**Airview of Williamsburg Housing Project in Brooklyn, N. Y.**

*The Largest Building Project in the Country*

The Capitol store front construction and non-pressure sash was approved and installed in the Williamsburg Housing Project consisting of 18 buildings and 60 stores.

After thorough investigation by Government experts Capitol construction was approved and installed in this 13½ million dollar government housing project.

**Recent Capitol Installation**

**Featuring**

Patented

**NON-PRESSURE SASH**

No Pressure on Glass

**SOLID STAINLESS STEEL**

At Same Price as Laminated and Alumilite



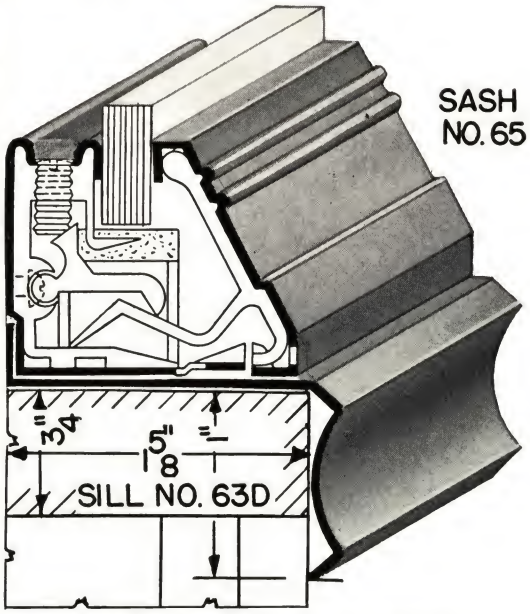
**Typical Corner Store Front, Williamsburg Housing Project**




**Typical Capitol Store Front Construction**

## CAPITOL ROLLED CONSTRUCTION

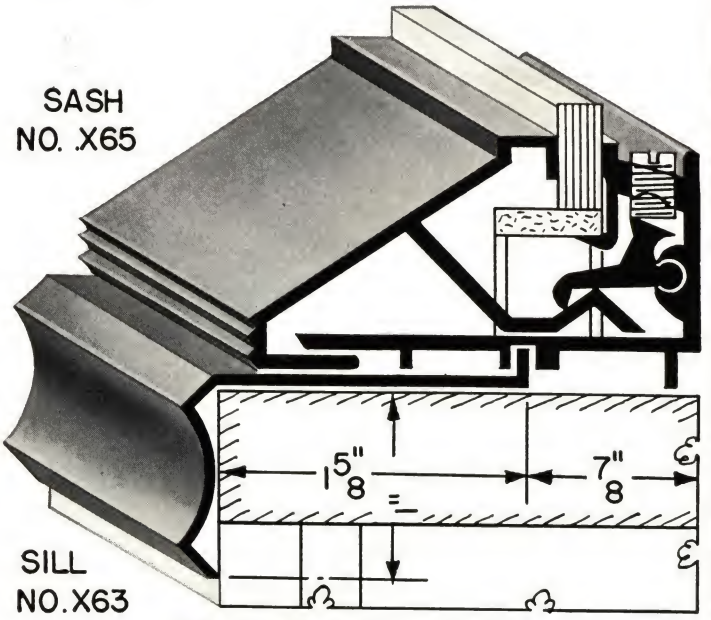
Available in aluminum, alumilite, bronze, copper, stainless steel.



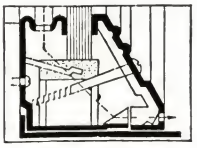

**Sash No. 65 Non-Pressure Sash (Patented)**
(Full Size Section)

## CAPITOL EXTRUDED CONSTRUCTION

Available in aluminum, alumilite, bronze, nickel, silver.




**Sash No. X65 Extruded Deep Reveal**
Non-Pressure Sash (Patented) (Full Size Section)



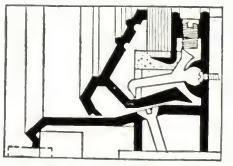
**Sash No. 60**
Face screw sash
(½ size section)

## EXTRUDED METAL

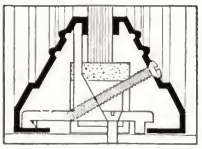
The "Capitol" extruded construction is of special interest to architects because of the patented "non-pressure" feature *(described below)* which is incorporated therein.

The non-pressure feature is *most* essential in extruded construction which is a heavy solid metal.

Capitol extruded metal can be had in *bronze, aluminum and alumilite.*



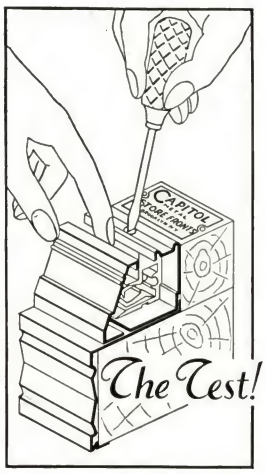
**Sash No. 65C**
Extruded face member
Drawn back member
(Patented)
(½ size section)



**Sash No. 60A**
Double faced sash
(½ size section)

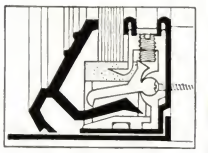
## NON-PRESSURE SAFETY SASH

In contrast to the concealed screw sash of other store front construction, where the face member is "pulled" *to the glass,* (with the action of the screw), resulting in *pressure* on the glass, our *Non-Pressure Safety Sash* (which is also a concealed screw sash, with uniform and positive fastening features), *avoids* such pressure for the very simple reason that our patented fastening arrangement *holds the face member in position and does not pull same to the glass.* Thus the danger of glass cracking during installation and during the life of the show window, due to *pressure* on the part of the store front construction, *is entirely eliminated.*

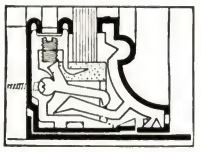



This principle of *non-pressure* is highly endorsed by insurance companies and glass-setters and merits special consideration of architects when writing specifications for store fronts.

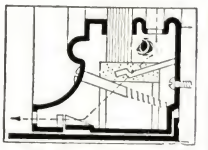
For convincing practical demonstration of this feature, merely insert your finger in the sash (where glass is supposed to be), and you will note the *pressure* on your finger (the glass) is *avoided* by our *non-pressure* safety sash, for which you pay *no extra premium.*



**Sash No. 65A**
Extruded face member
Drawn back member
(Patented)
(½ size section)



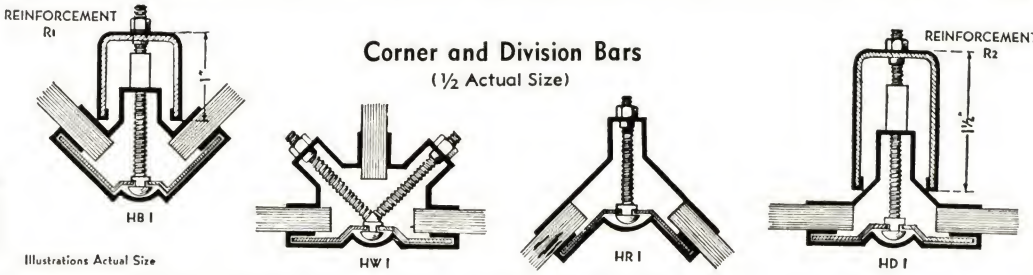
**Sash No. 55**
Non-Pressure Sash
(Patented)
(½ size section)



**Sash No. 50**
Face screw sash
(½ size section)

## Corner and Division Bars

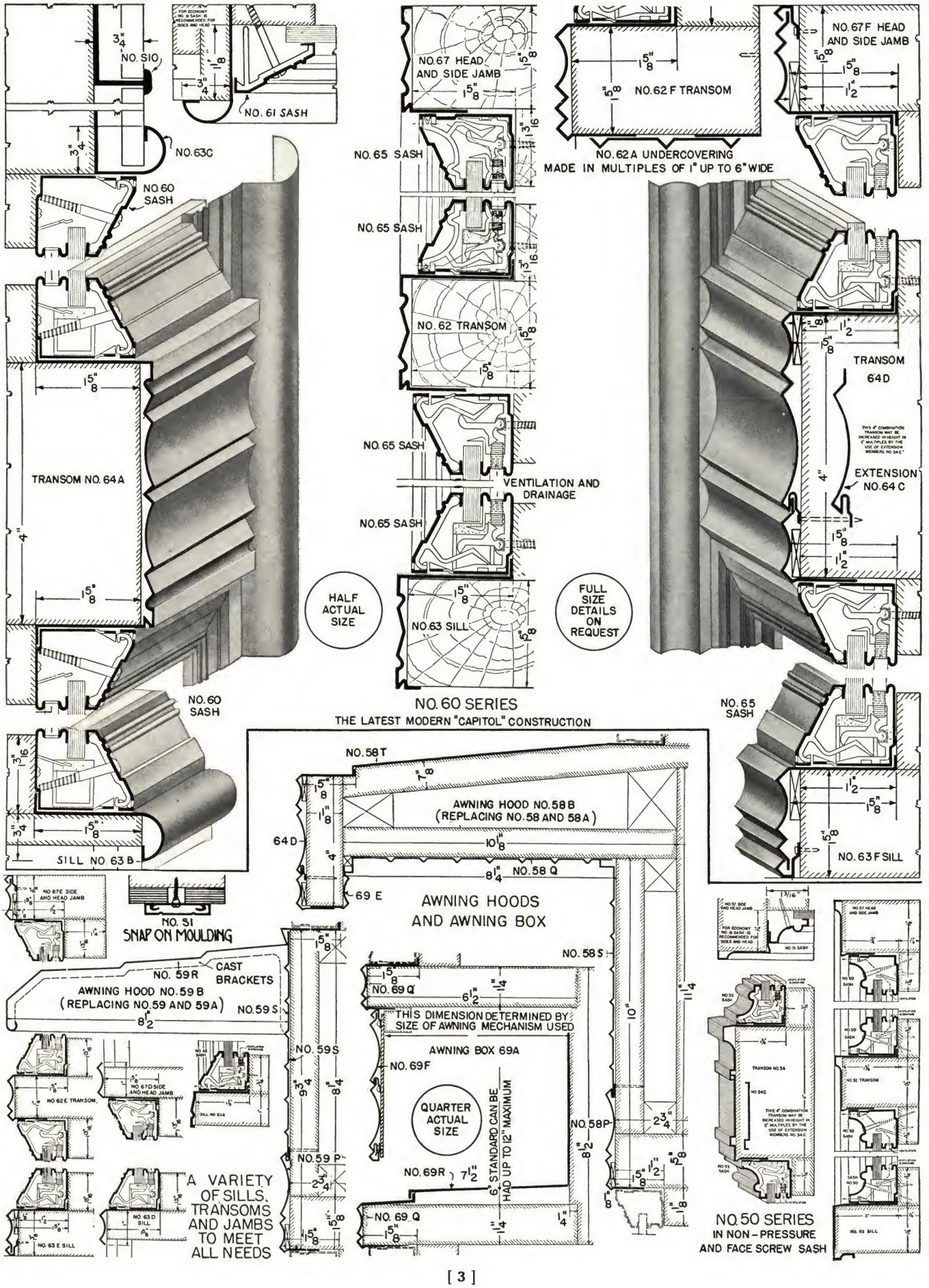
(½ Actual Size)




Illustrations Actual Size

Reinforcement can be added to any stock bar by using our special threaded lug.

Corner and Division Bars can be had with or without reinforcement.


NO. S10
NO. 61 SASH
NO. 63C
NO. 60 SASH
TRANSOM NO. 64A
NO. 60 SASH
SILL NO. 63 B
NO. 67 HEAD AND SIDE JAMB
NO. 65 SASH
NO. 65 SASH
NO. 62 TRANSOM
NO. 65 SASH
VENTILATION AND DRAINAGE
NO. 65 SASH
NO. 63 SILL
NO. 62 F TRANSOM
NO. 62A UNDERCOVERING MADE IN MULTIPLES OF 1" UP TO 6" WIDE
NO. 67F HEAD AND SIDE JAMB
TRANSOM 64D
EXTENSION NO. 64 C
NO. 65 SASH
NO. 63 F SILL
HALF ACTUAL SIZE
FULL SIZE DETAILS ON REQUEST
NO. 60 SERIES
THE LATEST MODERN "CAPITOL" CONSTRUCTION
NO. 58T
AWNING HOOD NO. 58 B (REPLACING NO. 58 AND 58A)
64D
69 E
NO. 58 Q
AWNING HOODS AND AWNING BOX
NO. 58 S
NO. 69 Q
THIS DIMENSION DETERMINED BY SIZE OF AWNING MECHANISM USED
AWNING BOX 69A
NO. 69F
QUARTER ACTUAL SIZE
NO. 69R
6" STANDARD CAN BE HAD UP TO 12" MAXIMUM
NO. 58P
NO. 69 Q
NO. S1 SNAP ON MOULDING
NO. 59R CAST BRACKETS
AWNING HOOD NO. 59 B (REPLACING NO. 59 AND 59A)
NO. 59S
NO. 59S
NO. 59 P
A VARIETY OF SILLS, TRANSOMS AND JAMBS TO MEET ALL NEEDS
NO. 50 SERIES
IN NON-PRESSURE AND FACE SCREW SASH

MEMORANDA




# Desco

## STORE FRONT CONSTRUCTION

DETROIT SHOW CASE CO.

# Desco FEATURES

WHEN you study the superior qualities of DESCO, you'll welcome this modern Store Front Construction. You'll find it an aristocrat, decidedly, in design and construction . . . a commoner in initial expense . . . and a miser in upkeep cost. Built to stay in style and to stay in service. Compare DESCO and DESCO features!

## METALS and FINISHES

ALUMILITE • For a white metal finish we recommend Alumilite. This modern finish has a soft, pleasing tone and is whiter than the standard aluminum alloys. It is permanent . . . and has a richer, more refined appearance than many of the bright, shiny metals. Also the Alumiliting process hardens, as well as whitens the metal, so that it cannot scratch easily. And it does not show fingerprints—a feature practically unknown in other metals and finishes. With all of these advantages it is comparatively inexpensive.

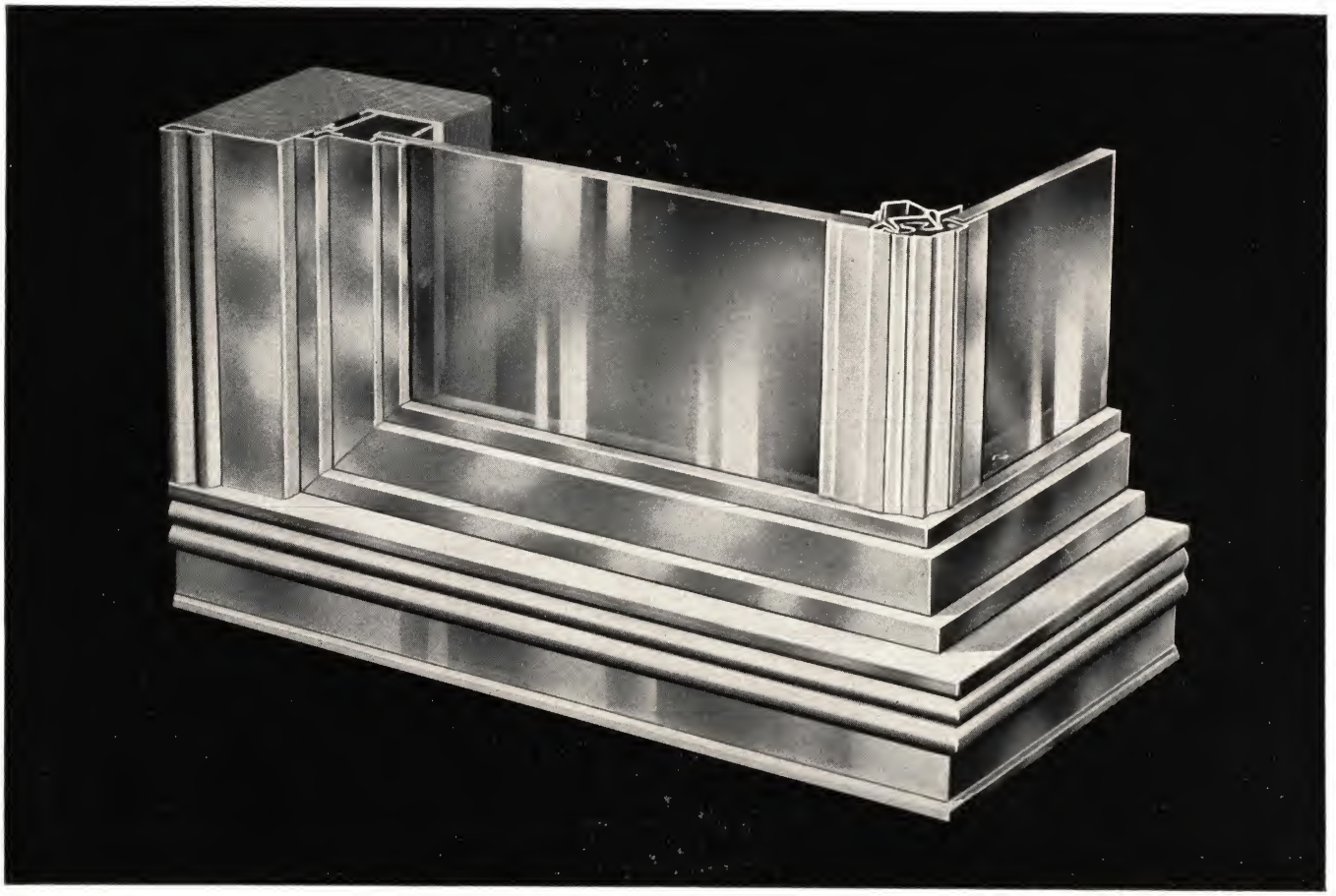
POLISHED AND SATIN FINISH ALUMINUM ALLOY • These are standard finishes for which there is no extra charge. The polished finish is somewhat more popular for the reason that it is easier to keep clean. Satin finishes look attractive, especially when new, but the tendency to accumulate dirt—emphasized by the white background—calls for more frequent cleaning. In either case, the metal will not rust.

BRONZE METAL FINISHES • Bronze metal is furnished in polished or satin finish, without additional charge. Light, medium or dark statuary finishes, at nominal extra cost.

COPPER • Same as for bronze, except that copper cannot be furnished in extruded shapes . . . rolled only.

## DESIGN ASSISTANCE

We will be glad to co-operate with architects in designing any type of store front. Our years of experience in planning store fronts of various kinds in all parts of the country well enable our field men to give reliable consulting service. Full size details showing various DESCO combinations sent to architects on request.



# . . . and TYPES OF *Desco* SETTINGS

## NO. 616 EXTRUDED METAL SASH BAR . . . 600 Line

This sash, while truly modernistic, is also neat and graceful in appearance. It is well balanced. Its lines are sharp, clearly defined . . . harmonize with any type of architecture. Can be used either as a self-supporting sash or with wood backing.

### CONCEALED FASTENINGS . . . Exclusive Advantages found only in DESCO

DESCO Concealed Fastenings are simple, unique, fool-proof . . . eliminate previous faults. Only two essential members—and these are heavy extruded metal, not easily bent or distorted. No light-gauge stamped metals are used. The extruded cam, concealed inside the gutter, is raised and lowered by means of a flange screw. Action is positive in both directions, cannot become "frozen." The cam engages an extruded draw-bar on the face piece, so that merely turning the screw tightens or releases the outside member. This is the whole operation . . . economical, efficient.

NO LOST SCREWS. The screws are so arranged that they cannot be removed—thus facilitating installation and completion of job.

GLASS CANNOT BECOME LOCKED IN SETTING . . . caused by settlement or shifting of glass from vibration. The moving parts are so placed that nothing can prevent their functioning. This avoids waste of time in making replacements.

### TIGHT JOINTS

DESCO insures tight joints between sash and sill and jamb . . . an important feature. The tighter the screw is drawn, the tighter the face member hugs down to the sill or jamb. Where granite, glass or marble base is used, this tight joint is highly essential . . . as it prevents water seeping in at this point.

### TAKES GLASS ⅜ TO ⅛-INCH THICK

And regardless of the thickness of glass, the face member remains constant, in a vertical position . . . does not lean over . . . insures accurate mitering and a true job.

### SOFT GRIP ON GLASS

Grip is soft and velvety. The strong, substantial gutter affords an even distribution of pressure at all points. This avoids the common fault of pressure in front of the screw — where breaks most frequently occur. Resiliency in front member and adjusting brackets eases the shock. This is the newest, most logical method of insuring a safe setting for glass . . . there is no fixed point where the glass is most apt to snap.

## NO. 116 SASH . . . with Extruded Face and Rolled Gutter . . . 1100 Line

No. 116 differs from No. 616 in that it has an extruded metal face . . . and a rolled gutter. Its working parts are the same. Has the same principle of cam and draw-bar mechanism . . . which always works, whether on installments or replacements.
This sash is designed for those who prefer the resilient gutter . . . and a more reasonable price.

## NO. 126 SASH BAR . . . 1200 Line

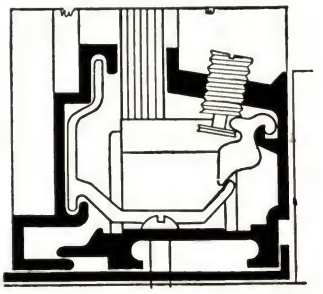
This is the standard outside-set type . . . with extruded face and rolled gutter. Screws through from the face into the wood. Although sash bars with concealed fastenings are more popular today, this type of setting—the outside-set—has been in use for many years and has proved its worth.
No. 126 is more reasonable than either No. 116 or No. 616. In aluminum alloy, the price is the same whether rolled or extruded face is used. In bronze, the extruded face is slightly higher.

## NO. 26 SASH BAR . . . 200 Line

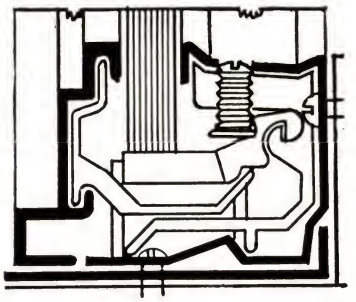
Similar in all respects to No. 126 . . . except that both face piece and gutter are rolled metal. The lines, naturally, are not as sharp. The only essential difference is the face piece . . . it is .040 metal, as against .050 metal in the extruded.
This substantial setting has been used for years with complete satisfaction by most of the leading chain stores. It is recommended where economy of cost is a ruling factor.

## NO. 81 SASH BAR . . . 800 Line

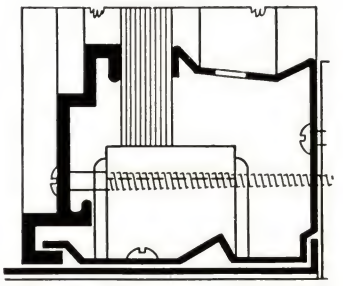
This sash is especially recommended for those who prefer curved and moulded effects. With the exception of the profile of the face member, it is identical with No. 26 . . . with rolled face and rolled gutter. It is outside-setting, of course.



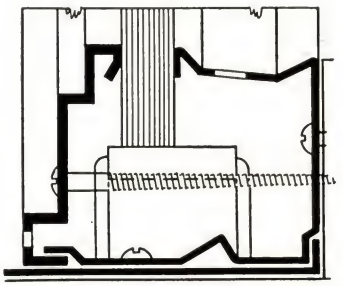
DESCO Setting . . . No. 616
U. S. Pat. No. 2,087,515



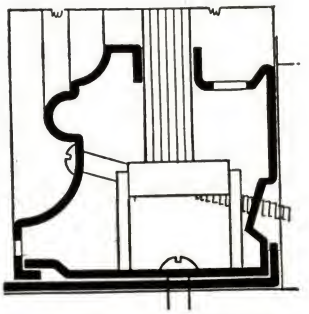
DESCO Setting . . . No. 116
U. S. Pat. No. 2,087,516



DESCO Setting . . . No. 126

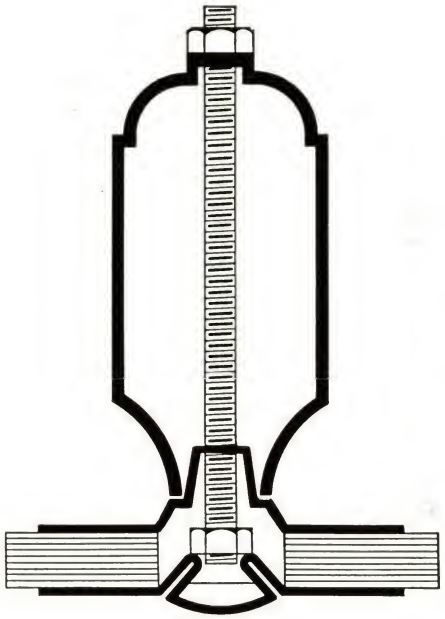


DESCO Setting . . . No. 26

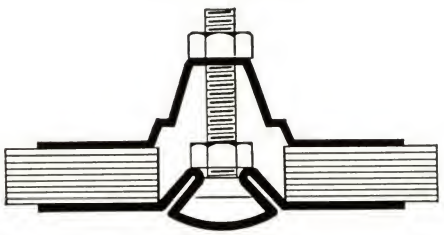


DESCO Setting . . . No. 81

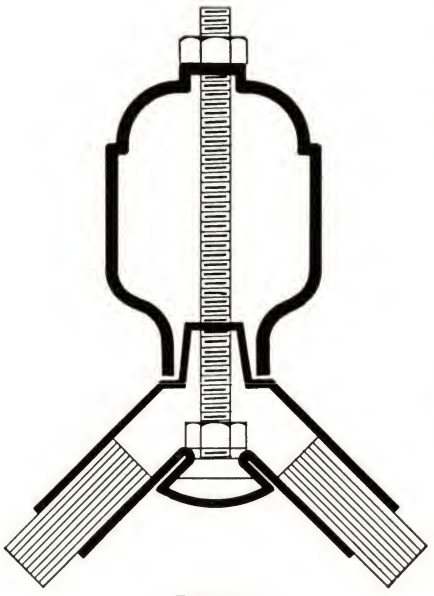
# FULL SIZE SECTIONS of *Desco* BARS



DESCO
Corner Bar,
No. 183XXH



DESCO
Corner Bar,
No. 183



DESCO
Reverse Corner Bar
No. 184XH

## FIXED ANGLE CORNER BARS . . . Rolled

DESCO Fixed Angle Corner bars, both regular and reverse . . . likewise the Dividing Bars . . . offer exceptional strength and durability with the least possible glass displacement. And, in addition, DESCO Bars are unusually trim and modern in their appearance . . .

The face member is moulded from one continuous piece of metal, rather than built up of two or more pieces. This eliminates any possibility of its working loose. There is no chance of open seams—to weaken the bar and mar its appearance. Note the exceptionally deep rabbets—full ⅝-inch. Note, too, the shoulder which prevents the glass working up against the screw and causing breakage.

The inside member, or spring back, is so constructed that the fastenings may be tightened firmly . . . without fear of breaking the glass . . . and with full assurance of affording ample resiliency. For glass of various heights and sizes, we recommend, the H, XH and XXH Steel Reinforcing Channels . . . finished to match the metal on the job.

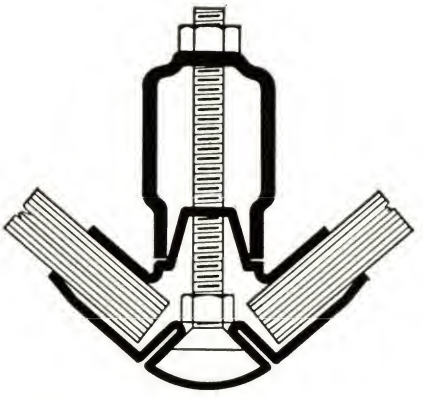
## UNIVERSAL CORNER BARS . . . Extruded

The DESCO Universal Corner Bar—also a Dividing Bar—operates like a hinge. It has a range from 85 to 180 degrees . . . and is adjustable to any angle within that range. It is also made for use as a Reverse Angle Bar.

The bar is built of heavy extruded metal—except the inside stop, or spring back, which is rolled. The leaves of the hinge are held firmly in place by small grooves which mesh into each other as the lock-nut is tightened.

To change the degree, just loosen the lock-nut, swing the leaves to the desired splay, tighten lock-nut, and the bar is ready for use. The advantage over fixed angle bars . . . made 90, 100, 110 and other standard degrees . . . is readily seen. Not only will the DESCO Universal fit any angle, but it fits perfectly. It gives a uniform, continuous bearing against the glass for the full depth of the rabbet. This has the effect of steadying the glass and preventing excessive vibration.

With the DESCO Universal, it is impossible to send the wrong angle to the job. No delays, no lost time. The DESCO Universal always fits—regardless of angle. And—another feature—it makes an equally fine 180 degree dividing bar!



DESCO
Corner Bar,
No. 182H



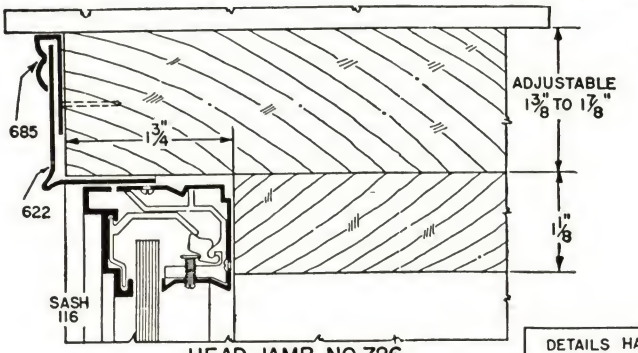
DESCO
Universal Corner Bar,
No. 682

Desco

# DESCO 1100 LINE STORE FRONT CONSTRUCTION

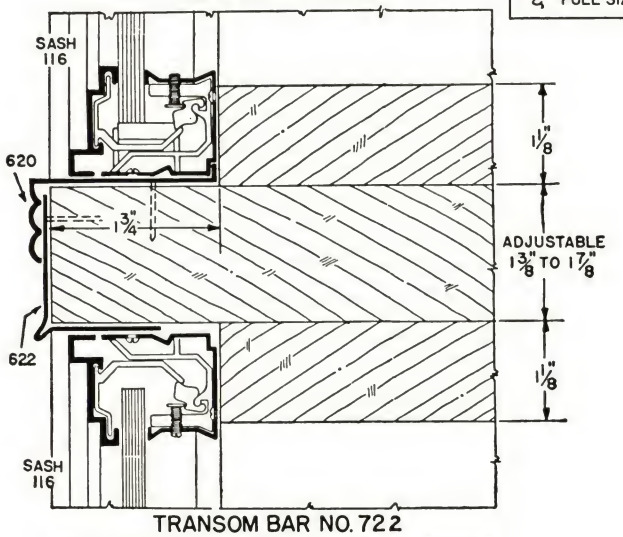
EXTRUDED AND ROLLED SECTIONS IN ALUMINUM AND BRONZE

PLATE I

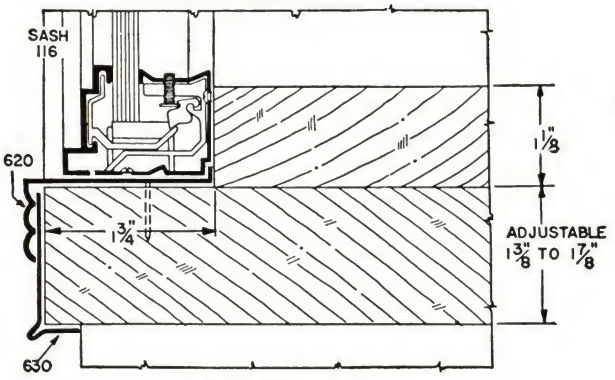



HEAD JAMB NO. 726

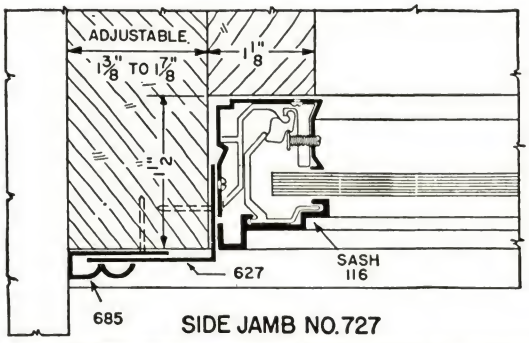
DETAILS HALF & FULL SIZE



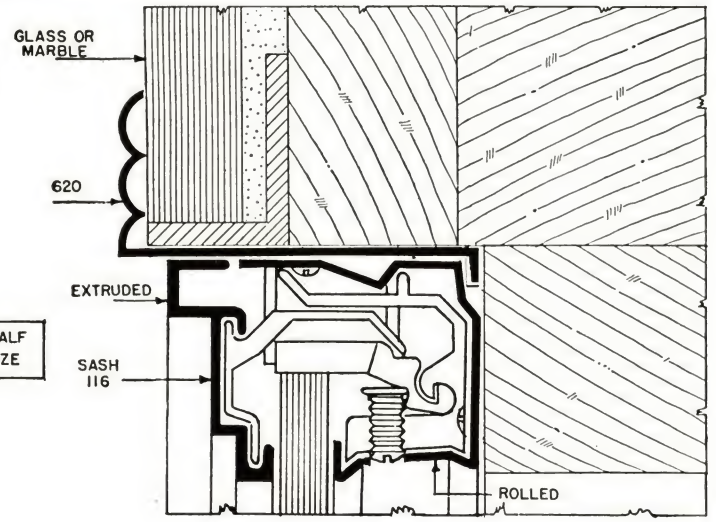

TRANSOM BAR NO. 722

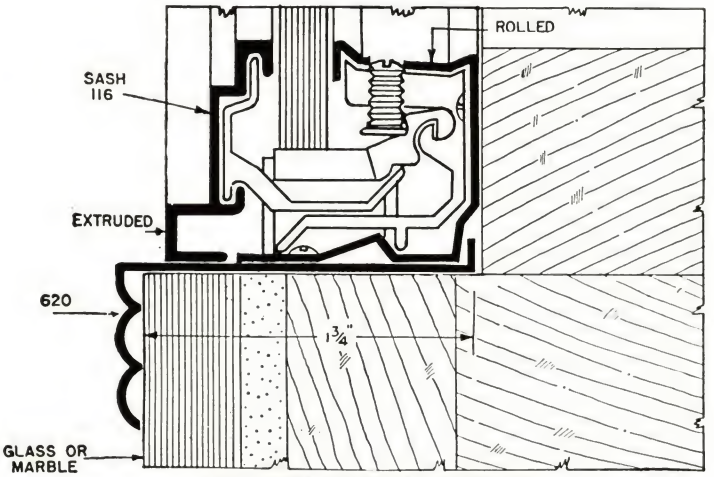



SILL NO. 720



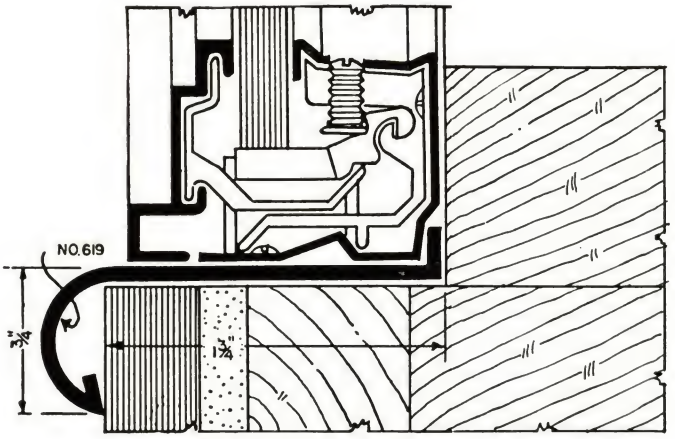

SIDE JAMB NO. 727




FULL SIZE VERTICAL SECTION THROUGH HEAD AND SILL

NO. 116 SASH — NO. 620 COVERING STRUCTURAL GLASS OR MARBLE ALL AROUND




BULL NOSE SILL COVERS

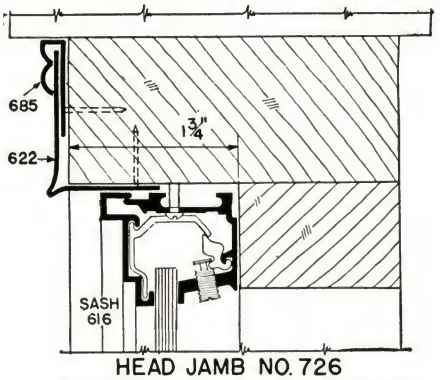
NO. 619 - EXTRUDED - .050" THICKNESS
NO. 119 - ROLLED - .040" THICKNESS

Desco

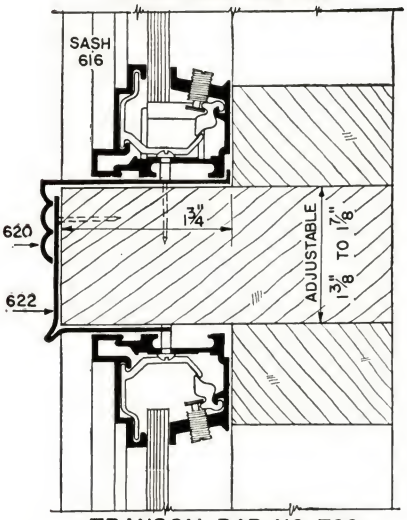
# DESCO 600 LINE STORE FRONT CONSTRUCTION

EXTRUDED AND ROLLED SECTIONS IN ALUMINUM AND BRONZE

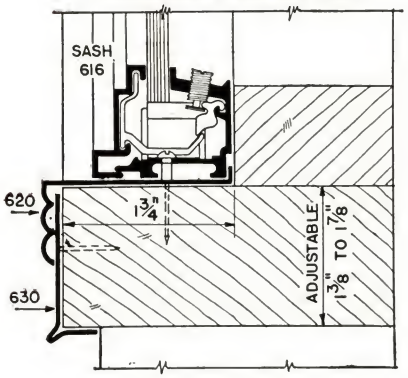
PLATE 2



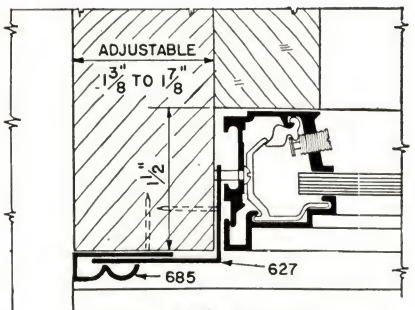

HEAD JAMB NO. 726



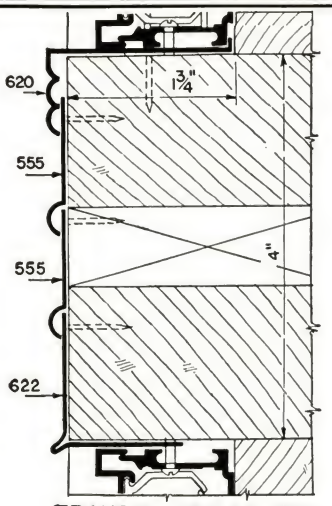

TRANSOM BAR NO. 722



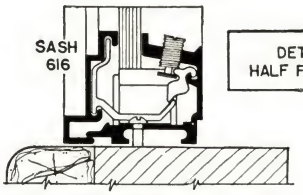

SILL NO. 720




SIDE JAMB NO. 727

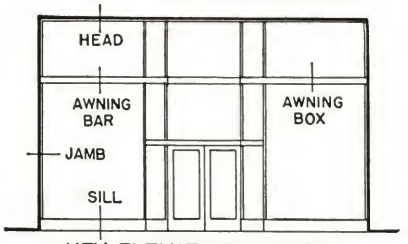



TRANSOM BAR NO. 724

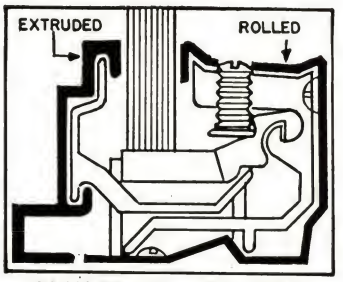



DETAILS HALF FULL SIZE

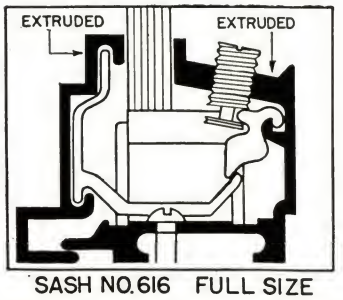
SELF SUPPORTING SASH




KEY ELEVATION SHOWING WHERE SECTIONS ARE TAKEN

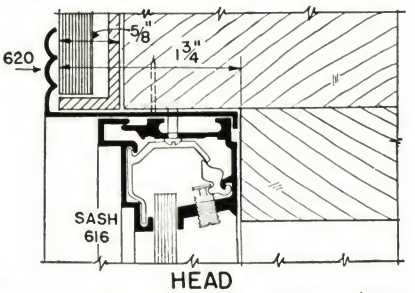



SASH NO. 116 FULL SIZE

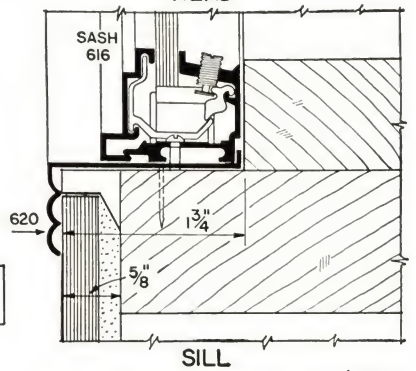



SASH NO. 616 FULL SIZE

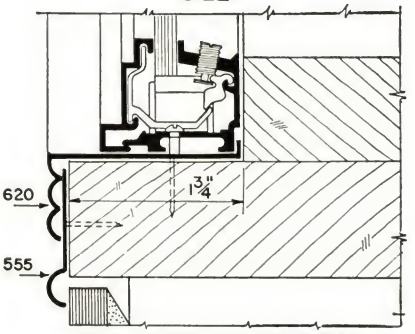
EITHER OF THE ABOVE SASH MAY BE USED IN ANY OF THE CONDITIONS SHOWN BY DETAILS ON THIS DRAWING




HEAD




SILL




SILL - WITH FILLER STRIP

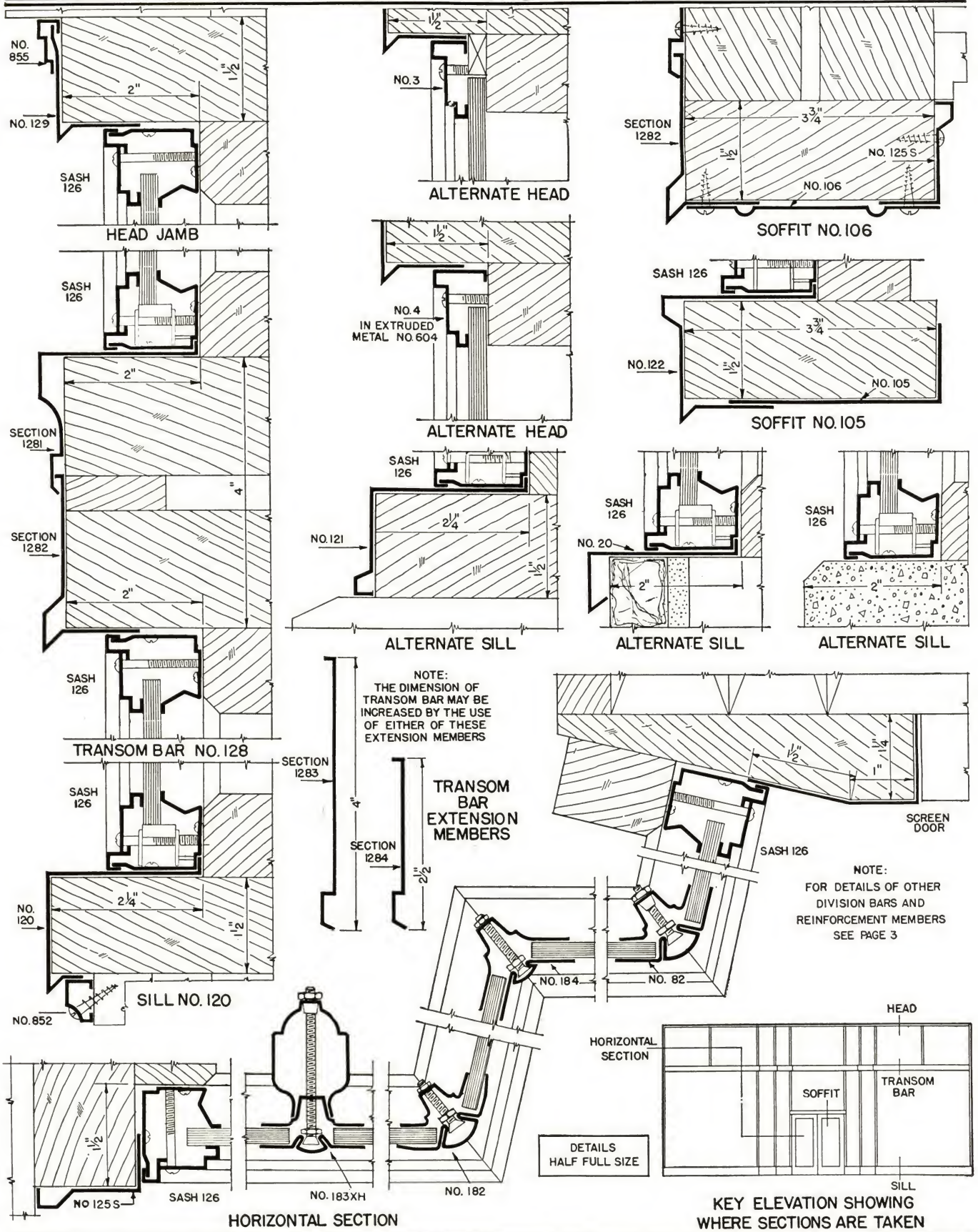



New Desco Polished Bronze Store Front for "Peggy Ann" on Grand River Ave., Detroit.

# Desco 1200 LINE STORE FRONT CONSTRUCTION

SOLID BRONZE, SOLID COPPER OR ALUMINUM — ANY FINISH DESIRED

PLATE 3

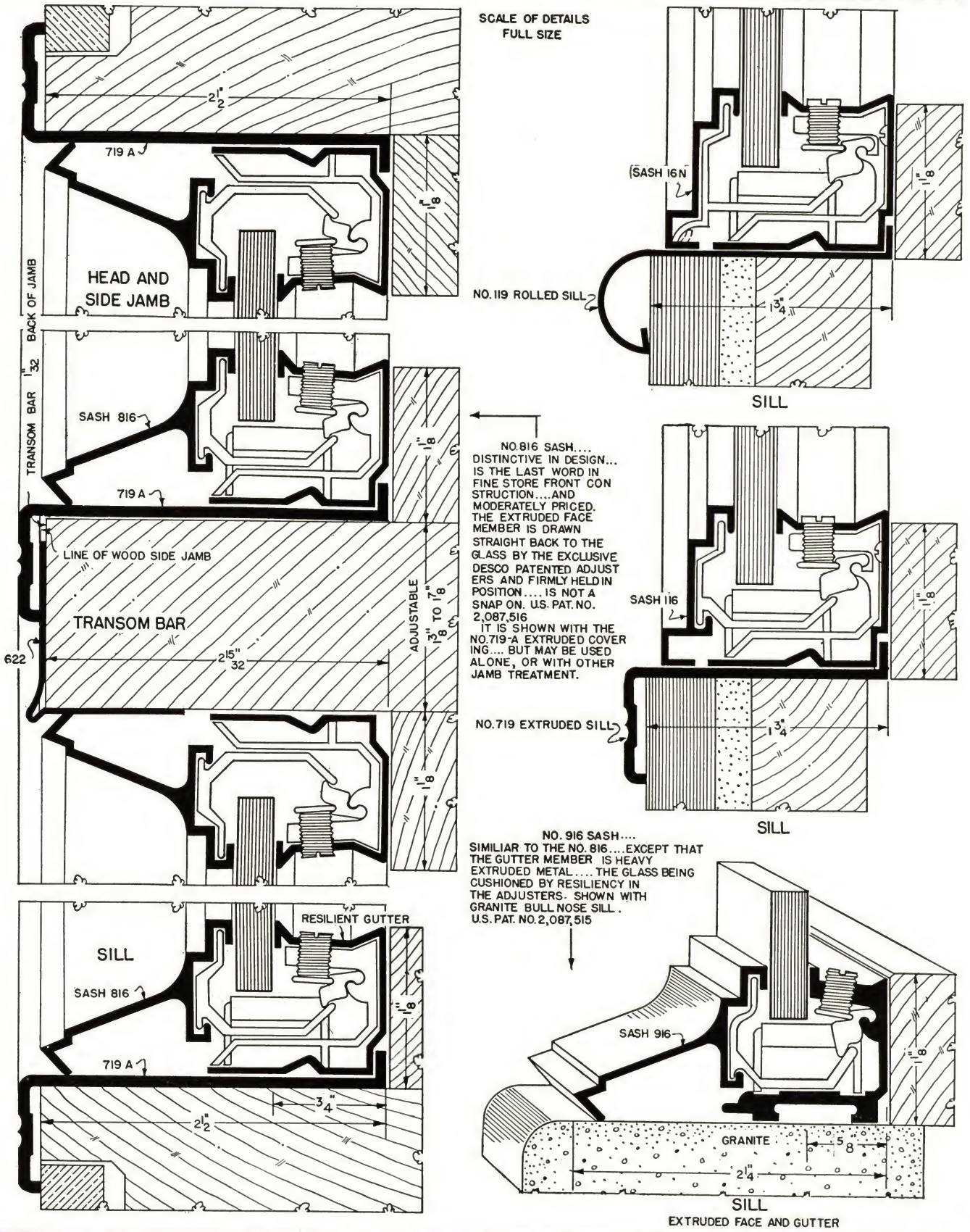


Desco

# DESCO STORE FRONT CONSTRUCTION

EXTRUDED AND ROLLED SECTIONS IN ALUMINUM AND BRONZE

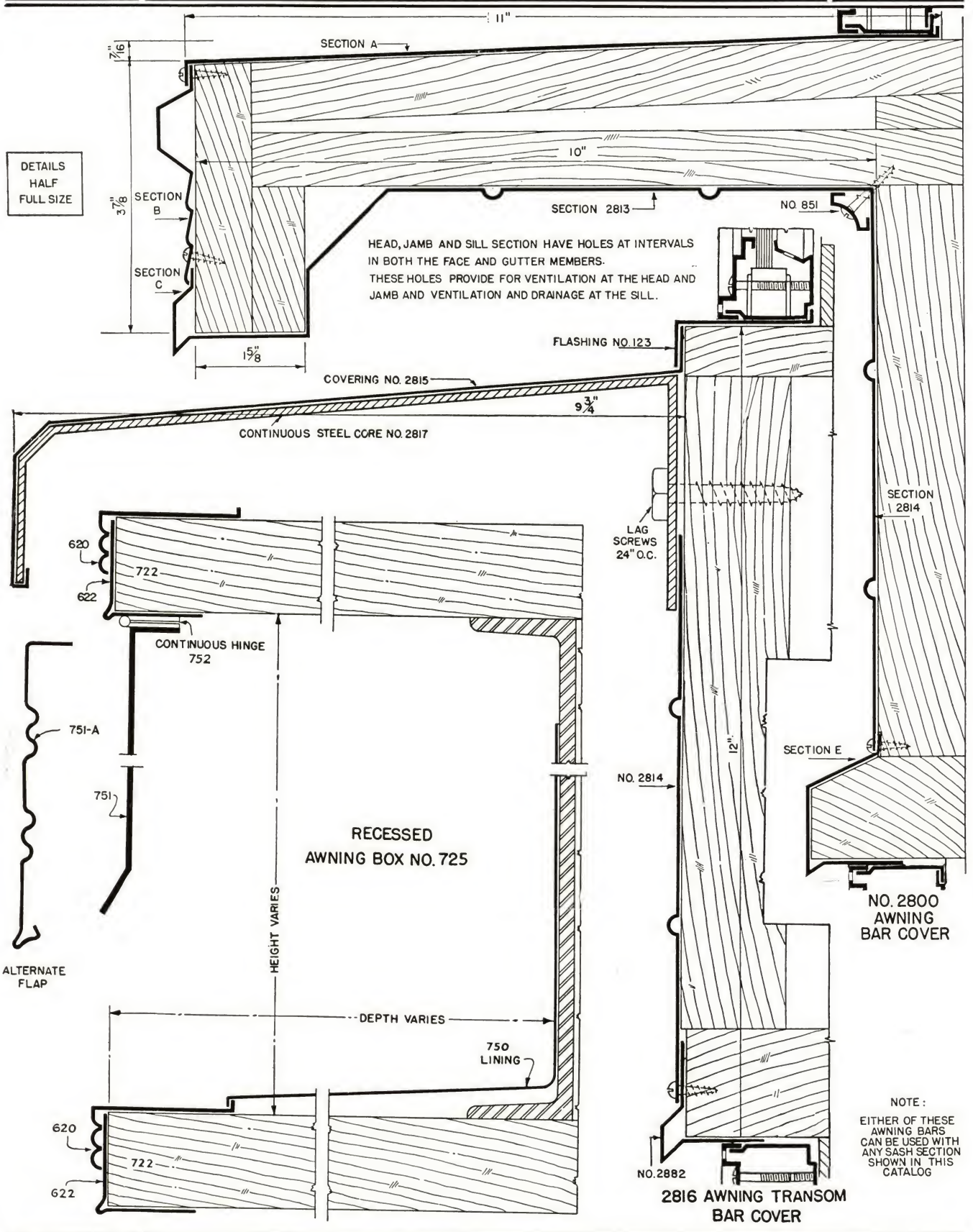
PLATE 4



# Desco DESCO 200 LINE STORE FRONT CONSTRUCTION & AWNING BARS

SOLID BRONZE, SOLID COPPER, OR ALUMINUM ALLOY  ANY FINISH DESIRED

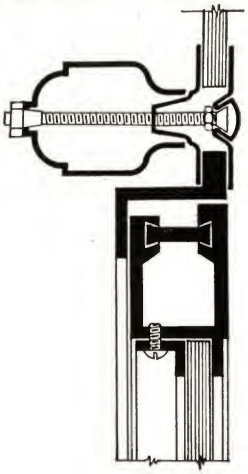
PLATE 5

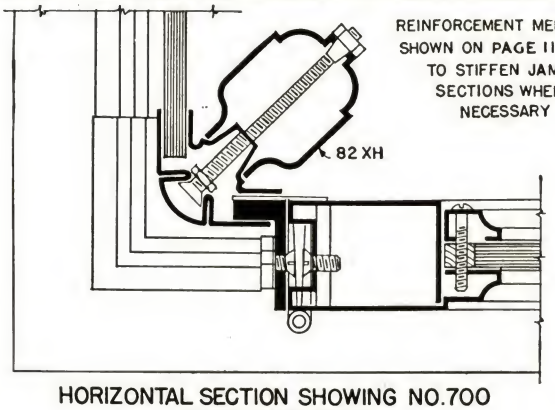


Desco

# DESCO SHOW CASE DOORS IN EXTRUDED METAL

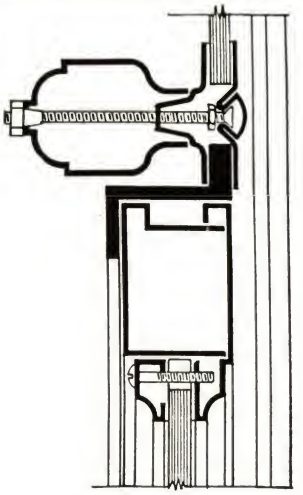
PLATE 6

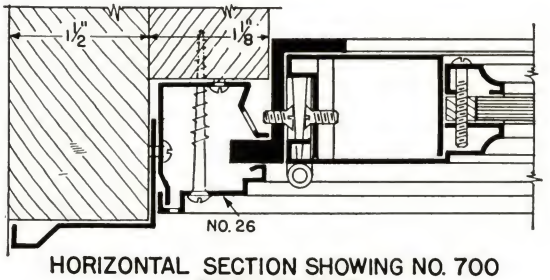




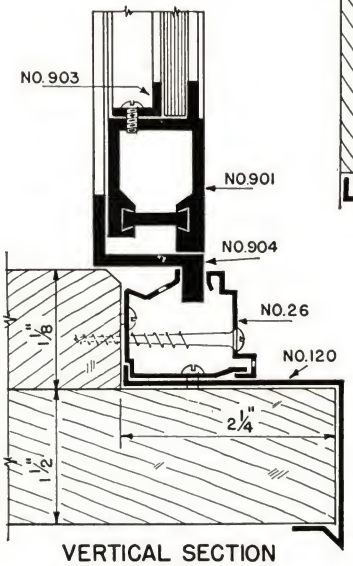

REINFORCEMENT MEMBERS SHOWN ON PAGE 11 USED TO STIFFEN JAMB SECTIONS WHEN NECESSARY

HORIZONTAL SECTION SHOWING NO.700 DOOR AT CORNER

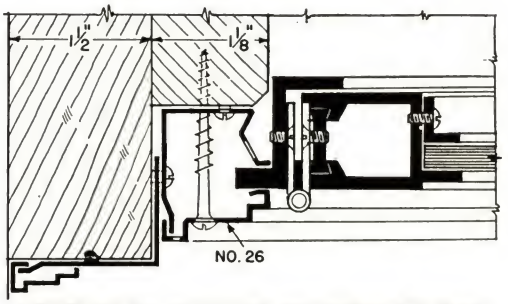




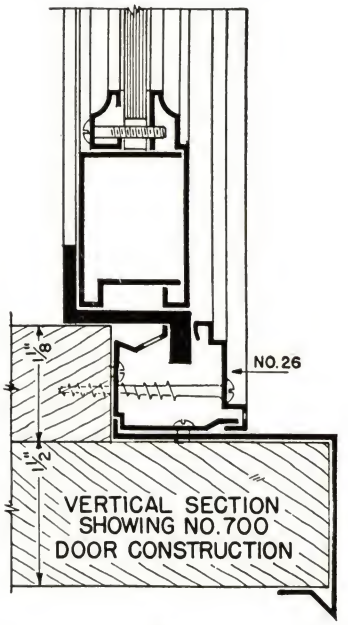

HORIZONTAL SECTION SHOWING NO. 700 DOOR AT JAMB




VERTICAL SECTION SHOWING NO. 900 DOOR CONSTRUCTION

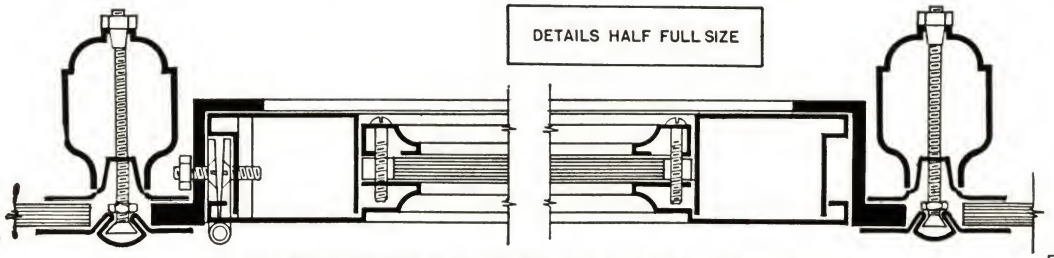



HORIZONTAL SECTION SHOWING NO.900 DOOR AT JAMB

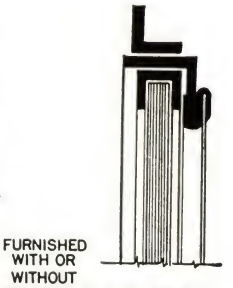



VERTICAL SECTION SHOWING NO.700 DOOR CONSTRUCTION

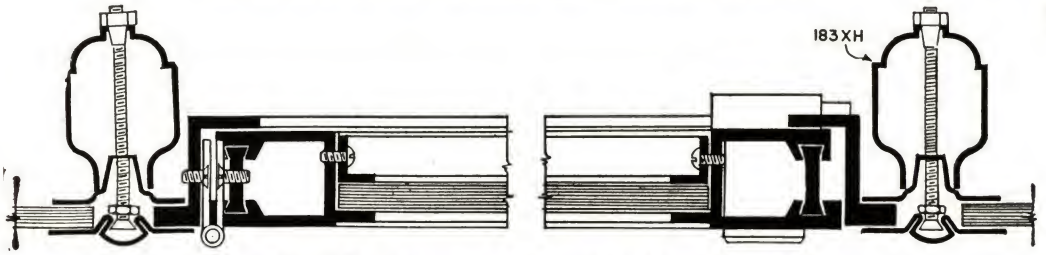
DETAILS HALF FULL SIZE



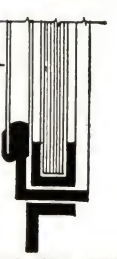
HORIZONTAL SECTION SHOWING NO. 700 DOOR CONSTRUCTION



FURNISHED WITH OR WITHOUT REMOVABLE SCREENS



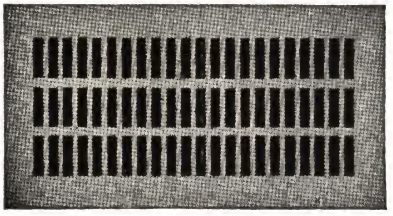

HORIZONTAL SECTION SHOWING NO. 900 DOOR CONSTRUCTION



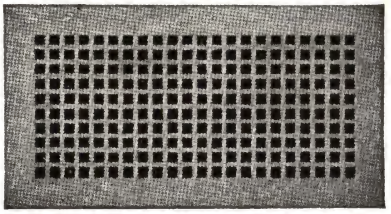
STANDARD PRISM VENTILATOR

# ACCESSORIES for *Desco* STORE FRONTS

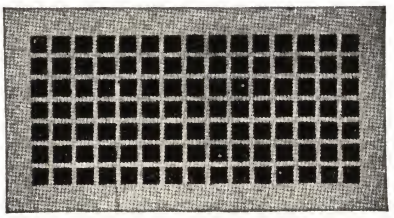
**Accessories — including mouldings, grilles, plates, thresholds, setting blocks and reinforcements—meet the same high standards of quality of material and fineness of workmanship that have always characterized DESCO products.**



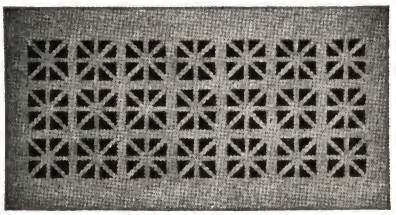
DESCO Grille . . Type 1



DESCO Grille . . Type 2

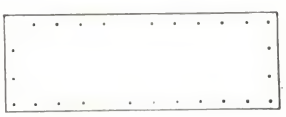


DESCO Grille . . Type 3

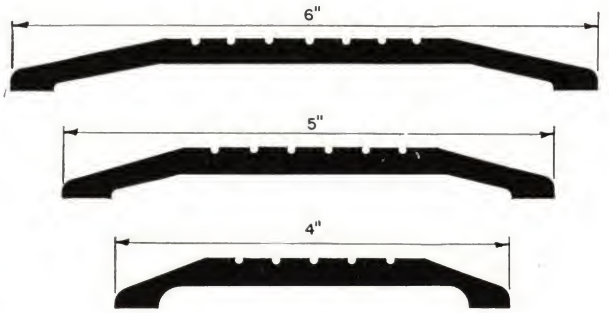


DESCO Grille . . Type 5

DESCO Grilles . . . . in Bronze, Aluminum and Alumilite
Standard Sizes: 11 x 15, 18 x 9, and 24 x 10 inches



Kick Plate
Standard Heights: 10, 12, 14 and 16 Inches.
Any Length—16 Gauge



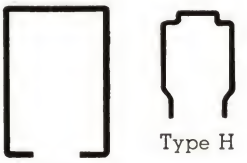

Threshold Plates
in Bronze and Aluminum



Type XXH



Type XH



Type SXH

Type H

Reinforcements for Division Bars
See Plate No. 3 for Division Bars




DESCO Setting Block

Cushions the glass in lead. The rocker channel insures perfect bearing in case of settlement or other irregularities . . . avoids glass breakage.

## *Installation* . . .

**In every principal city throughout the country there is an authorized Desco Dealer or Distributor ready to assist Architects in planning windows of new stores . . . or remodeling facades of old buildings. These dealers and distributors carry a complete stock of Desco Store Front construction and are equipped to handle any installation.**

**In New York City we maintain our own corps of skilled mechanics, thoroughly experienced in the erection of Desco Fronts. Consequently — in the Metropolitan area — we are able to shoulder the entire responsibility of the installation . . . watch every detail of the erection . . . follow the job through to completion. We, likewise, are able to estimate on work delivered and set-up complete.**

**For samples, details and prices, we earnestly request Architects to contact our nearest dealer or distributor. Our fieldmen in these offices will be glad to co-operate in planning any type of work. No obligation, of course.**

Page . . . 10




Another Whelan Store in Mid-town New York . . . 42nd St. and 8th Ave. . . . uses Desco Store Fronts . . . Chas. Herman Contracting Co., Builders . . . Robert A. Fash, Architect

# Desco

## DETROIT SHOW CASE COMPANY

1652 - 1694 WEST FORT STREET

**DETROIT, MICHIGAN**

NEW YORK OFFICE: 103 PARK AVENUE, NEW YORK, N. Y.

19/5

# HIMCO

METAL STORE FRONT CONSTRUCTION

HIMCO

## NON-TARNISHABLE

# STORE FRONT CONSTRUCTION


**THE HIMMEL BROTHERS CO.**

1409-15 Dixwell Avenue • • • Hamden, Conn.

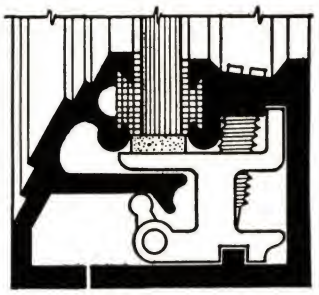
(Suburb of New Haven)



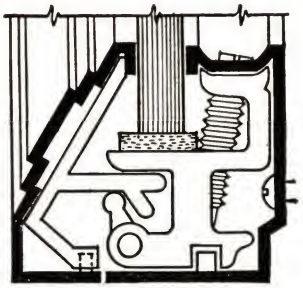
CATALOG H • 1938

# "HIMCO" NON-TARNISHABLE STORE FRONT CONSTRUCTIONS

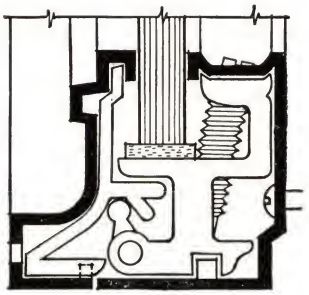
TRADE-MARK



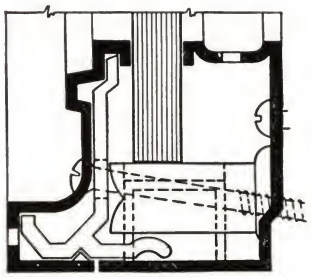
No. 400 Series Setting
Architectural Extruded Bronze



No. 70 Setting
Rolled Solid and Stainless Laminated Metal



No. 80 Setting
Rolled Solid and Stainless Laminated Metal



No. 60 Setting
Rolled Solid and Stainless Laminated Metal

## A Complete "Himco" Line in Either Extruded, Solid Rolled, or Stainless Laminated Metal

(Patented)

We offer to the architect a complete glass setting construction either in architectural extruded sections for the highest quality store fronts, or in rolled solid metals for medium priced work.

We do not erect these constructions but the sections are stocked by reputable glaziers throughout the country and are generally erected through the glaziers, plate glass manufacturers, or setters.

## Essential Elements for Satisfactory Store Front Construction

The principal factor in satisfactory glass setting construction is in holding the glass in a cushion-like grip which counteracts shocks from wind or vibration and yet provides for expansion and contraction.

The setting member must be so arranged that it is possible to set and remove glass in a minimum amount of time in case of accident as well as in first erection. It must be a simple, quickly erected construction with a maximum amount of glass protection, with reduced labor charges.

## Modern Metals for Glass Settings

### Cold Rolled Metals

Stainless Chrome-Nickel (chromium 18%, nickel 8%)
Stainless Non-Magnetic Steel 18-8
Bronze
Copper
"Alumcro" (aluminum alloy)
Stainless Laminated Metal (Patented) "Alumcro-x-ite" and "Alumilite"

*Note*—"Alumcro-x-ite" is an Alumcro Oxide hard surface aluminum finish not subject to discoloration like Aluminum.

### Extruded Metals

"Alumcro" (aluminum alloy)
Bronze

## General Information Pertaining to Stainless Chrome-Nickel 18-8%

Stainless Chrome-Nickel 18-8% and Stainless Steel 18-8% are the same metal known under different names, and are non-tarnishable and rustproof. All Stainless Chrome-Nickel 18-8% is non-magnetic and this quality can easily be detected by use of an ordinary magnet. If magnetic, it is not genuine Stainless Chrome-Nickel. Ordinary Stainless Steel with no nickel content is magnetic, will magnetize a certain amount of iron dust which is constantly floating in the air and will settle on the Stainless, causing a film of rust. Genuine Stainless 18-8% Chrome-Nickel, which is non-magnetic, will not collect said iron which rusts, making it a superior metal for exposure.

## Finishes

The standard finish for Bronze, "Alumcro," Copper, Stainless Chrome-Nickel, Stainless Steel, Stainless Laminated Metal, is polished.

Bronze or Copper supplied in Oxidized or Statuary finishes on order. "Alumcro" in "Alumcro-x-ite" on order.

Satin Finish supplied on all metals.

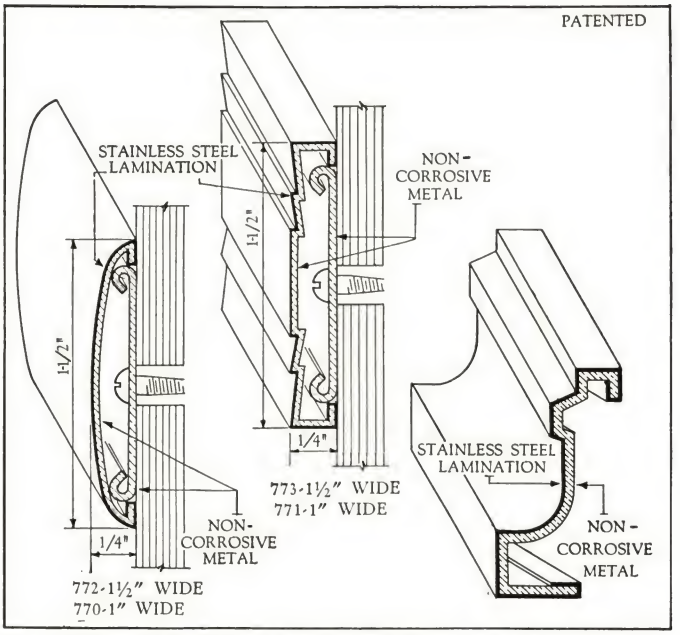
# "HIMCO" STAINLESS LAMINATED METAL

(PATENTED)

## A New, Non-tarnishable Moulding Construction for Store Fronts and Other Purposes at a Price Within the Range of Copper, Bronze or Aluminum

"Himco" Stainless Laminated Metal is a new, non-tarnishable metal for store front construction which has already proven a great success as indicated by the demand created, *and the cost is within the price range of copper, bronze or aluminum.* It requires no polishing of any description.

Stainless Laminated Metal can be used in connection with solid Stainless Steel 18-8 because the same type of non-magnetic Stainless material is used in the fabrication of the Stainless Laminated Metal construction.




**"Himco" Stainless Laminated Snap-on Mouldings**

**For complete line see our catalog in File index**

The only maintenance necessary is that, whenever the plate glass of the show window is washed, the Stainless Laminated Metal shall be washed at the same time and wiped off with an ordinary chamois *(not polished)*. In this way the high lustre of the metal will be retained indefinitely.

The "Himco" Stainless Laminated Mouldings have a wide use in modern decorative interiors and exteriors. They are especially useful as cover moulds for sheet materials. See our catalog on these mouldings in Sweet's File index.

## Especially Valuable for Alteration or Replacement Work

Although also specified for new work because of its appearance, first cost, and minimum upkeep, one of its important advantages is that it is made in exactly the same sections as our standard settings —No. 70, No. 80 or No. 60. Anyone having these store fronts already in place, and desiring to improve the appearance of his store according to the modern trend, can have his present "Himco" construction replaced with Stainless Laminated Metal face mouldings *without disturbing the balance of the glass setting.*

"Himco" Stainless Laminated Metal is guaranteed to give the same identical results as our solid, non-magnetic Stainless Steel 18-8 sections, because the same type of Stainless material is used in its fabrication.

The principal point of interest is that the cost of "Himco" Stainless Laminated Metal is within the price range of ordinary copper, bronze or aluminum store front construction. Sample mouldings of this material will gladly be sent upon request.

## The Four Types of "Himco" Constructions

### Architectural Extruded Metal

**No. 400 Series with the Cushion Glass Grip (Patented)**

For the very finest type of modern store fronts. Glass settings can be supplied separately for cast bronze or aluminum alloy by others. The positive screw flange control (patented) eliminates all exposed screws and the rubber cushions or gaskets prevent glass breakage.

### Rolled Solid Metal or Stainless Laminated Metal

**No. 70 (Patented)**

Our newest modern design based on the No. 400 Series setting, but in rolled solid metals having the same type of positive screw flange control, eliminating exposed screws.

**No. 80 (Patented)**

This construction has a screw flange control, similar to No. 70 and does not have exposed screws. The design of this construction is similar to the No. 60 in face section.

**No. 60 (Patented)**

The setting screws pass through a metal tube from the front to the back member, assuring freedom from contact between the glass and the screw.

THE HIMMEL BROTHERS CO.

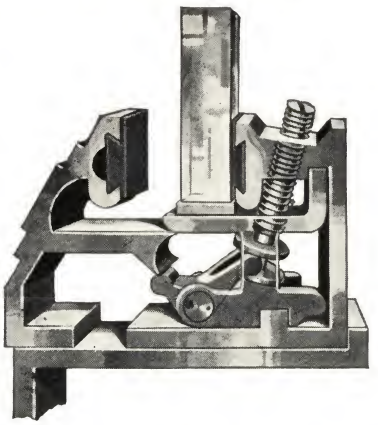
# "HIMCO" NO. 400 STORE FRONT CONSTRUCTION

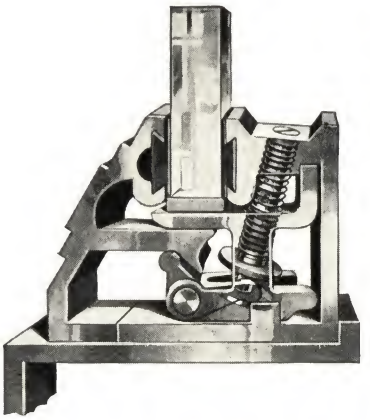
PATENTED

## ARCHITECTURAL EXTRUDED "ALUMCRO," "ALUMILITE," AND BRONZE

### A New Modern Improved "Himco" Invisible Screw Cushion Type, Extruded Setting (Patented)

The illustrations below show how radical is the new method of setting glass. Composed entirely of extruded shapes the new "Himco" No. 400 sections offer an entirely new feature in rigid store front constructions. In the old No. 400 setting the glass was held in a steady but velvet like grip by means of the rubber cushions, yet allowing the glass to expand and contract, and by the concealed adjusting screw. The new section is an even greater improvement over the old both in design as well as in the method of securing the glass by the new positive setting screw. The cushions are of the finest rubber.



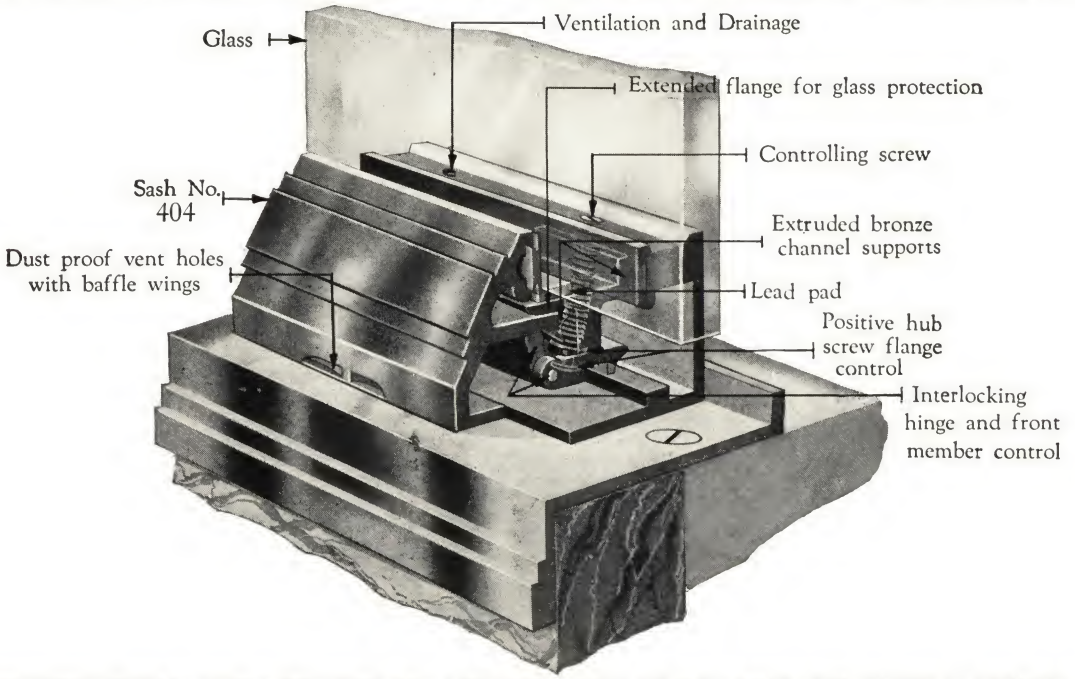


### No Screws Show on the Face of the Setting

The setting consists of only two shapes, the front and back plates. By means of an indirect draw, acting on the interlocking members of extruded metals, glass set in "Himco" No. 404 setting is held more firmly than in the old type and less pressure is exerted on the glass. The setting screws, which cannot work loose, are also more available for setting the glass yet invisible from the exterior of the construction giving the appearance of strictly architectural cast construction.

The two sections at full size below illustrate the method by which the extruded lever arms are operated by means of this set screw. It is impossible for this screw to work loose, on account of vibration from the street, thus reducing tightening supervision necessary for many old types of construction.

## FULL SIZE SECTIONS THROUGH GLASS SETTING SHOWING OPERATION OF THE SETTING SCREWS




## CONSTRUCTION AND METHODS OF HOLDING THE GLASS AND THE SETTING SCREW

### The Any Angle Extruded Corner Construction

The new lock gear type of corner construction allows the use of a universal section for any angles of 5 degrees desired. By locking the two center members together the wing pieces of the corner are made absolutely rigid. The only part which changes is the back spring grip. This is shipped to fit the correct angle desired.

### Extruded Metals

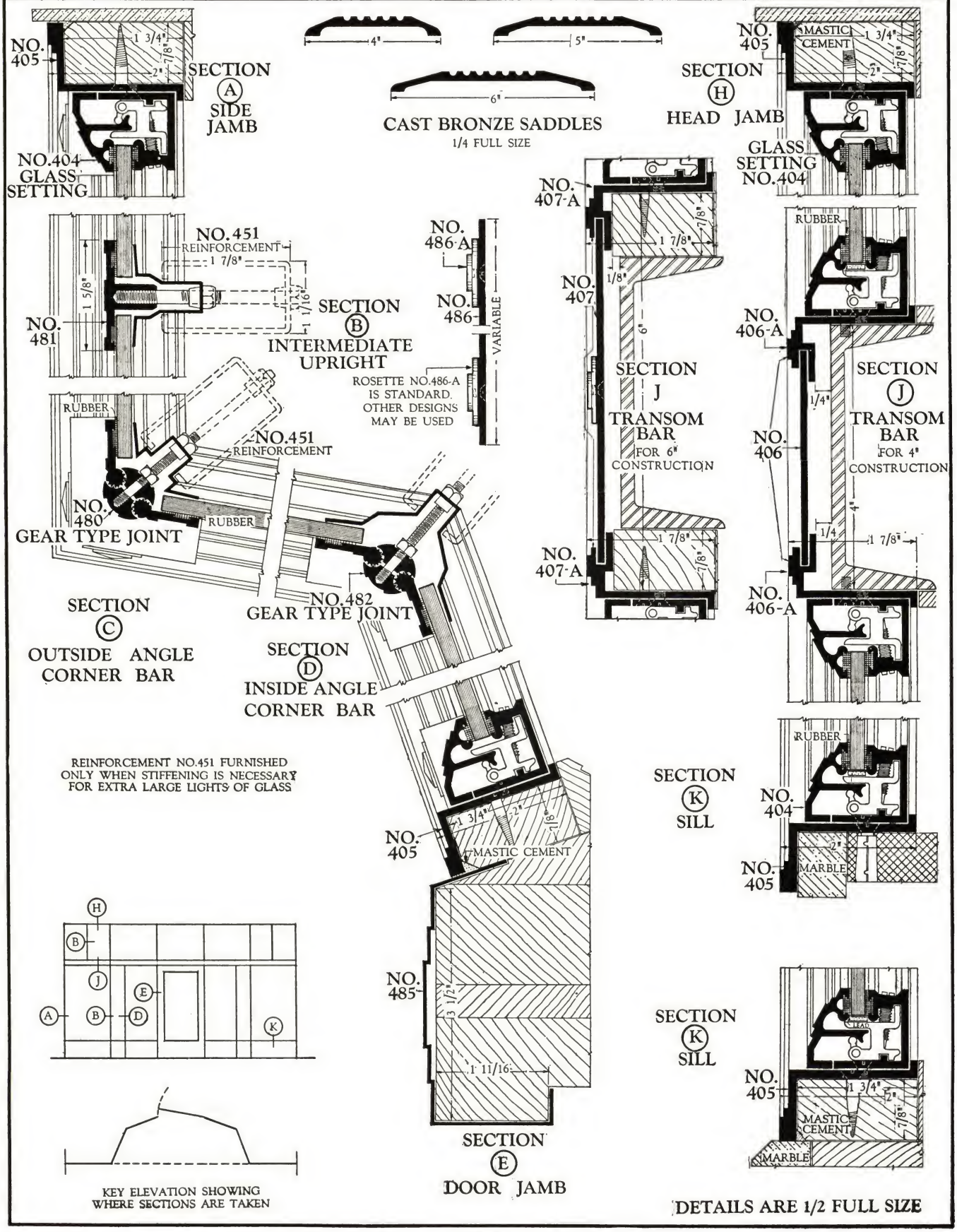
"Himco" No. 400 construction is made either in "Alumcro" (aluminum alloy) or in bronze. It is impossible to make this section in extruded Stainless Chrome-Nickel (chromium 18%—nickel 8%) or genuine Stainless Steel. If a white metal is desired we suggest using "Alumcro" made under our own direction which will stay bright and take a high polish.

*In Specifying*—We suggest that our glass settings be included for use with all cast bronze stone front construction, for the protection and easy accessibility of installing the glass, whether the work is done by an ornamental bronze contractor or the entire front is of our section. These sections have been designed and made by experts specializing in the protection of plate glass in window constructions for many years. We will be only too glad to advise with any architect or bronze contractor as to the best methods of using the sections with their types of special construction. Many times on account of incorrect detailing of the show windows, it is very hard to install plate glass at the building. This causes high labor charges and dissatisfaction and misunderstandings arising between the owner and the architect and contractor.

# "HIMCO" NO. 400 STORE FRONT CONSTRUCTION

EXTRUDED, ARCHITECTURAL SECTIONS OF BRONZE, "ALUMCRO," "ALUMILITE" AND "ALUMCRO-X-ITE"

400
1



# "HIMCO" NO. 70 STORE FRONT CONSTRUCTION

PATENTED

## THE NEW, INEXPENSIVE MODERN GLASS SETTING WITHOUT EXPOSED SCREWS

*Made in Rolled Stainless Laminated Metal, "Alumcro," "Alumilite," Bronze and Solid Stainless Steel (copper made only to order).*

## A NEW TYPE POSITIVE SETTING WITHOUT EXPOSED SCREWS

**"Himco" No. 70** glass setting is similar in principle to the "Himco" No. 404 setting—in that all screws on the face of the construction are eliminated. This new setting is absolutely positive in action and the screw will not work loose by street vibrations.

An indirect draw acting with a lever on interlocking members of extruded bronze, holds the glass more firmly than in the exposed screw type sash, though less pressure is exerted on the glass. This permits the window to give to vibration and atmospheric changes, thus reducing the danger of breakage from exterior causes. The glass is further protected by the use of leather cushions on a stationary extended flange. This flange, part of the solid controlling base, safeguards the glass from contact with moving parts.

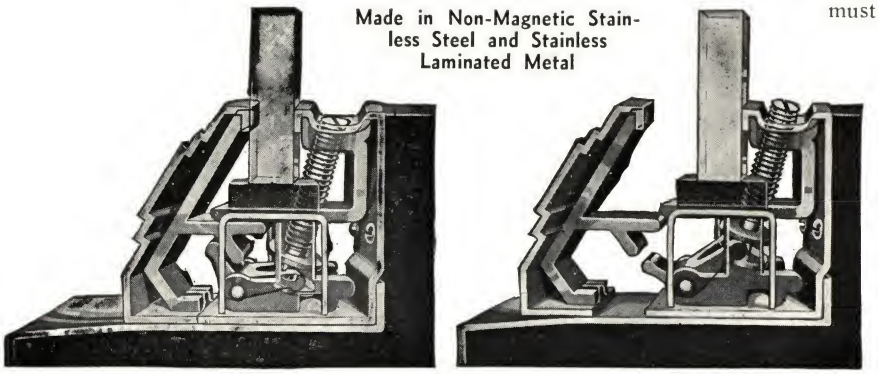
### Displays Remain Clean Longer

The sash is set squarely on the sill no matter what thickness of glass used, reducing the possibility of infiltration of dust to the inside. The baffle wings behind the exterior vents divert dust, allow ventilation and eliminate dust slides.

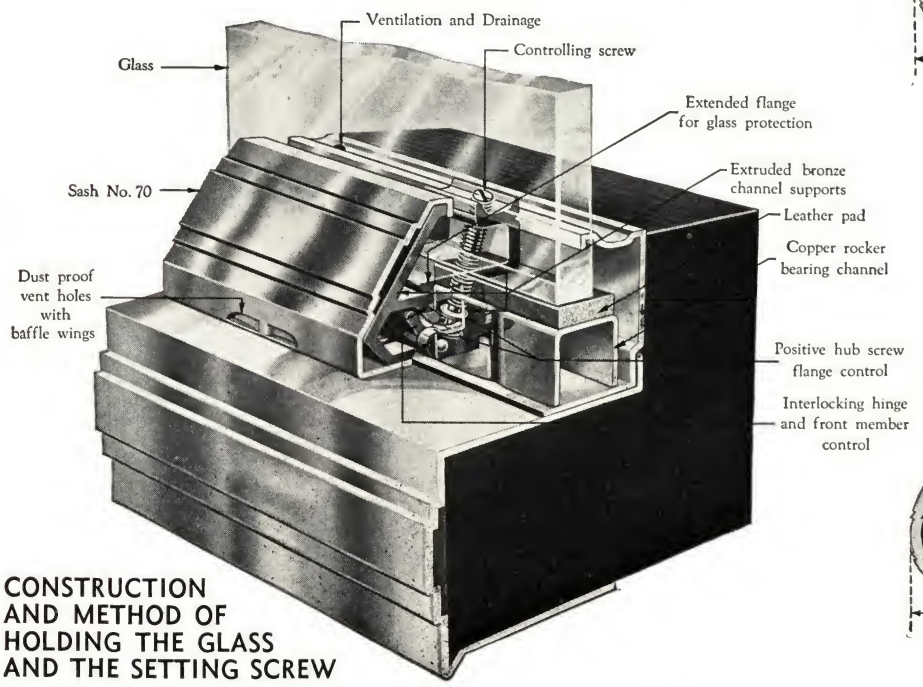
**"Himco" No. 70**—Harmonizes with the character of modern building design. The flat surfaces and reduced depth of construction allow the glass to be set almost on the building line. Although the mouldings are drawn, the smooth plain faces, without visible fastenings, give the effect of an extruded or cast construction.

**"Himco" No. 70X**—Has an extruded bronze front plate used in connection with the regular No. 70 rolled back plate sections. The No. 70X front plate allows the use of hair line miters without caps.

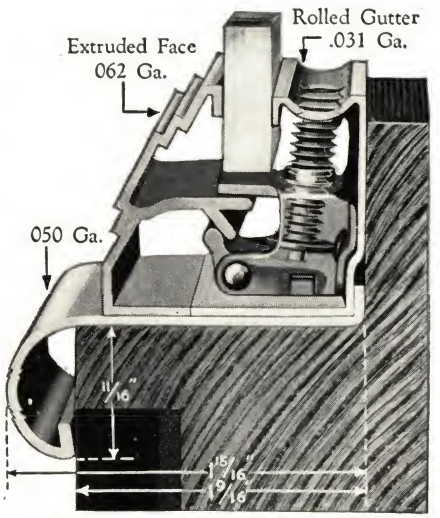
**"Himco" No. 20**—A new rolled Sill Section for use with No. 70 or 70X Setting in connection with structural glass, sheet materials, marble or stone. It may also be used to form a frame at head and sides of the window but head must be filled with mastic.



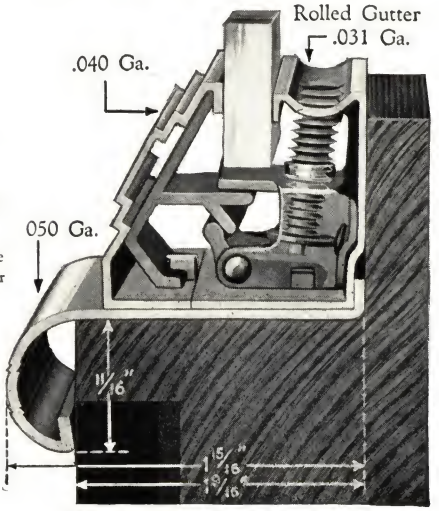

FULL SIZE SECTIONS THROUGH NO. 70. GLASS SETTING SHOWING OPERATION OF THE SETTING SCREW




CONSTRUCTION AND METHOD OF HOLDING THE GLASS AND THE SETTING SCREW




NO. 70X WITH NO. 20 SILL

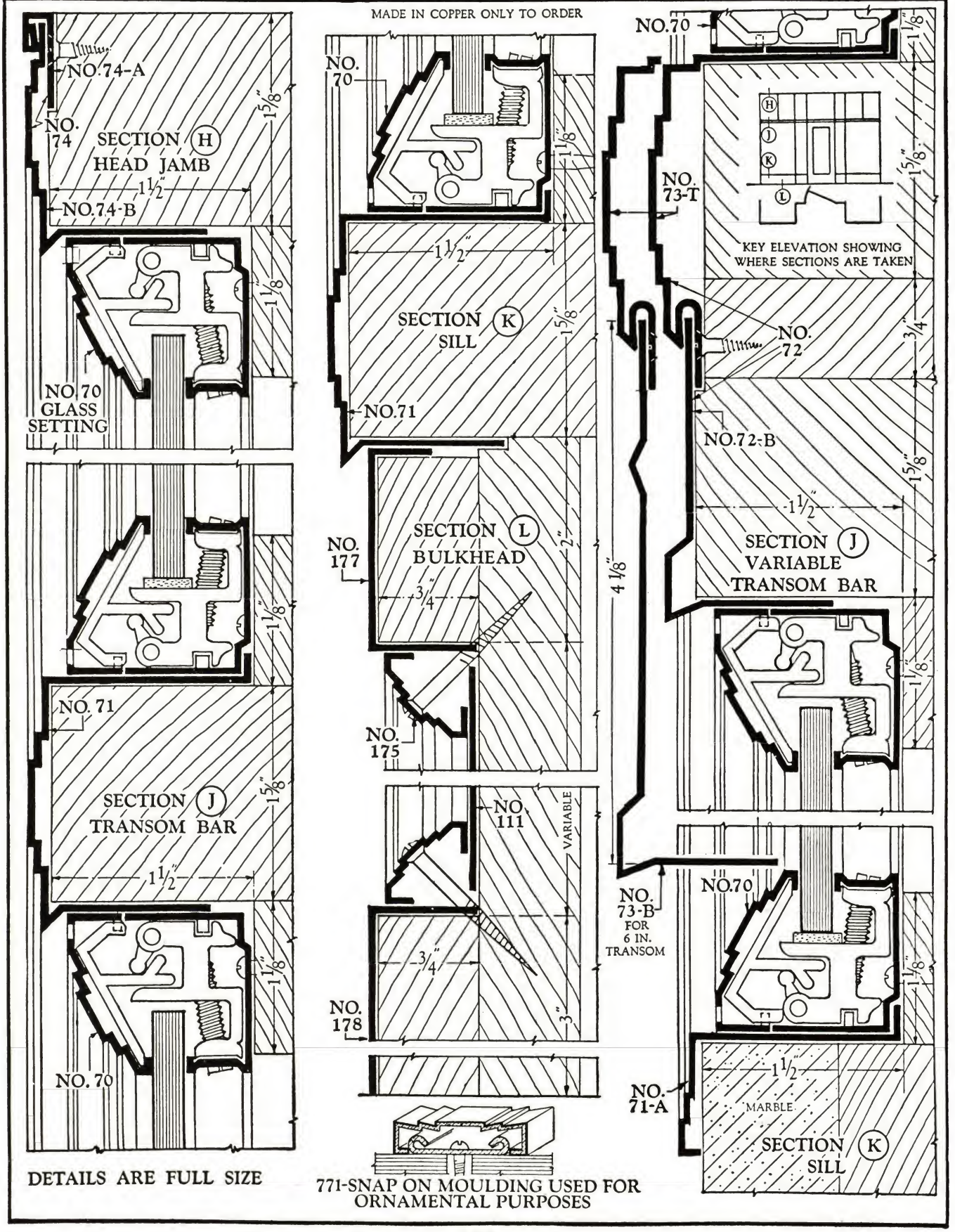



NO. 70 WITH NO. 20 SILL

# "HIMCO" NO. 70 STORE FRONT CONSTRUCTION

ROLLED SOLID BRONZE, "ALUMCRO," "ALUMILITE," STAINLESS STEEL, STAINLESS LAMINATED METAL AND "ALUMCRO-X-ITE"

70
1




DETAILS ARE FULL SIZE

771-SNAP ON MOULDING USED FOR ORNAMENTAL PURPOSES

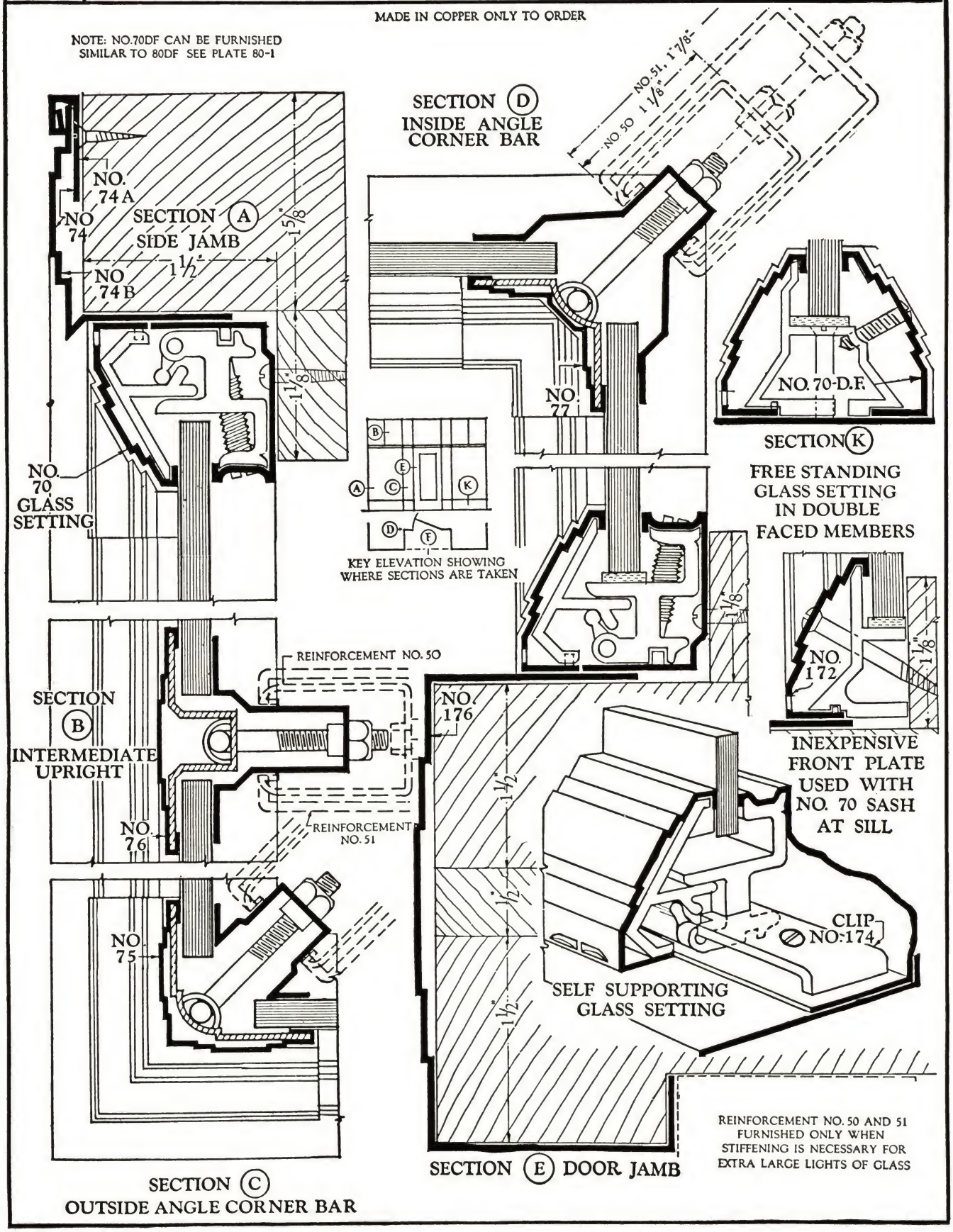
# "HIMCO" NO. 70 STORE FRONT CONSTRUCTION

ROLLED SOLID BRONZE, "ALUMCRO," "ALUMILITE," STAINLESS STEEL, STAINLESS LAMINATED METAL AND "ALUMCRO-X-ITE"

70/2

MADE IN COPPER ONLY TO ORDER

NOTE: NO.70DF CAN BE FURNISHED SIMILAR TO 80DF SEE PLATE 80-1



# "HIMCO" NO. 80 STORE FRONT CONSTRUCTION

PATENTED

## MADE IN ROLLED STAINLESS LAMINATED METAL, "ALUMCRO," "ALUMILITE," BRONZE AND SOLID STAINLESS STEEL

Copper Made Only on Special Order

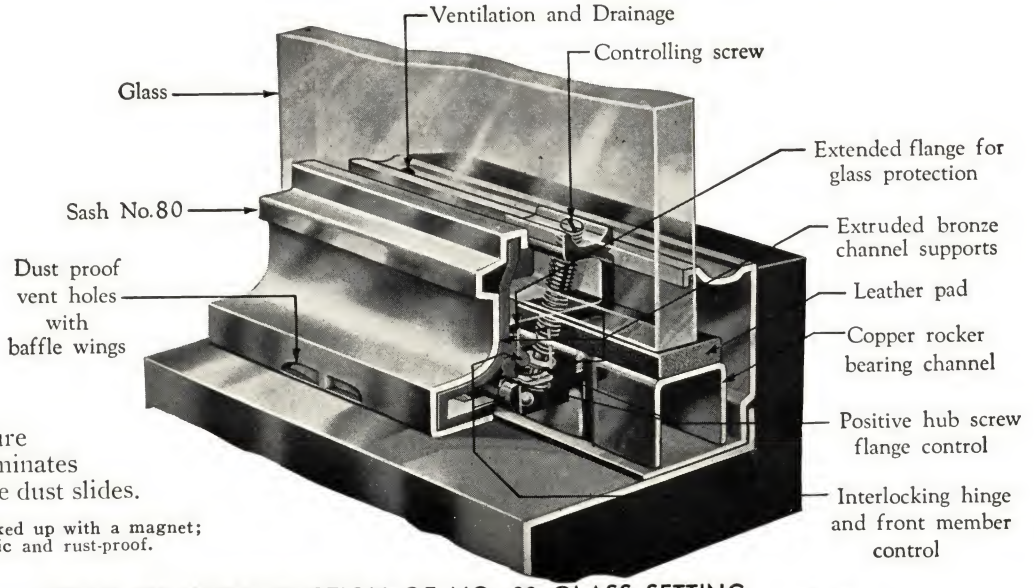
The particular advantage of this section is that it can be obtained in Rolled Solid Stainless Chrome-Nickel (chromium 18%—nickel 8%).* On account of the hardness and non-corrosive character of this metal, the slight extra cost more than offsets the reduced cost of upkeep. The metal will withstand the corrosive action of acids and smoke. Its surface is impervious to atmospheric conditions and will always retain its high polish and brilliance. This section is also produced in rolled solid "Alumcro" (aluminum alloy), and bronze.

This glass setting is similar in construction to The No. 70 setting except that the design of the profile is different. It is a vast improvement over our No. 60 setting, the details of which are also shown on page 12. The new No. 80 has no screws on the face of the setting. The setting is absolutely positive in action and the screw will not work loose by vibration from the street.

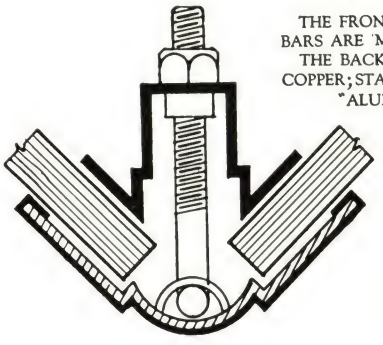
The action of the indirect draw, acting with a lever, on interlocking members of extruded bronze is the same as that illustrated on page 6.

**Ventilation and Condensation**—There is a direct system of ventilation on all sides of the glass setting. The front vent holes indicated on the drawings have dust-proof baffle wings which prevent direct drafts and dust from entering show windows due to wind pressure or storms. This eliminates the use of troublesome dust slides.

* This metal cannot be picked up with a magnet; it is therefore non-magnetic and rust-proof.

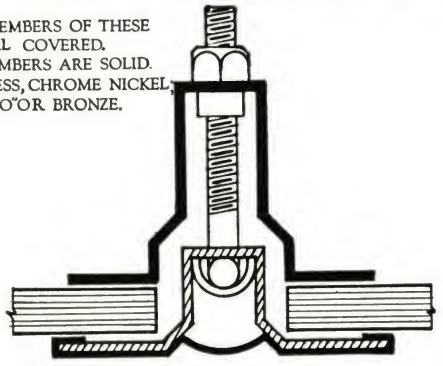



DETAIL OF CONSTRUCTION OF NO. 80 GLASS SETTING



CORNER BAR NO. 41

THE FRONT MEMBERS OF THESE BARS ARE METAL COVERED. THE BACK MEMBERS ARE SOLID COPPER; STAINLESS, CHROME NICKEL; "ALUMCRO" OR BRONZE.



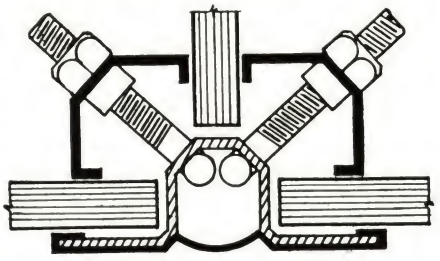
DIVISION BAR NO. 45



REVERSE BAR NO. 42

**Corner Bars**—These are made to fit any angle of glass setting desired. The patented method of bolting together the outer and inner sections, eliminates the use of clips, one of the commonest causes of glass breakage.

The bar constructions not only permit glass of varying thicknesses to be joined but provide equal pressure on both pieces of glass.



3-WAY BAR NO. 48

**Construction of Corner**—The corners are formed up of rolled steel sections to give rigidity and strength and are bronze plated. The sections exposed to the weather are covered with rolled copper, bronze, Stainless Chrome-Nickel or "Alumcro."

**Use of Corner Bars**—The rolled steel corner bars are used interchangeably with either the No. 60, 70 or 80 type of setting.

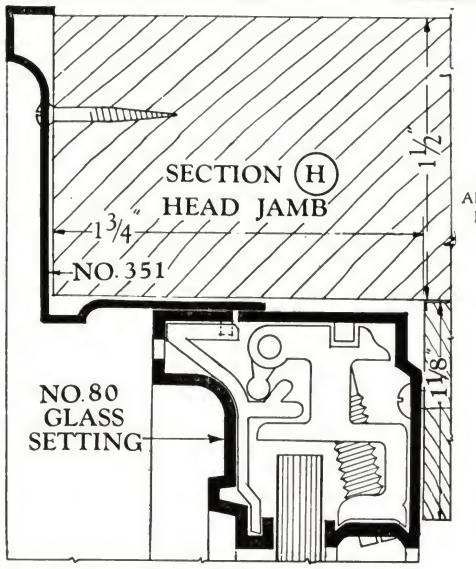
FULL SIZE DETAILS OF CORNER AND DIVISION BARS

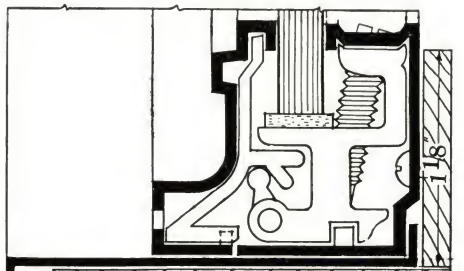
# "HIMCO" NO. 80 STORE FRONT CONSTRUCTION

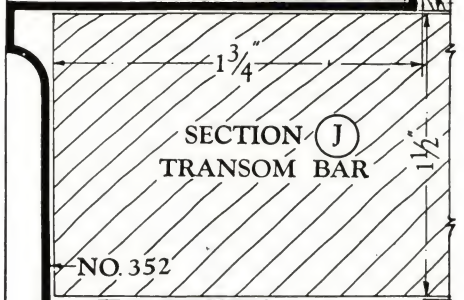
ROLLED SOLID BRONZE, "ALUMCRO," "ALUMILITE," STAINLESS STEEL, STAINLESS LAMINATED METAL AND "ALUMCRO-X-ITE"

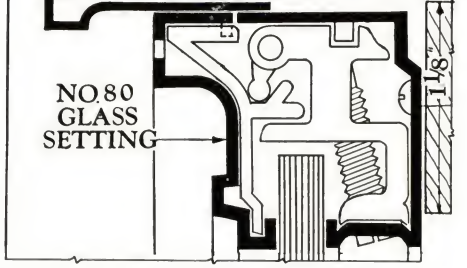
80
1

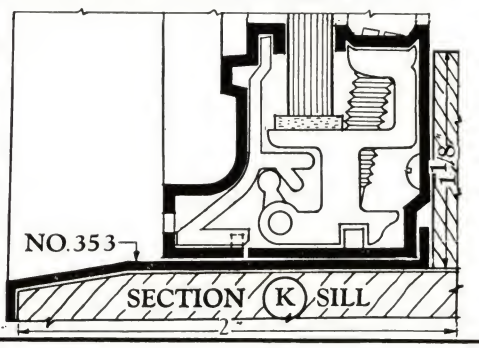
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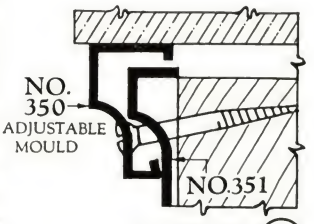


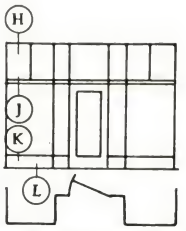



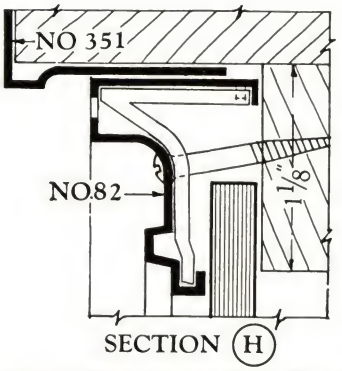




SHOWING USE OF ADJUSTABLE MOULD NO. 350

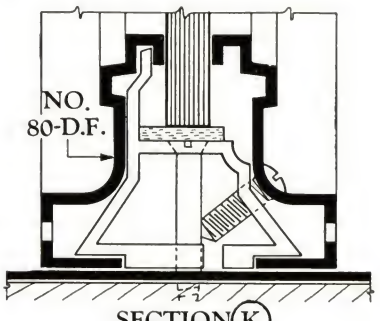



KEY ELEVATION SHOWING WHERE SECTIONS ARE TAKEN

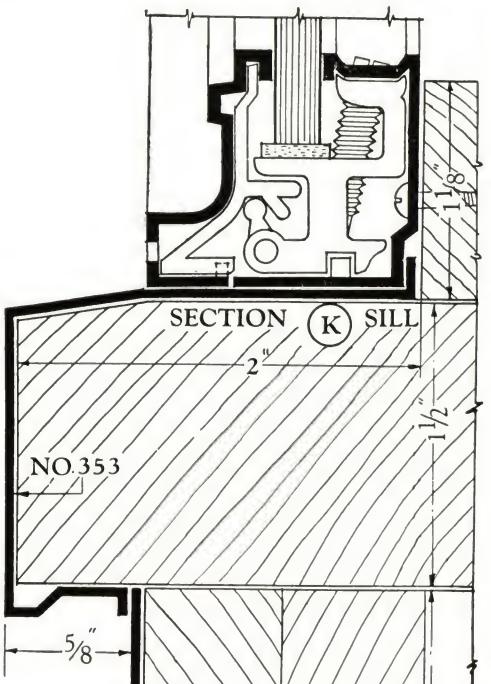


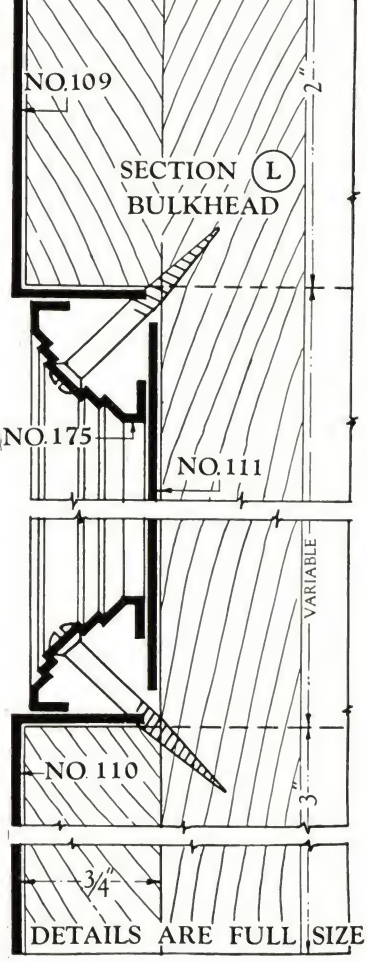

## INEXPENSIVE FRONT PLATE CONSTRUCTION

DETAIL ABOVE SHOWS NO.82 FRONT PLATE, WHEN USED WITH NO.80 SASH AT SILL IT PROVIDES AN INEXPENSIVE STORE FRONT CONSTRUCTION. IT DOES NOT HOWEVER AFFORD VENTILATION. FOR MAXIMUM GLASS PROTECTION USE NO.80 GLASS SETTING




## FREE STANDING GLASS SETTING IN DOUBLE FACED MEMBERS



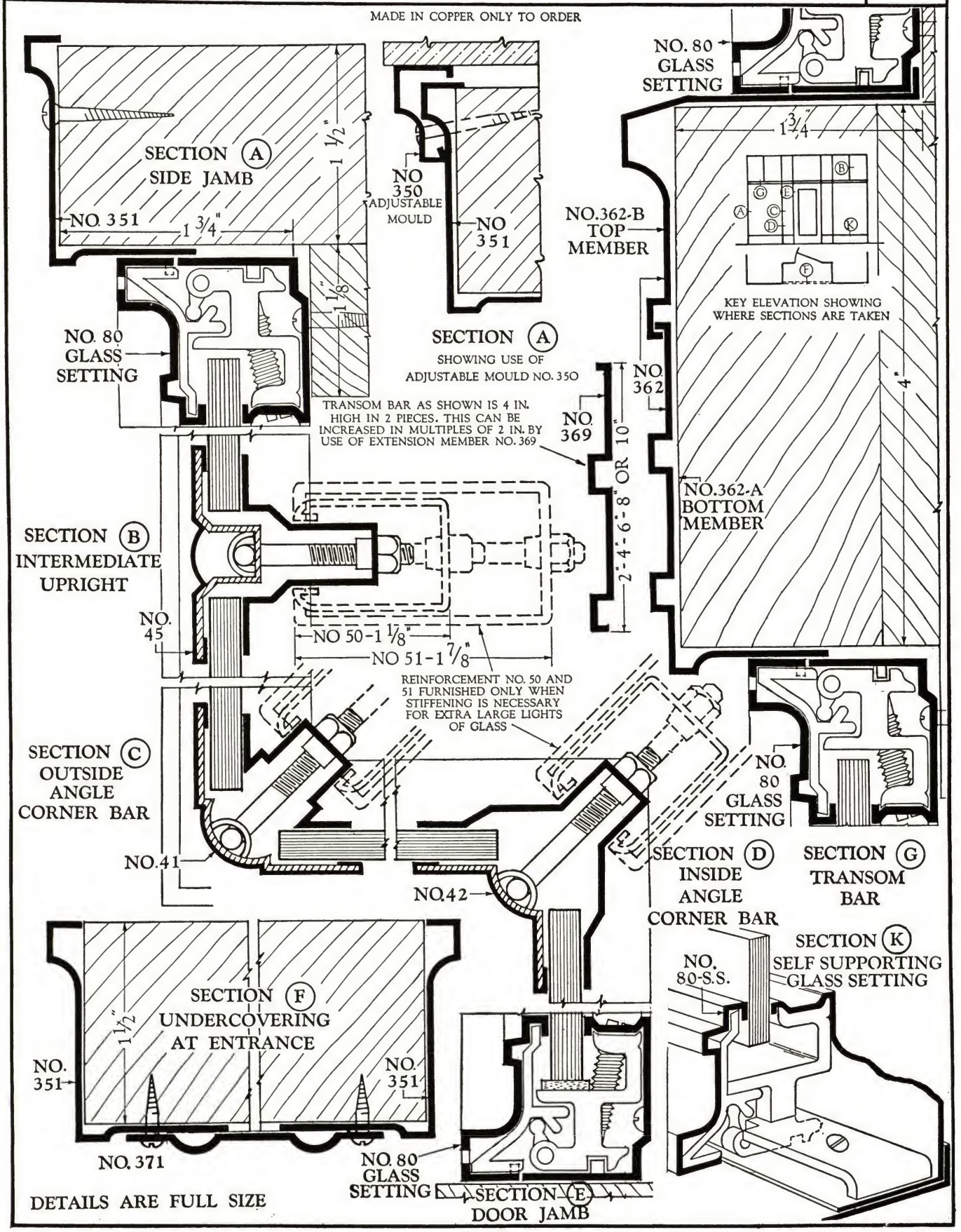




DETAILS ARE FULL SIZE

# "HIMCO" NO. 80 STORE FRONT CONSTRUCTION

ROLLED SOLID BRONZE, "ALUMCRO," "ALUMILITE," STAINLESS STEEL, STAINLESS LAMINATED METAL AND "ALUMCRO-X-ITE"

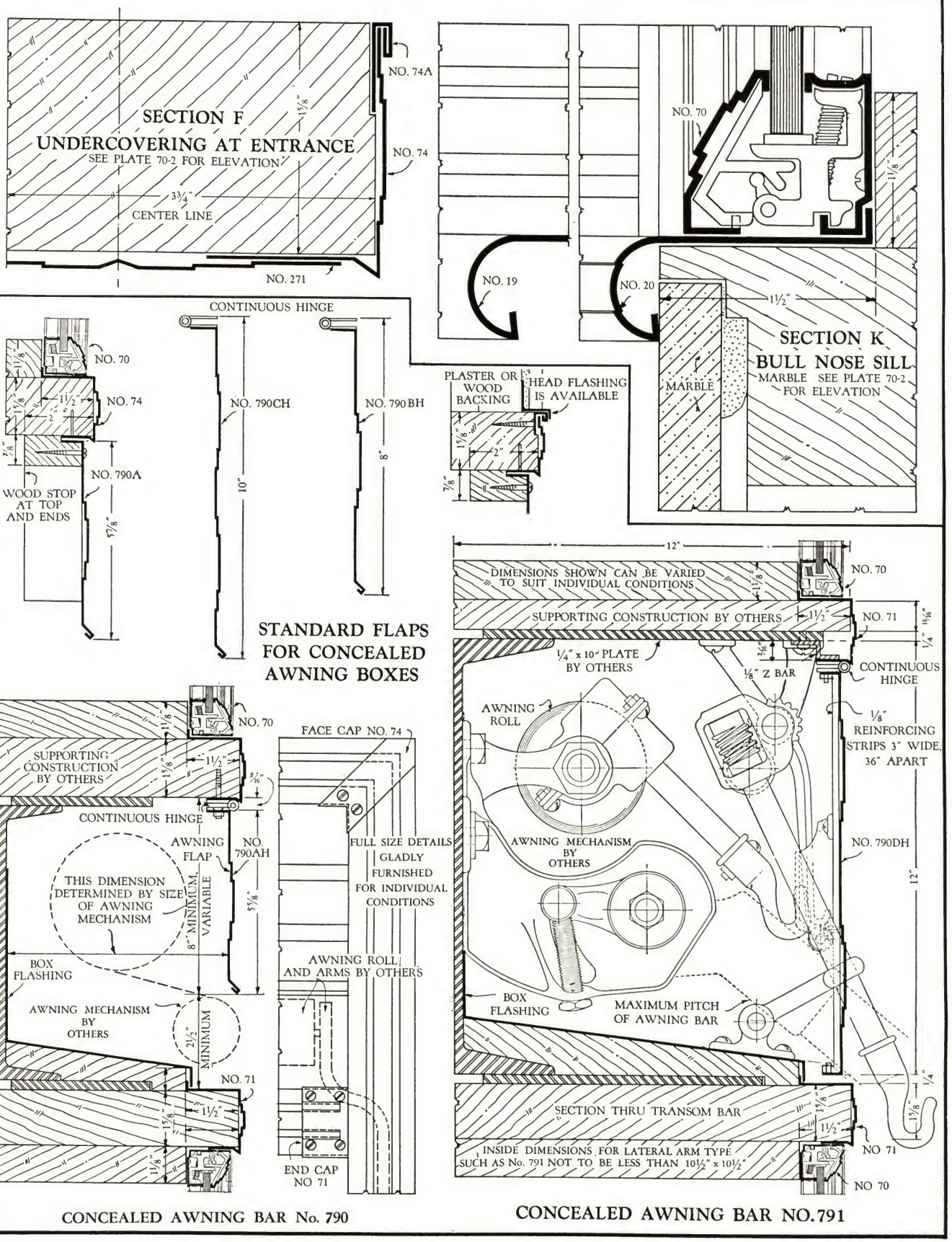
80
2



# "HIMCO" NO. 70 STORE FRONT CONSTRUCTION

ROLLED SOLID BRONZE, "ALUMCRO," "ALUMILITE," STAINLESS STEEL AND "ALUMCRO-X-ITE"

70/3



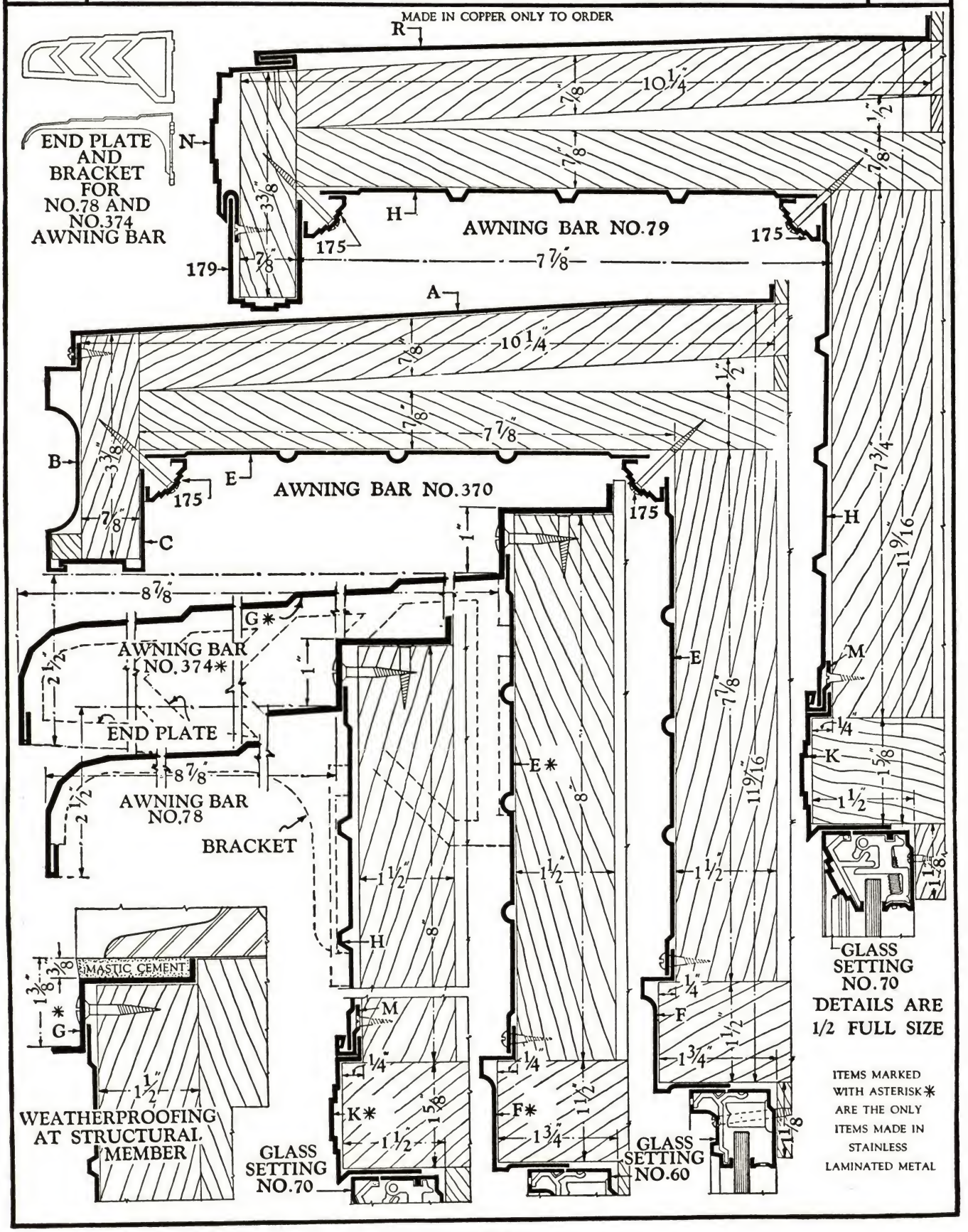

CONCEALED AWNING BAR No. 790

CONCEALED AWNING BAR NO. 791

# "HIMCO" NO 60, 70, 80, STORE FRONT CONSTRUCTION

ROLLED SOLID BRONZE, "ALUMCRO," "ALUMILITE," STAINLESS STEEL, STAINLESS LAMINATED METAL AND "ALUMCRO-X-ITE"

60-70-80
3

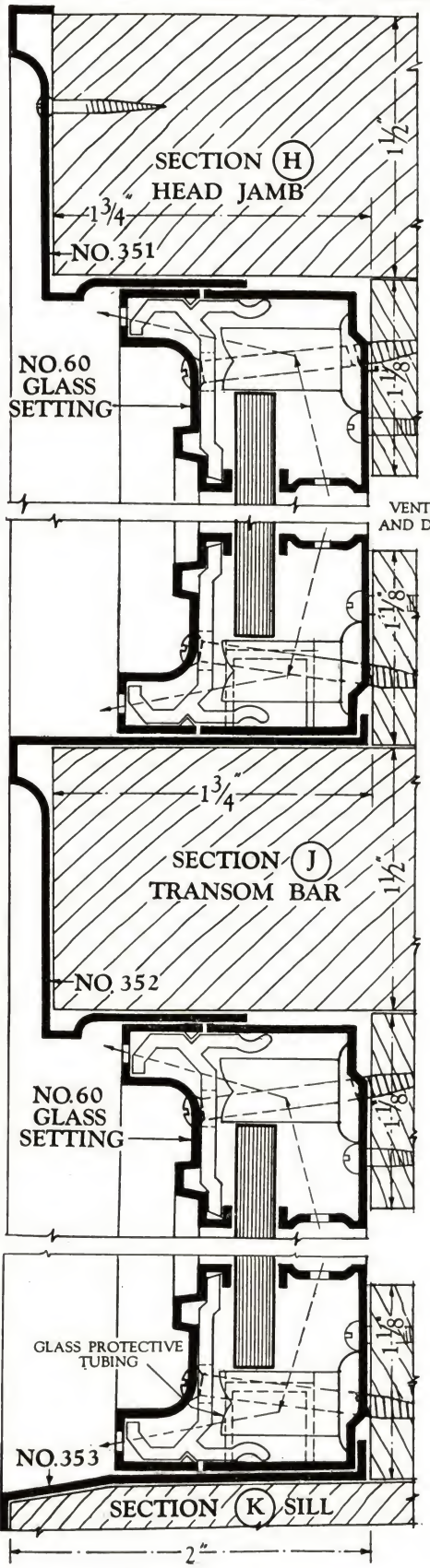


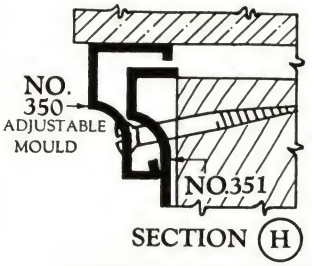
# "HIMCO" NO. 60 STORE FRONT CONSTRUCTION

ROLLED SOLID BRONZE, "ALUMCRO," "ALUMILITE," STAINLESS STEEL, STAINLESS LAMINATED METAL AND "ALUMCRO-X-ITE"

60/1

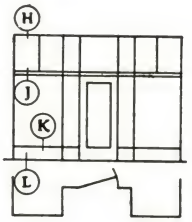
MADE IN COPPER ONLY TO ORDER



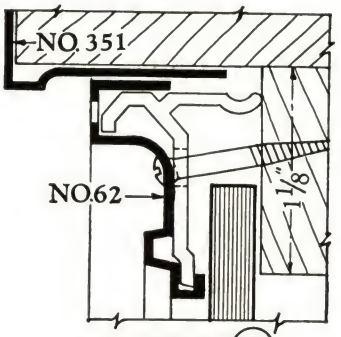




SECTION (H)

SHOWING USE OF ADJUSTABLE MOULD NO.350



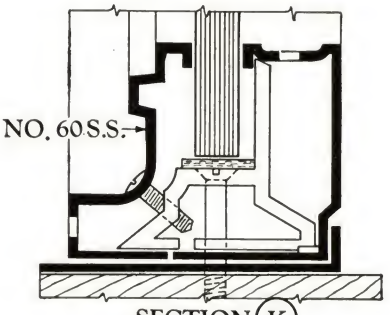

KEY ELEVATION SHOWING WHERE SECTIONS ARE TAKEN




SECTION (H)

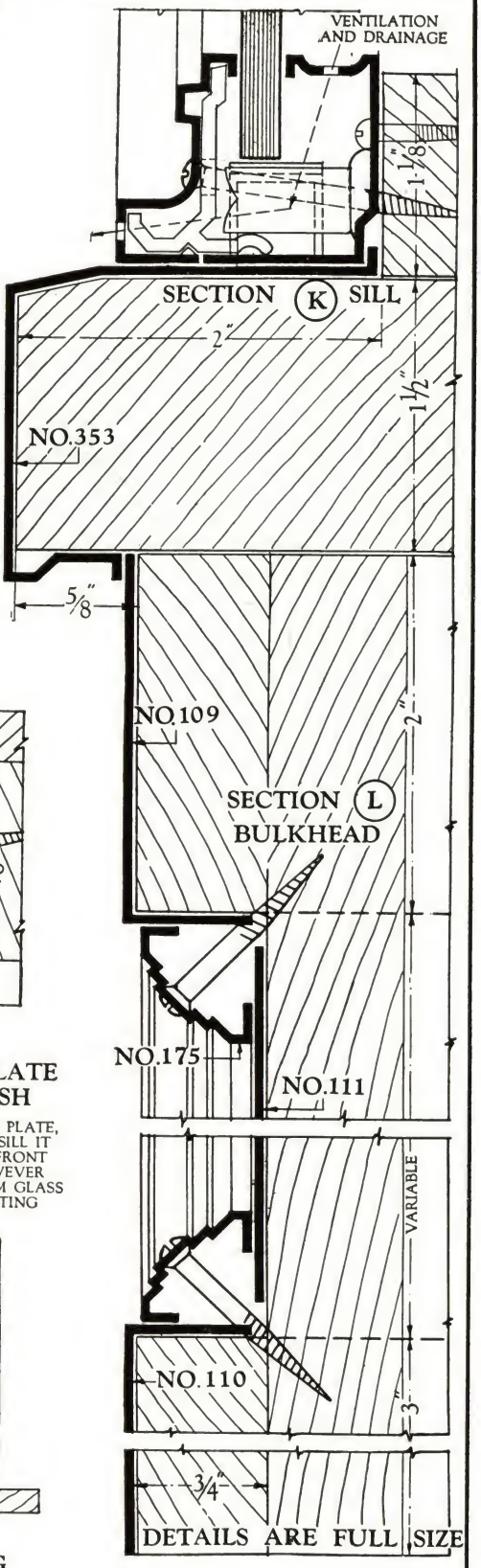
**INEXPENSIVE FRONT PLATE USED WITH NO. 60 SASH**

DETAIL ABOVE SHOWS NO.62 FRONT PLATE, WHEN USED WITH NO.60 SASH AT SILL IT PROVIDES AN INEXPENSIVE STORE FRONT CONSTRUCTION. IT DOES NOT HOWEVER AFFORD VENTILATION. FOR MAXIMUM GLASS PROTECTION USE NO.60 GLASS SETTING




SECTION (K)

SELF SUPPORTING GLASS SETTING

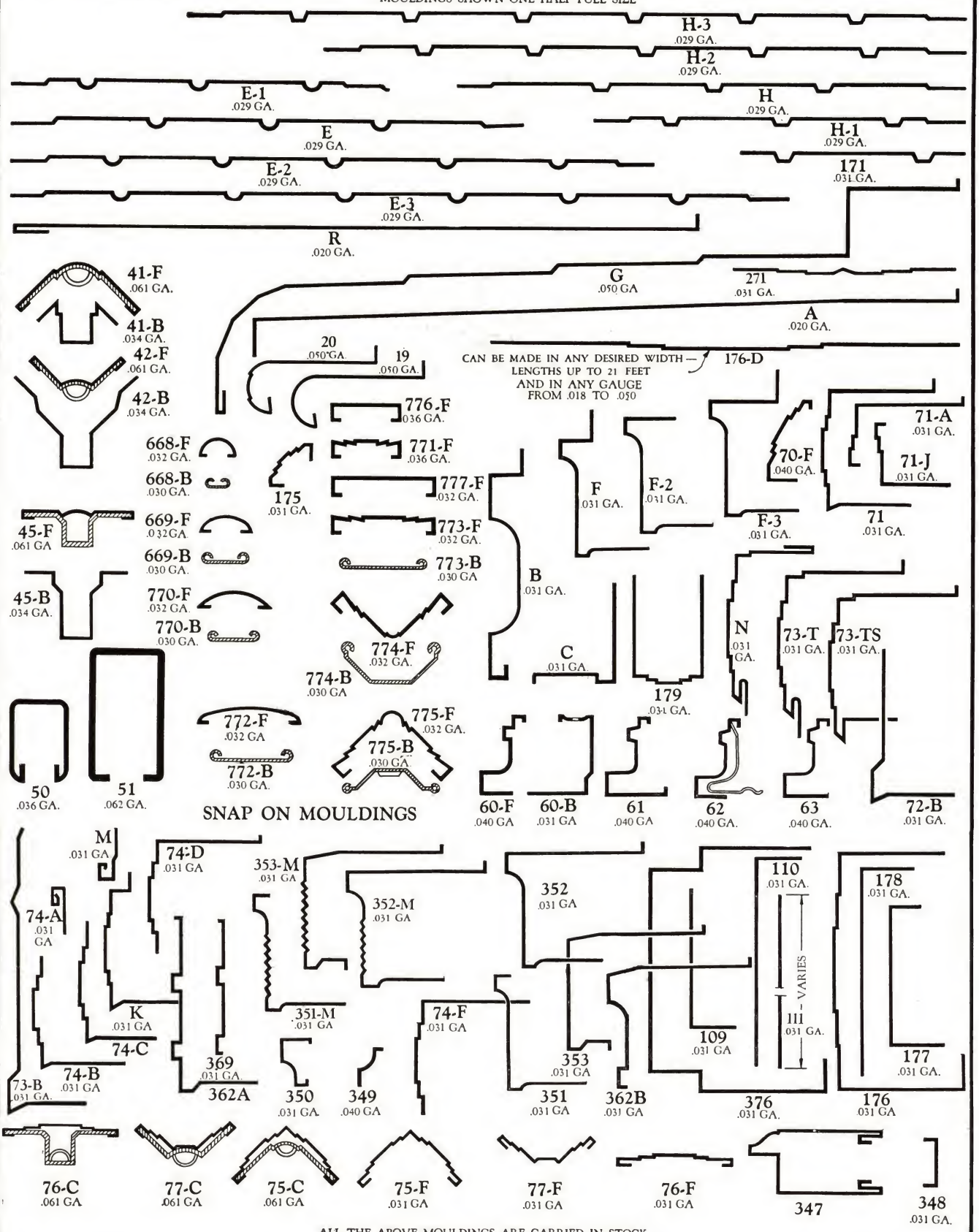


# "HIMCO" STOCK MOULDINGS

ROLLED SOLID BRONZE, "ALUMCRO," "ALUMILITE,"
STAINLESS STEEL AND "ALUMCRO-X-ITE"

70
4

MOULDINGS SHOWN ONE HALF FULL SIZE




ALL THE ABOVE MOULDINGS ARE CARRIED IN STOCK
SPECIAL SHAPES MADE TO ORDER

19/5

# "HIMCO"

## STAINLESS METAL STORE FRONT CONSTRUCTION

## "Alumcro-x-ite" and "Alumilite"

(An Alumcro Oxide Hard Surface Aluminum Finish, Not Subject to Discoloration Like Aluminum)

## THE HIMMEL BROTHERS CO.

1409-15 Dixwell Avenue - - - - - HAMDEN, CONN.
(Suburb of New Haven)

*Distributors in Principal Cities*

Pacific Coast Manager
S. CRAIG ALEXANDER
976 Clayton Street - - SAN FRANCISCO, CALIF.

# INVISIBLE GLASS COMPANY OF AMERICA, INC.

## Invisible Glass Window Units

(U. S. Patents Nos. 1,911,881 and 2,003,735)

35 West 60th Street
NEW YORK, N. Y.

The merchandising magic of Invisible Glass starts with its uncanny ability to *stop* people passing by . . . to attract, almost to *compel,* them into a store. Reflections which are inevitably present with flat glass are wholly and utterly eliminated by this scientifically curved glass. Goods displayed in an Invisible Glass window or an adjacent interior are irresistably attractive and inviting. The result is being proved every day—Invisible Glass is a fundamental merchandising force that *increases sales for retailers.*

Invisible Glass Window Units consist of bent glass, mirrors, and the chassis or frame in which they are installed.

Units up to 6 ft. long are shipped completely assembled. From 6 to 15 ft. they are shipped knocked down, ready for reassembly.

Price list and specifications for the 39 standard sizes will be sent upon request.



**Steuben Glass, Inc., Corning Glassworks Building, 718 Fifth Avenue, New York, N. Y.**
WILLIAM PLATT, N. Y., Architect

Note how window opens up complete interior of store to traffic on the street . . . how it brings detail of design through vividly clear to traffic *outside* the store

### Information Concerning Various Types

**HC—High Cusp Type**—Cusp line 5 ft. 10 in. above average pavement.

Ideal for displays of most types of merchandise. Particularly suitable for open showrooms or larger merchandise displays.

**MC — Middle Cusp Type —** Cusp line 4 ft. 9 in. above average pavement.

Requires least window space of the double bend types, and has a very narrow bottom baffle. Particularly suitable for large windows and where display depth space is at a premium.

**LC—Low Cusp Type** — Cusp line 4 ft. above average pavement.

Designed particularly for tall displays. Provides more display floor space than high cusp type. Also usable for open showrooms.

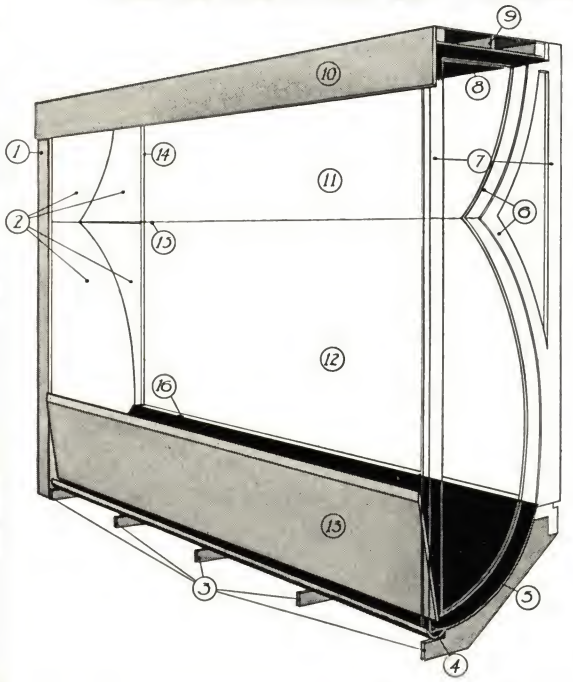
**SB—Single Bend Type**—Similar to lower half of High Cusp types with glass extended forward in a single sheet to the head of the unit.

Particularly designed for dramatic display of small and medium size merchandise. The absence of any division line is a particular feature.

*High and Middle Cusp Types may be obtained with head heights (above pavement) of 7 ft., 7 ft. 6 in., 8 ft. or 8 ft. 6 in. Low Cusp Types 7 ft. 6 in. or 8 ft. Sill heights and depth dimensions are given in chart at right.*

123T

### PHANTOM VIEW OF HIGH CUSP TYPE SHOWING COMPONENT PARTS




**1.** Unit jamb of reinforced plywood.

**2.** Eight special mirrors (four on each jamb), copperbacked, electroplated, edges ground and polished.

**3.** Plywood ribs supporting trough.

**4.** Extruded bronze gutter fitted with heavy ends.

**5.** Reflecting trough of formica applied to specially formed four-ply core.

**6.** Special curved glass stops holding rubber cushion for mounting glass.

**7.** Mirror beds for support and alignment of jamb mirror surfaces.

**8.** Upper black, light-absorbing baffle.

**9.** Laminated roof construction.

**10.** Pelmet or valance to conceal upper baffle.

**11.** Upper plate of polished silvering quality glass bent to patented formula.

**12.** Lower plate of polished silvering quality glass bent to patented formula.

**13.** Lower, black, light-absorbing baffle, inner face covered with special weatherproof velvet and hinged to allow the gutter to be cleaned.

**14.** Interior jamb trim, faced with natural maple to permit finishing to match present store interior woodwork.

**15.** Cusp bar of non-corrosive metal.

**16.** Sill rail finished in natural maple to permit matching existing display floor.

### DEPTH OF FLOOR SPACE USED BY INVISIBLE GLASS UNITS

| Sill heights | High Cusp | Middle Cusp | Low Cusp | Single Bend | |
|---|---|---|---|---|---|
| | | | | 6′ 2″ head | 5′ 9″ head |
| 1′ 6″ | 2′ 5″ | 2′ 2″ | 1′ 10″ | 2′ 3″ | 1′ 9″ |
| 2′ 0″ | 2′ 3″ | 2′ 1″ | 1′ 8″ | 2′ 0″ | 1′ 5½″ |
| 2′ 6″ | 2′ 0″ | 1′ 10″ | .... | .... | .... |
| 3′ 0″ | 1′ 10″ | 1′ 8″ | .... | .... | .... |
| 3′ 6″ | .... | .... | .... | .... | .... |

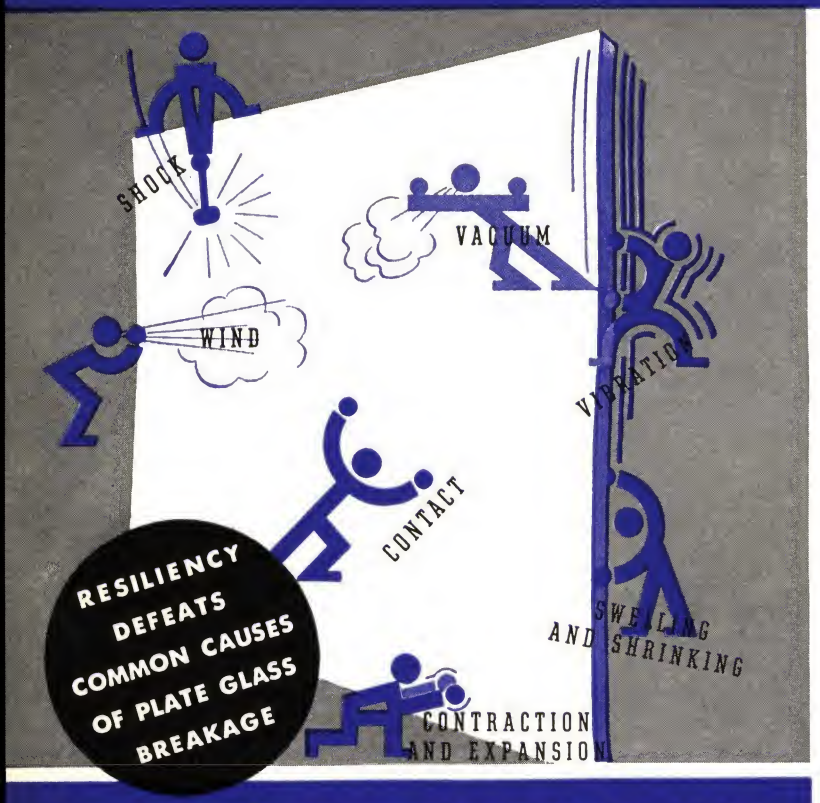
MEMORANDA

# Kawneer

# STORE FRONTS

# RESILIENCY

## A BASIC KAWNEER PRINCIPLE —IMPORTANT TO ARCHITECT, BUILDER AND MERCHANT



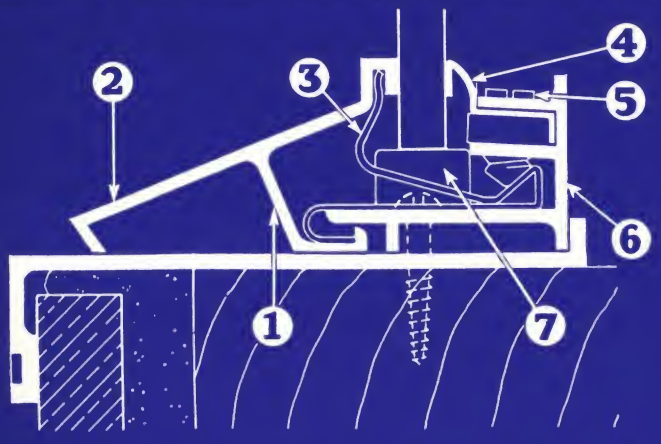

IT IS A WELL-KNOWN FACT that plate glass in store fronts is subject to a number of hazards, from a variety of sources. Glass bows in from wind pressure, bows out when wind pressure is suddenly stopped. It is endangered by contact from pedestrians, by shock from falling objects. Vibration is set up by street cars, trucks, busses, subway or railroad trains. The swelling, shrinking, contraction and expansion of other materials in the building exert their pressures on the plate glass.

These various factors cannot be eliminated. Whether they result in glass breakage, however, depends on the manner in which the glass is held—on the FUNCTIONING of the glass-holding sash and bars. If the grip is loose and insecure, if it is rigid and unyielding, or if it is localized, the danger of glass breakage is greatly increased, for obvious reasons.

With Kawneer construction, the possibility of glass breakage is practically eliminated, for glass is held in a firm, secure, and evenly-distributed grip which yields sufficiently to prevent damage from movement of glass or framing. Kawneer sash and bars are FULLY RESILIENT — WHETHER ROLLED OR EXTRUDED. This basic Kawneer principle, established in 1905, explains why hundreds of thousands of Kawneer Store Fronts are giving safe, dependable service to merchants everywhere today.

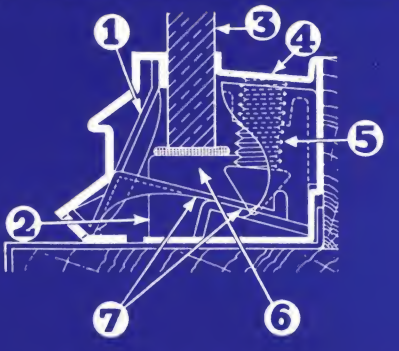
MAIN PLANT THE Kawneer COMPANY NILES, MICH.

### RESILIENT EXTRUDED STORE FRONT SASH No. A-1-AX




The first fully resilient Extruded Sash. 1. Face piece floats on Spring Mechanisms, and spreads pressure along entire face of glass. Removable only from inside. 2. Note simple, modern design. Lines are straight and true. 3. Fully resilient Spring Mechanisms provide a strong yet yielding grip — equally effective on glass varying from $\frac{1}{16}$" to $\frac{1}{4}$". No looseness. No binding. No rigidity. 4. Large, fully resilient Spring maintains continuous grip on back of glass. 5. Large trough to drain moisture from glass. 6. Strong gutter member, securely anchored at back or below. 7. Wide, sturdy, setting block, with leather cushion.

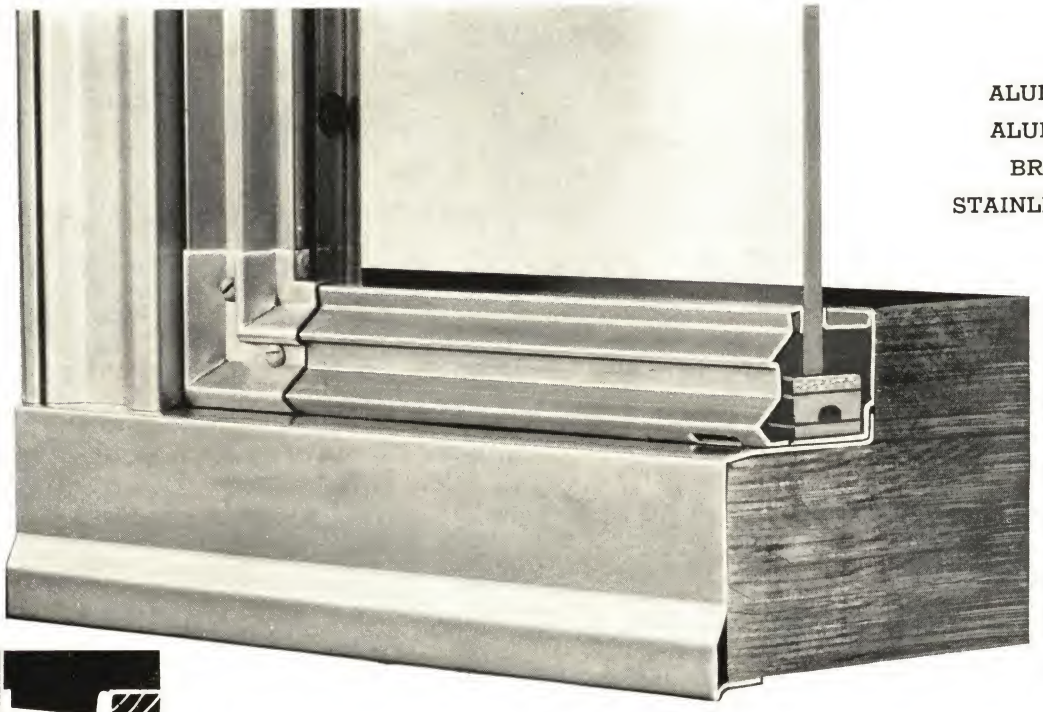
### RESILIENT ROLLED STORE FRONT SASH No. 88




A safe, dependable, time-tested glass setting. 1. Draw-plate and Screw Bracket of specially formed Spring metal assure an even, secure grip on glass which yields sufficiently to prevent glass breakage. Pressure is spread out along surface of glass by face piece. No looseness. No binding. No rigidity. 2. Wide, sturdy, adjustable supporting block. 3. Glass varying from $\frac{1}{16}$" to $\frac{1}{4}$" in thickness is held with equal grip. A uniform pressure is maintained along entire surface of glass, on both sides. 4. Trough of large capacity to drain moisture from glass. 5. Screw cannot be removed thus preventing loss or misplacement. 6. Glass rests on leather — does not touch screw. No chance of chipping or breaking. 7. Inclusa of Screw Bracket and Draw-plate leads face member inward in true alignment. Countless installations have proved the splendid glass protection afforded by resilient Kawneer settings.

# ROLLED STORE FRONT CONSTRUCTION

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ALUMINUM
ALUMILITE
BRONZE
STAINLESS STEEL

PATENTED
AND PATENTS
APPLIED FOR



## SASH No. 88

This simple, attractive store front sash holds glass by indirect screw pressure, applied from the back. The functioning of this sash is based on fundamental Kawneer principles of resiliency, explained in detail on the opposite page. Chances of glass breakage are practically eliminated. Sash is perforated at intervals for drainage and face piece is provided with ventilation holes unless otherwise specified.

The Kawneer line of rolled store front construction, suitable for store fronts of every description, is complete and up-to-date in design. Parts are furnished for every store front use — including sash, bars, awning bars, transom bars, mouldings, pilasters, sign letters, rustless metal doors, metal paneling, bulkheads, grilles, thresholds, showcase doors, ventilators, poster frames, cast ornaments, and architectural metal work.

This construction is cold-rolled, straight and true, in suitable modern alloys of aluminum, bronze, or stainless steel. The alumilite finish is recommended for aluminum, since it hardens the surface, giving extra protection against atmosphere and abrasion, and imparting a unique and appealing gloss and color to the aluminum itself. Kawneer maintains ample equipment for alumiliting all parts in its own plant (see page 6). Satin finish is standard for all metals, but polished, statuary or other practical finishes are also available.

Mouldings are formed to fit standard sizes of lumber. For data on items not listed in this catalog, see the Kawneer distributor or write the factory at Niles, Michigan.



HOOD AWNING BAR



CONCEALED AWNING BAR



RECESSED AWNING BAR

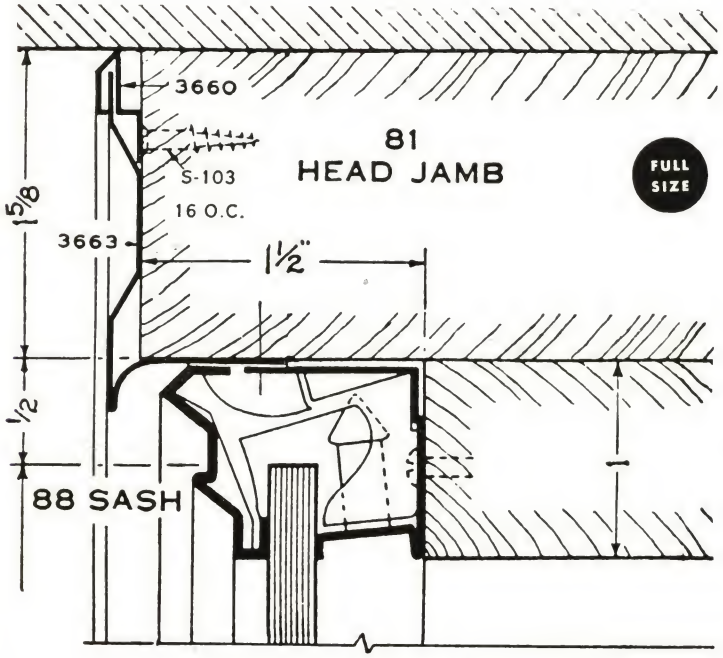


TRANSOM BAR

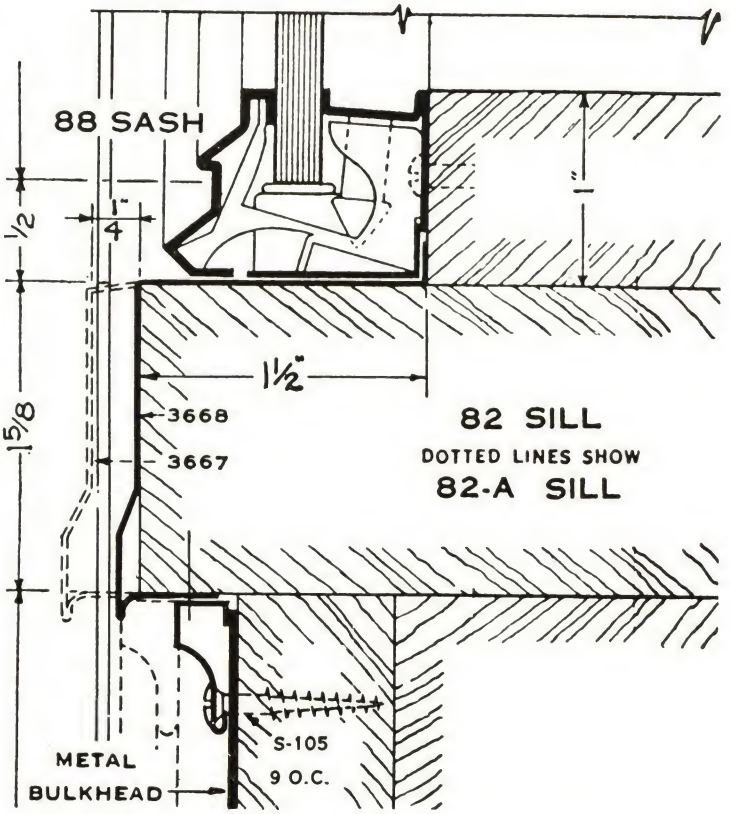


19/7

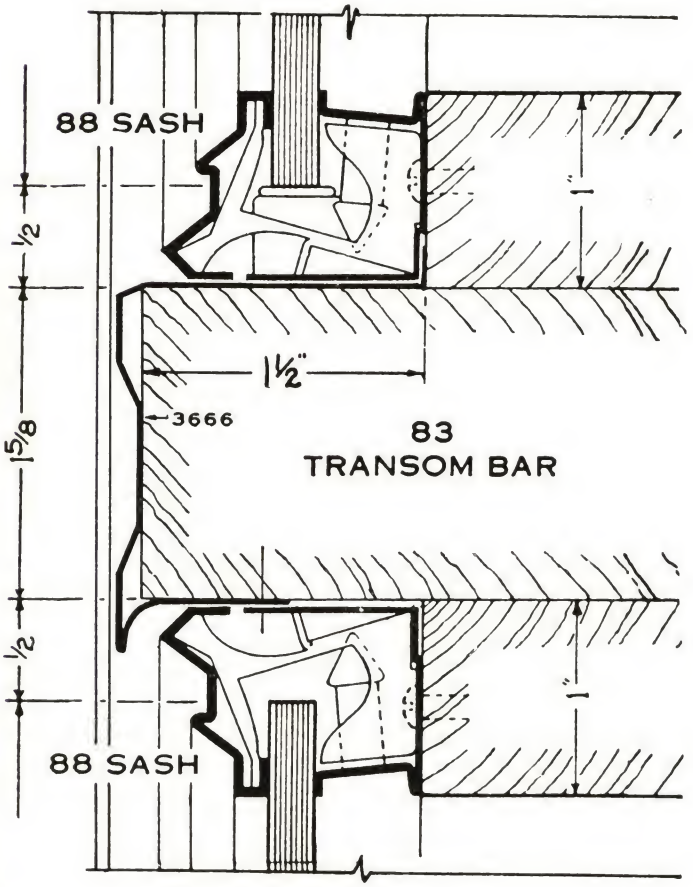
## ROLLED STORE FRONT CONSTRUCTION

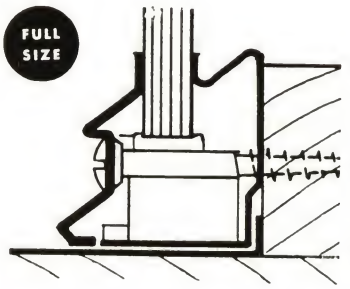



PATENTED AND PATENTS PENDING




**VERTICAL SECTION**




**SASH 77**

PATENTED AND PATENTS PENDING

Kawneer Sash 77 is a simple, screw-pressure type of cold-rolled sash, proved by over 30 years of general use. Fully RESILIENT members are fabricated from proper alloys of aluminum, bronze, or stainless steel in any practical finish. Satin finish is standard. The alumilite finish on aluminum is especially recommended.

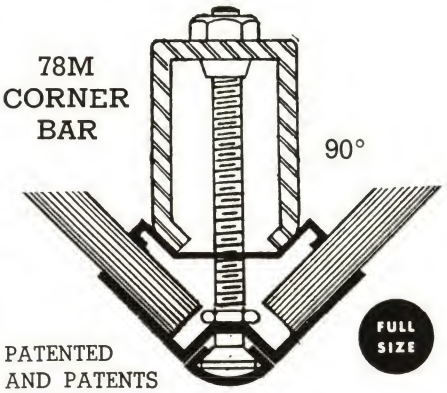
This sash presents a neat appearance for the average front.

**F. S. DETAILS AVAILABLE ON COMPLETE KAWNEER LINE – ROLLED AND EXTRUDED**

# ROLLED STORE FRONT CONSTRUCTION

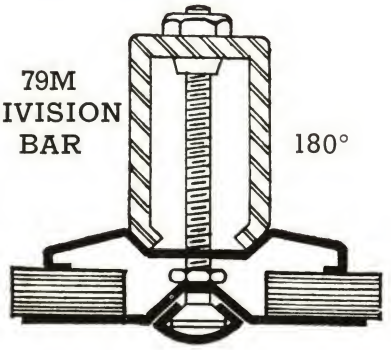


78M CORNER BAR

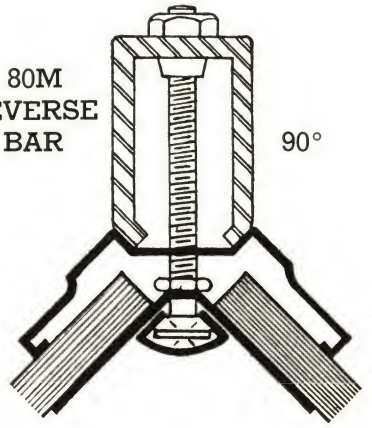



PATENTED AND PATENTS PENDING

79M DIVISION BAR




80M REVERSE BAR

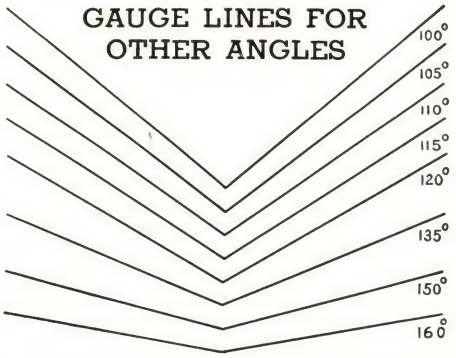



## BARS AND STIFFENERS

Stock angles for rolled bars are illustrated or shown in gauge lines at left, but these bars may be obtained at any angle desired. Kawneer Bars should always be used, to complete the framing of the show window, to minimize chances of glass breakage by providing full resiliency all around the plate glass, and to avoid the chance of injury to the passerby.

STIFFENERS should be specified according to Table of Bars below. X reinforcement for Heavy Stiffener supplied only when specified.

GAUGE LINES FOR OTHER ANGLES




3401 MEDIUM STIFFENER M SHOWN WITH BARS ABOVE

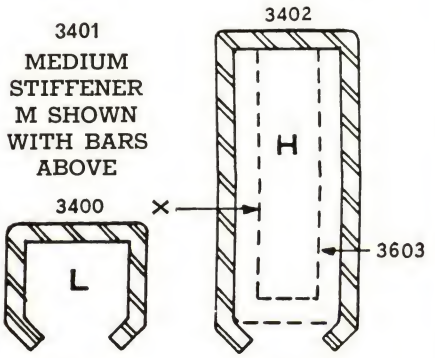


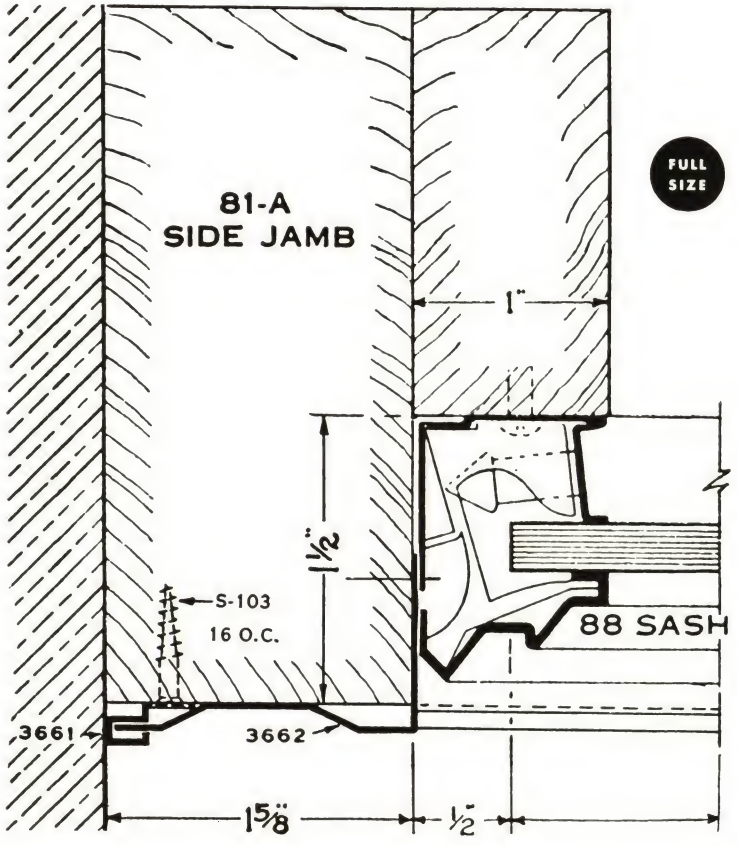

TABLE OF BARS

IN ORDER TO FACILITATE THE SELECTION OF PROPER BARS WE SUBMIT A TABLE WHICH WE BELIEVE WILL BE OF GREAT ASSISTANCE IN ORDERING. WE ARE ALSO SUBMITTING A FORMULA AS AN EXPLANATION OF THIS TABLE.

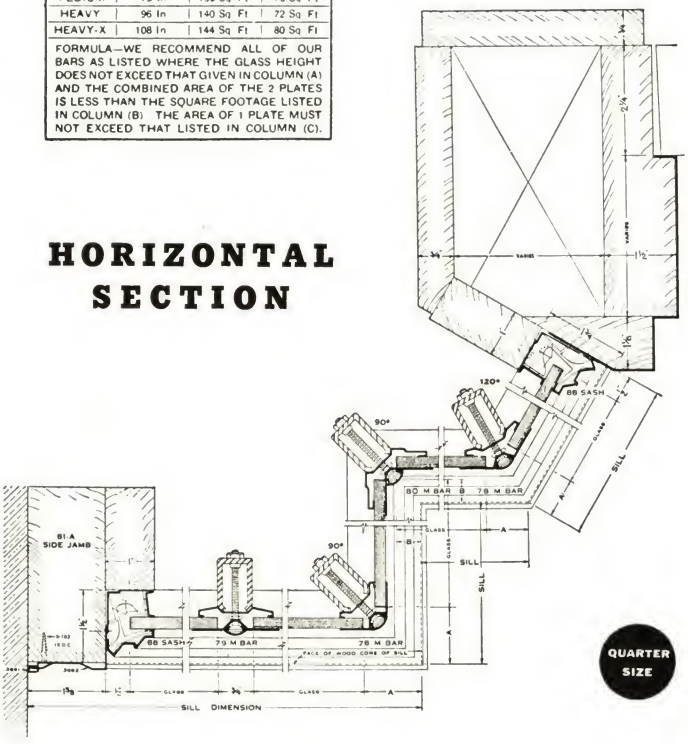
| STIFFENER | A | B | C |
|---|---|---|---|
| LIGHT | 60 In | 100 Sq Ft | 55 Sq Ft |
| MEDIUM | 78 In | 130 Sq Ft | 70 Sq Ft |
| HEAVY | 96 In | 140 Sq Ft | 72 Sq Ft |
| HEAVY-X | 108 In | 144 Sq Ft | 80 Sq Ft |

FORMULA—WE RECOMMEND ALL OF OUR BARS AS LISTED WHERE THE GLASS HEIGHT DOES NOT EXCEED THAT GIVEN IN COLUMN (A) AND THE COMBINED AREA OF THE 2 PLATES IS LESS THAN THE SQUARE FOOTAGE LISTED IN COLUMN (B). THE AREA OF 1 PLATE MUST NOT EXCEED THAT LISTED IN COLUMN (C).

81-A SIDE JAMB

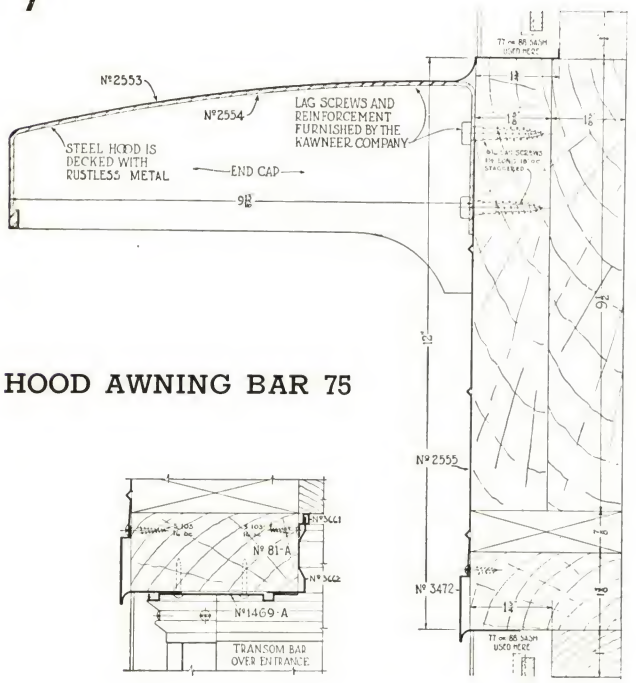



## HORIZONTAL SECTION

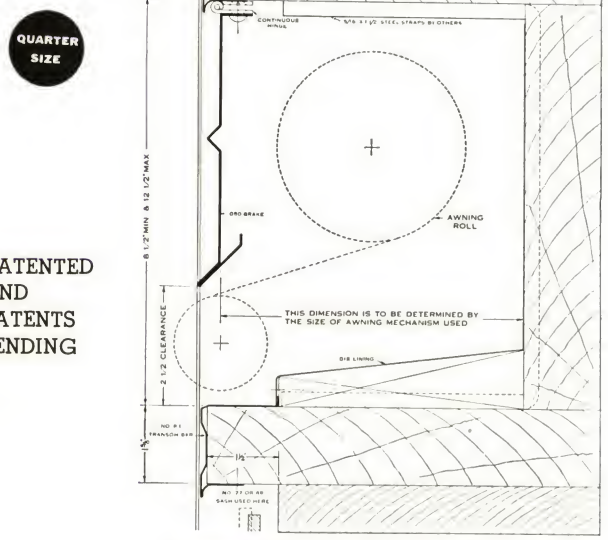


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# ROLLED STORE FRONT CONSTRUCTION




## HOOD AWNING BAR 75




## CONCEALED AWNING BAR 32-H

QUARTER SIZE



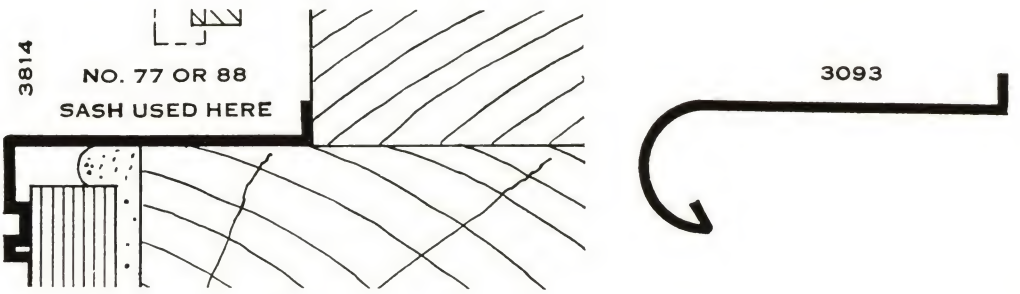

PATENTED AND PATENTS PENDING

## RECESSED AWNING BAR 35

## AWNING BARS

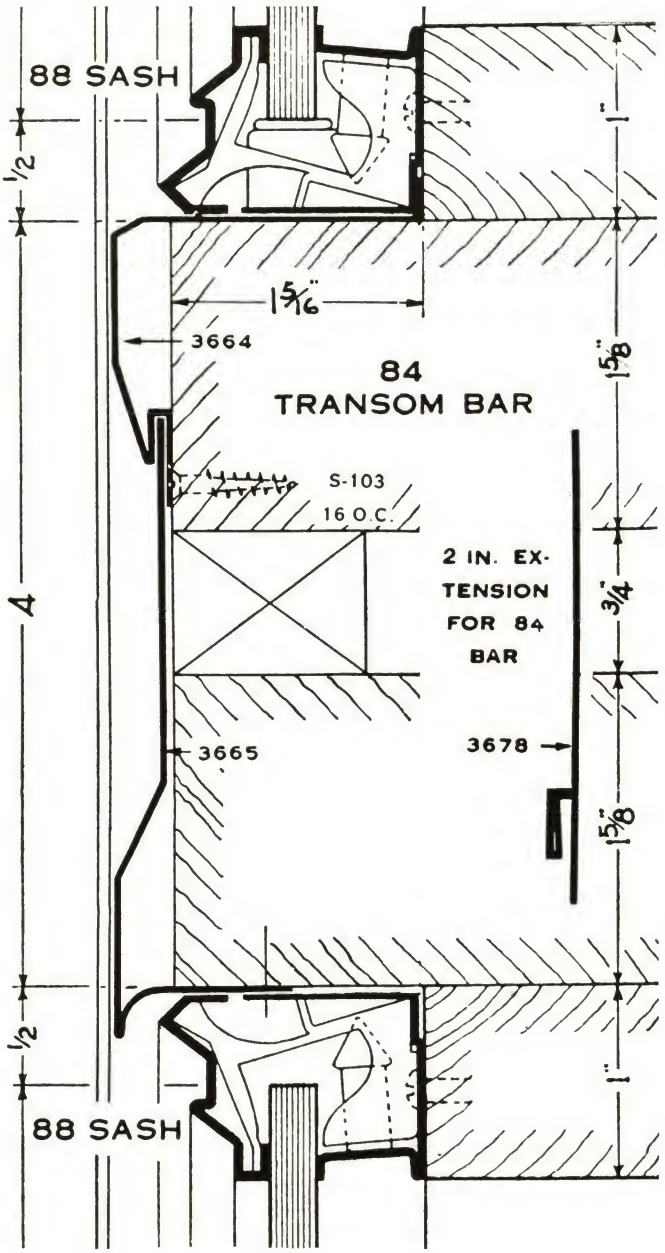
The three types of awning bars detailed on this page are very attractive and practical for any type of front. HOOD type is simple in design, is easily installed, and gives dependable protection. It may be used with lateral or outrigger arms. CONCEALED type hides and protects the awning roll when not in use; can be used ONLY with lateral arms. Typical construction shown. Awning mechanism is to be furnished by others. Concealed Awning Bar with pivoted cover is also available. RECESSED type protects awning roll in recessed box; can be used ONLY with outrigger arms. Hinged cover is detailed and recommended but stationary cover is available.

## SILL AND JAMB MOULDINGS



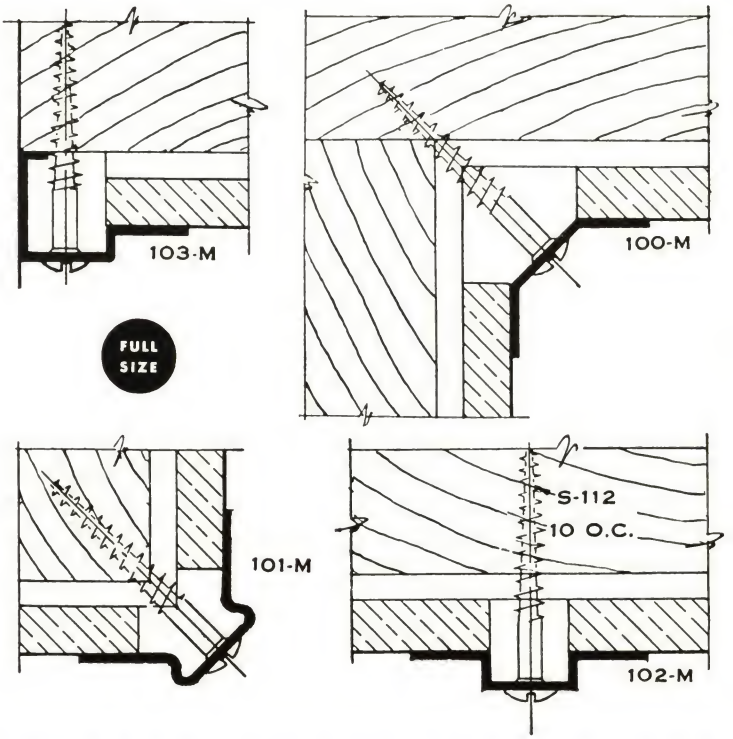
## ROLLED STORE FRONT CONSTRUCTION

19/7




**TRANSOM BAR 84**

Narrower Transom Bar detailed with Vertical Section on page 3. Wider Bars are accommodated by use of extension 3678.




**MIRROR FRAME MOULDINGS**




**SIGNS • SPECIAL METAL WORK**

In addition to material detailed in this catalog Kawneer furnishes many other mouldings and shapes, and fabricates all types of special metal work to order. Write for data.

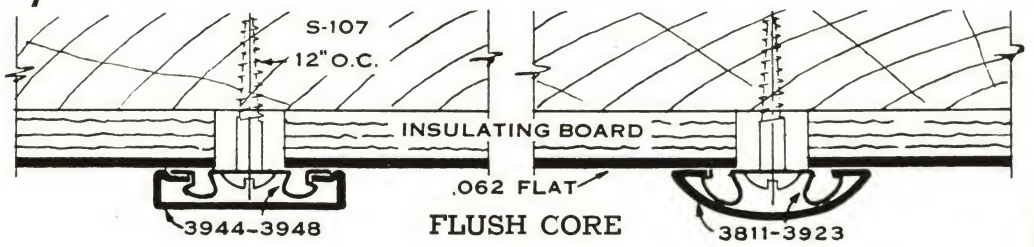


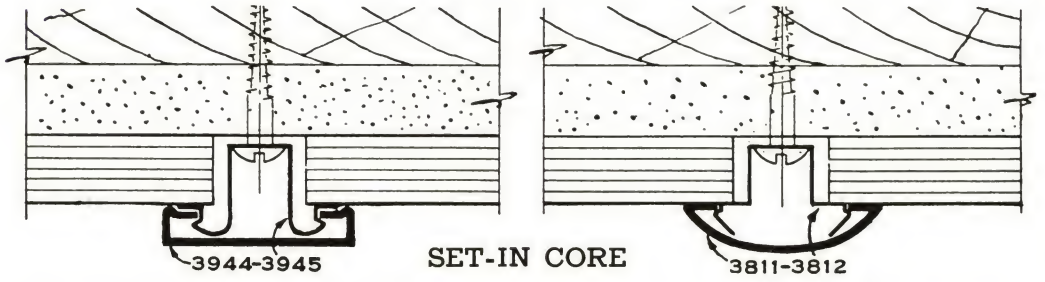
# ALUMILITED ALUMINUM

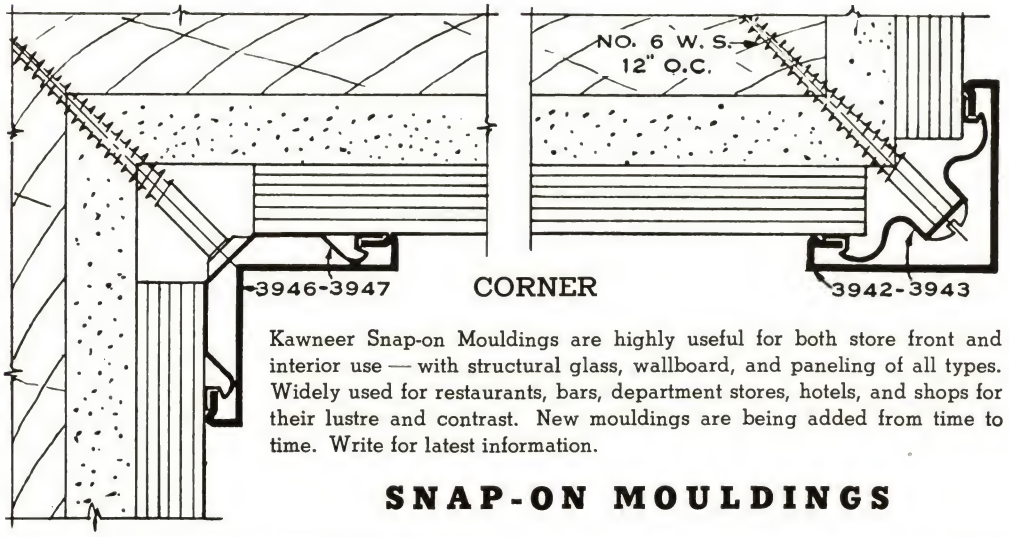
SPECIAL ATTENTION IS DIRECTED TO THE ALUMILITE (ANODIC) FINISH — AN ELECTRO-CHEMICAL PROCESS WHICH HARDENS THE SURFACE OF THE ALUMINUM ITSELF. THIS IS AN IDEAL FINISH SINCE IT AFFORDS MUCH GREATER PROTECTION AGAINST ABRASION AND ATMOSPHERIC CONDITIONS; IS NON-STAINING, NON-SEIZING; AND GIVES THE METAL A SOFT GLOSS AND APPEALING COLOR. EASILY CLEANED. REDUCES CORROSION TO THE MINIMUM.

19/7

## ROLLED STORE FRONT CONSTRUCTION



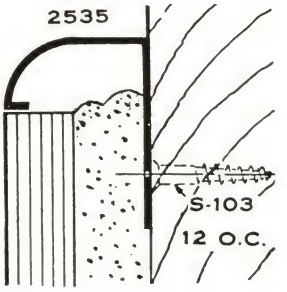



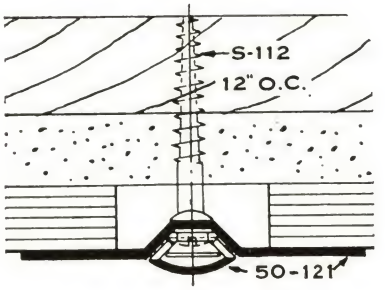

Kawneer Snap-on Mouldings are highly useful for both store front and interior use — with structural glass, wallboard, and paneling of all types. Widely used for restaurants, bars, department stores, hotels, and shops for their lustre and contrast. New mouldings are being added from time to time. Write for latest information.

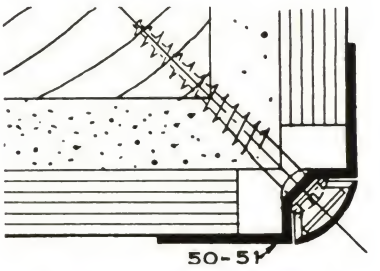
**SNAP-ON MOULDINGS**

FULL SIZE



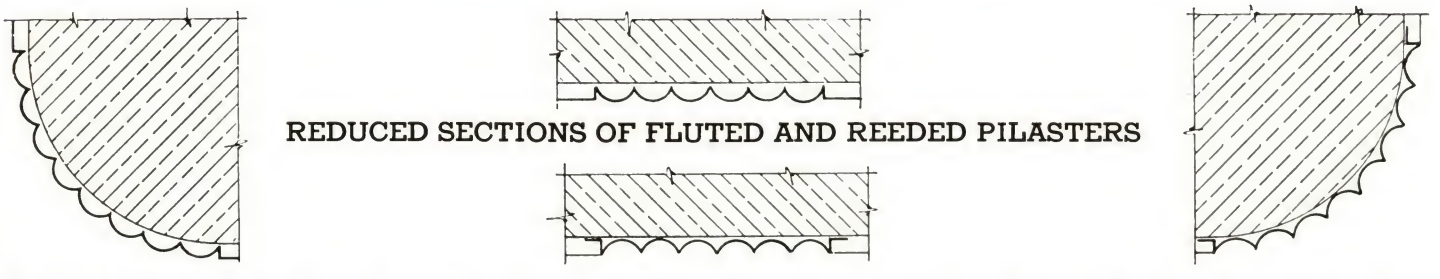

TRIM AT END



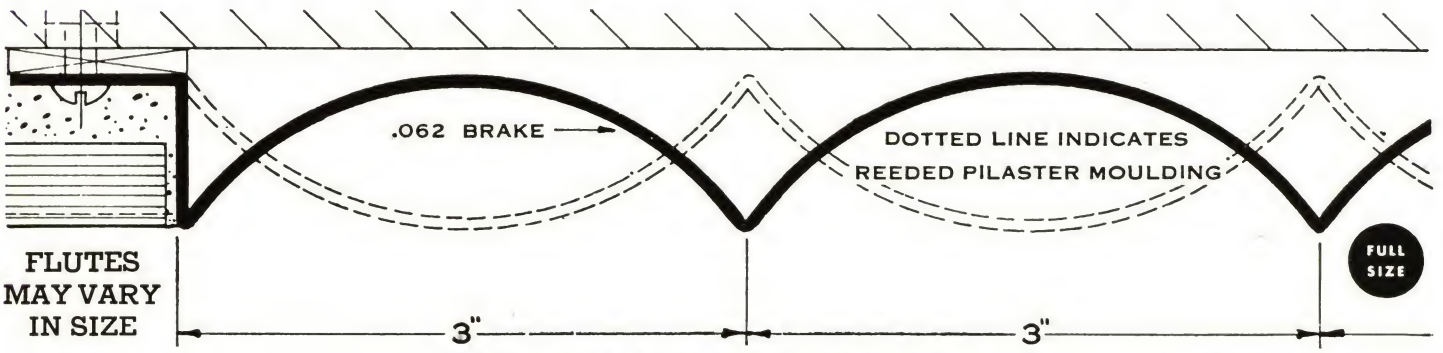




OUTSIDE SETTING

**TRIM MOULDINGS**



REDUCED SECTIONS OF FLUTED AND REEDED PILASTERS




**PILASTER MOULDINGS**

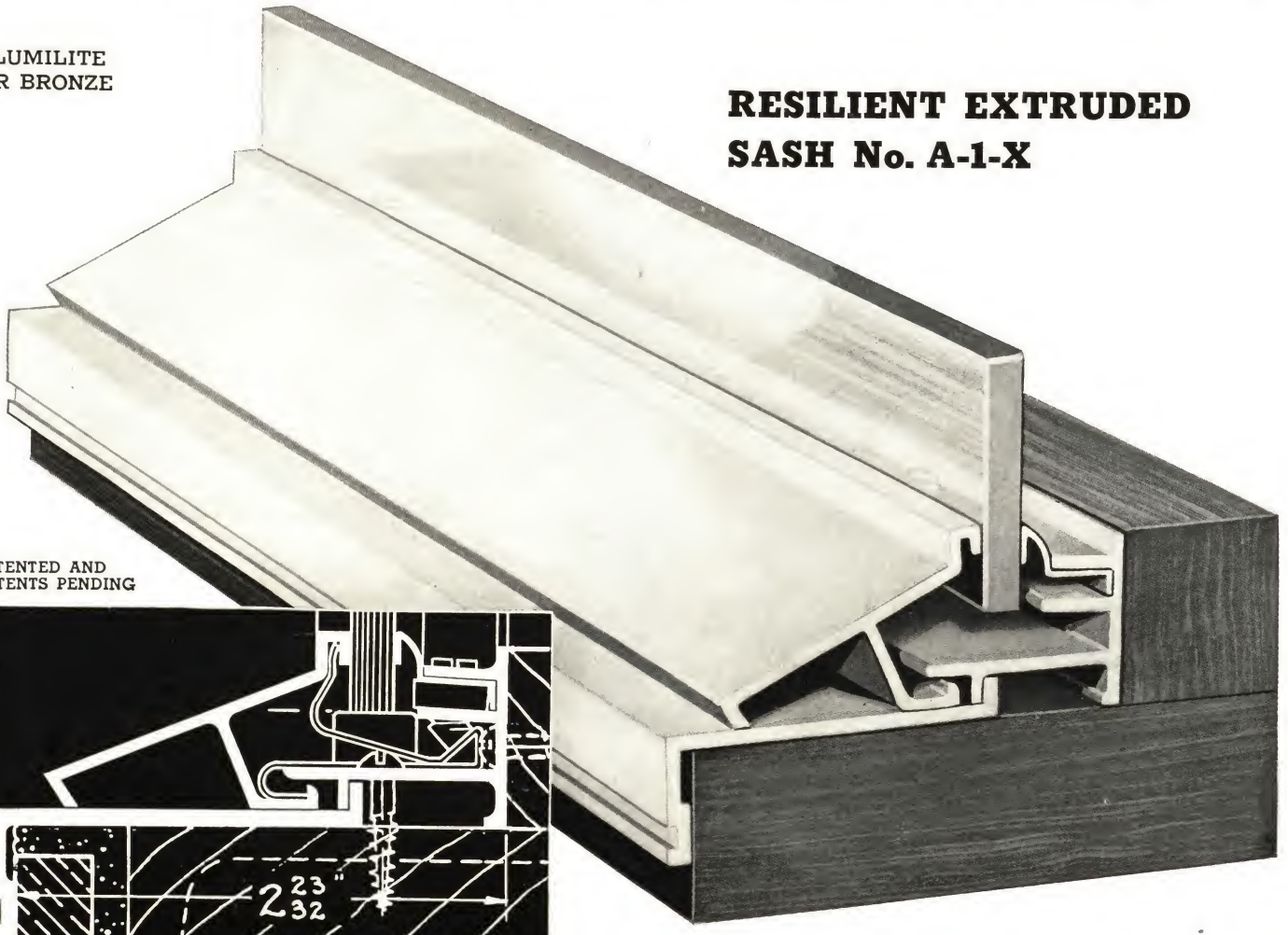
(see page 14 for Extruded)

# EXTRUDED STORE FRONT CONSTRUCTION

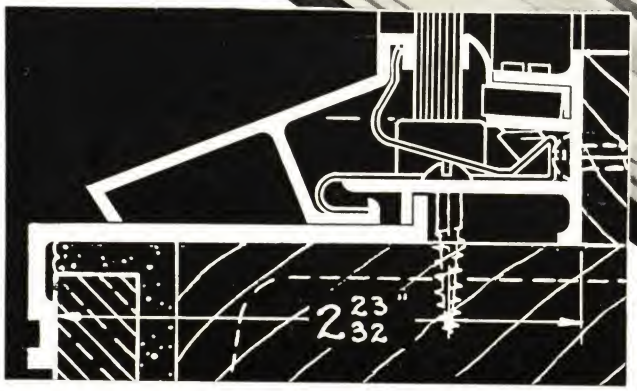
19/7

ALUMILITE
OR BRONZE

## RESILIENT EXTRUDED SASH No. A-1-X



PATENTED AND
PATENTS PENDING




This RESILIENT EXTRUDED SASH provides a truly safe and dependable glass setting for those who prefer the heavy extruded construction. Although extruded shapes are by their very nature rigid and unyielding, the introduction of fully resilient Spring Mechanism at front and of continuous Spring at back, creates an element of flexibility which prevents glass breakage.

This resiliency allows for the inevitable movement of plate glass and framing, yet maintains a firm, secure grip at all times — equally distributed along surface, and equally effective on glass varying in thickness from 3/16" to 5/16". No looseness. No binding. No rigidity. (See page 1)

Sash can be mitered perfectly, but corner caps are available if desired. Drainage holes are provided in gutter, but ventilation holes are made in sash only when specified. Sash is self-supporting.

The complete line of Kawneer Extruded Store Front Construction is harmoniously designed in simple, striking lines, and includes attractive shapes for every store front purpose. An ideal construction to use where richness, lasting beauty and dependable glass protection are desired.



HOOD AWNING BAR



CONCEALED AWNING BAR



RECESSED AWNING BAR

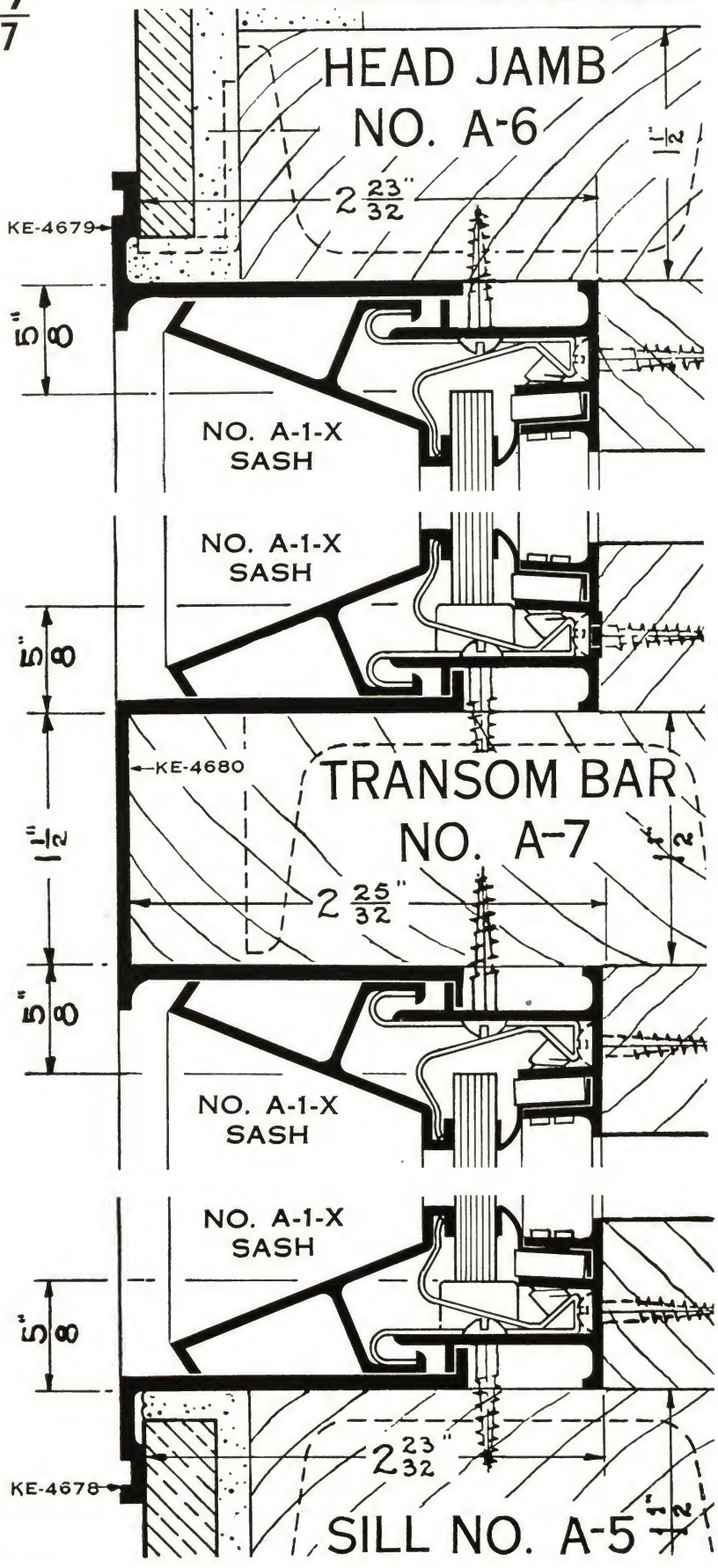


TRANSOM BAR

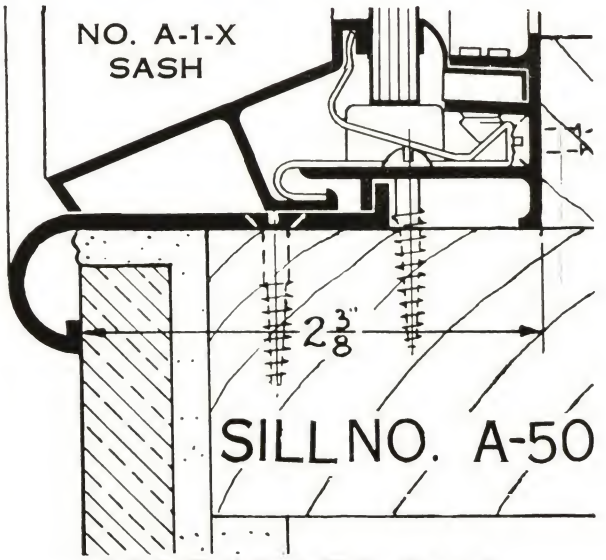


19/7

## EXTRUDED STORE FRONT CONSTRUCTION

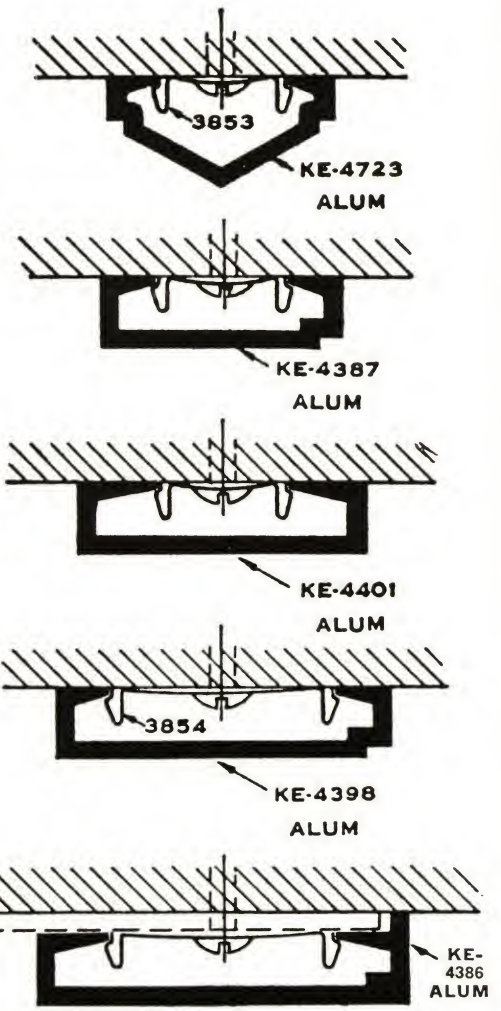



VERTICAL SECTION




ALTERNATE SILL

FULL SIZE

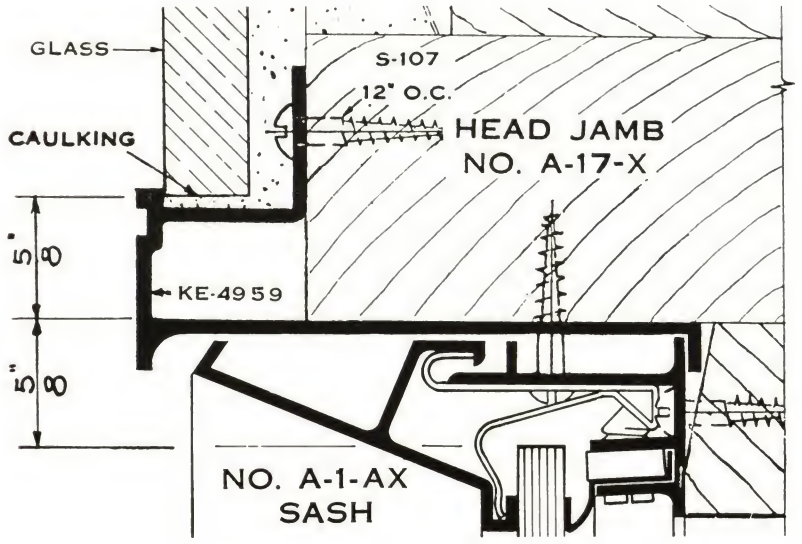


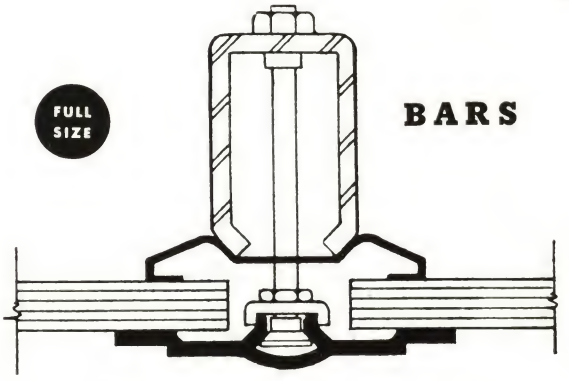

**SNAP-ON MOULDINGS**

For a wide variety of uses—exterior and interior.

# EXTRUDED STORE FRONT CONSTRUCTION

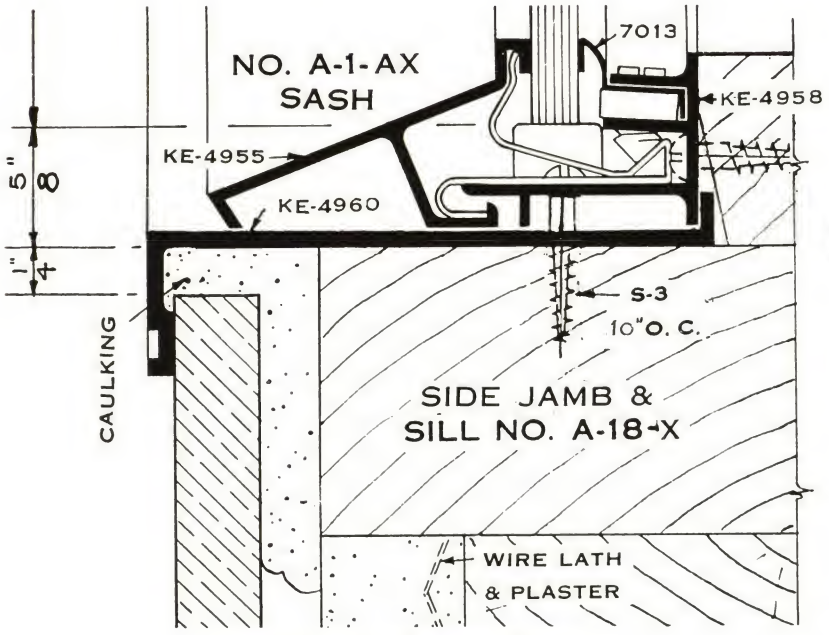




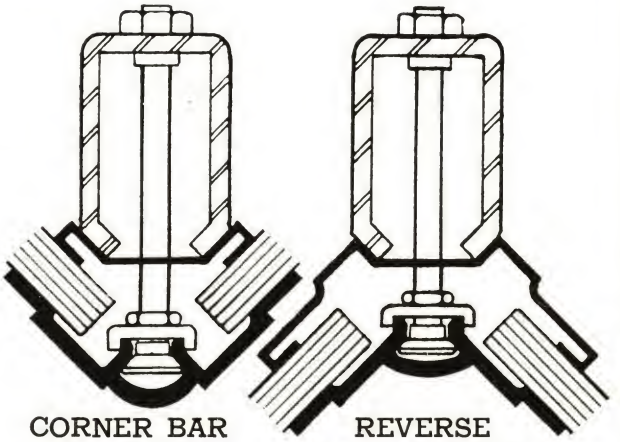




**DIVISION BAR No. A-3-X**

EXTRUDED BARS are carried in stock at these angles: 90° 110°, 120°, 135°, and 160°—both Corner and Reverse. They may be obtained at any angle, however. Data on page 4 regarding Stiffeners applies.

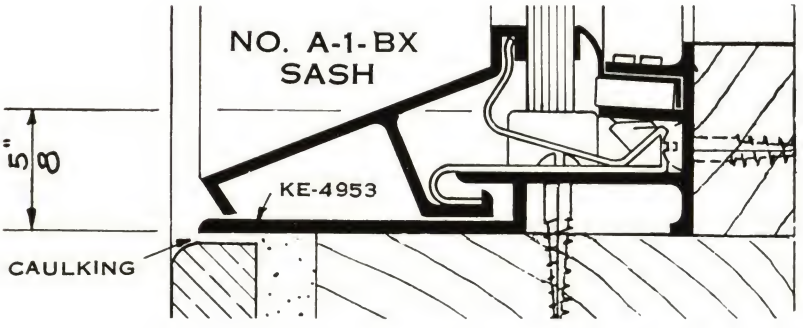



PATENTED AND PATENTS PENDING

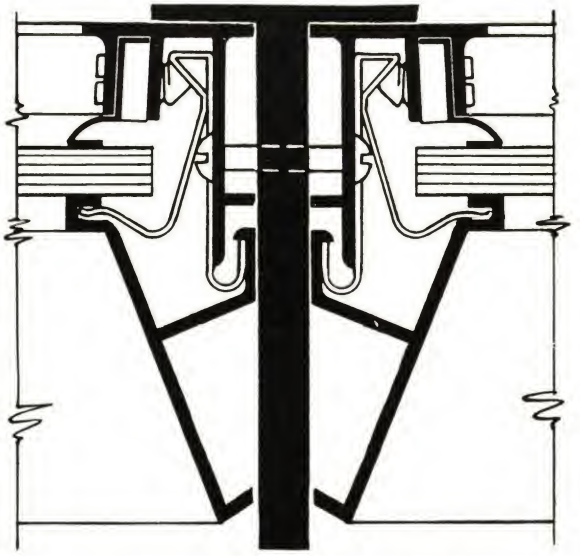


**CORNER BAR No. A-2-X**

**REVERSE BAR No. A-4-X**




**ALTERNATE SASH, JAMBS AND SILLS**



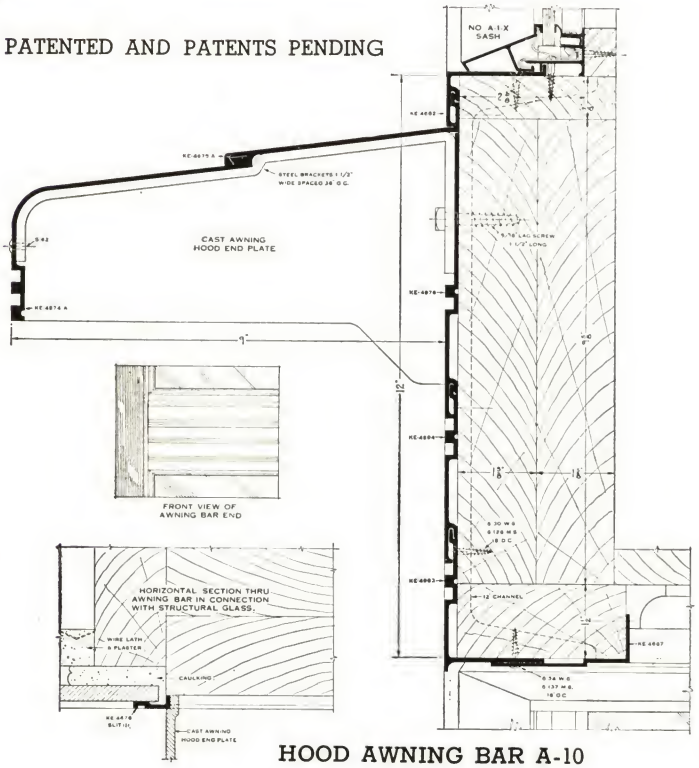
**DIVISION BAR No. 14-AX**

This Bar is used where a very definite division between show windows is desired.

19/7

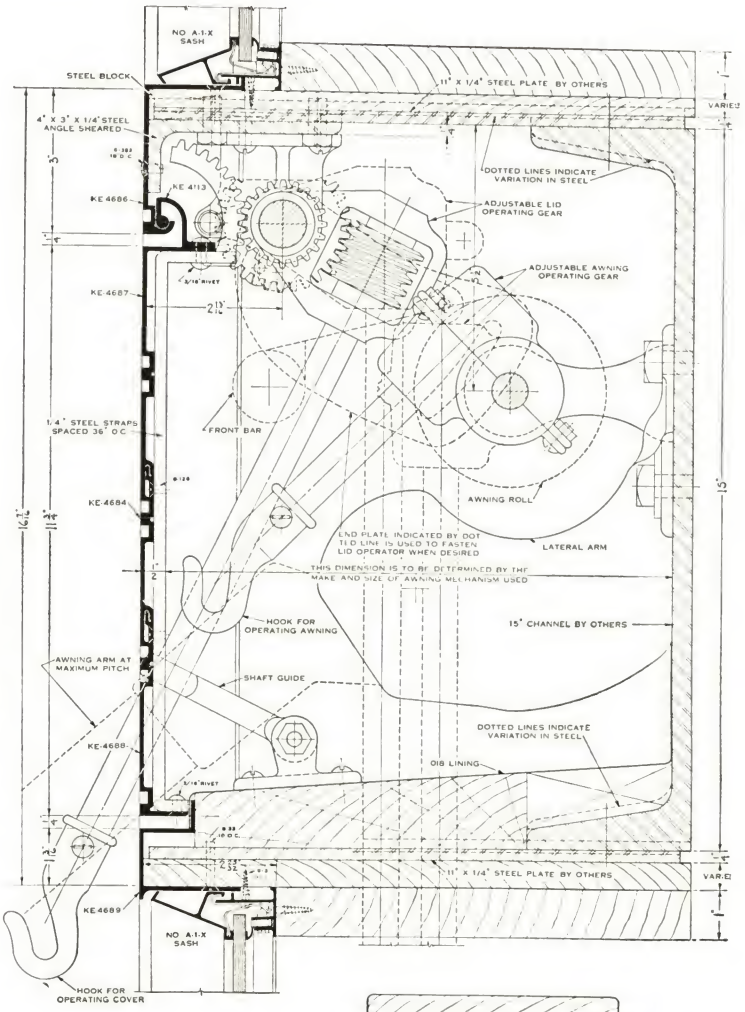
# EXTRUDED STORE FRONT CONSTRUCTION

PATENTED AND PATENTS PENDING



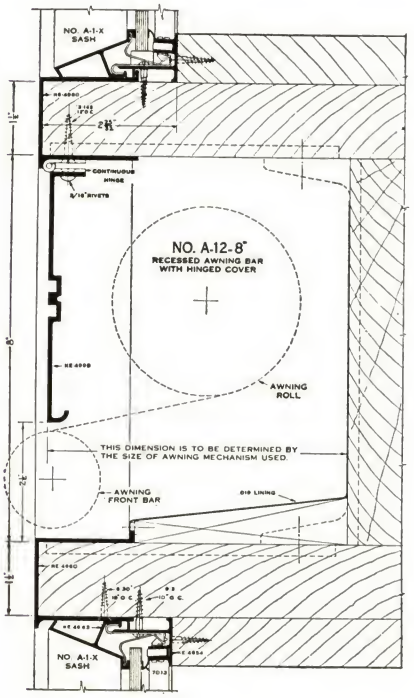

## HOOD AWNING BAR A-10

An exceptionally graceful awning bar, which may be used with either lateral or outrigger arms. Steel channel shown by dotted lines is optional.




## CONCEALED AWNING BAR A-11-H

Awning roll is protected and completely hidden when not in use — a very desirable condition. For use with lateral arms ONLY. Awning mechanism by others. Pivoted type also available.

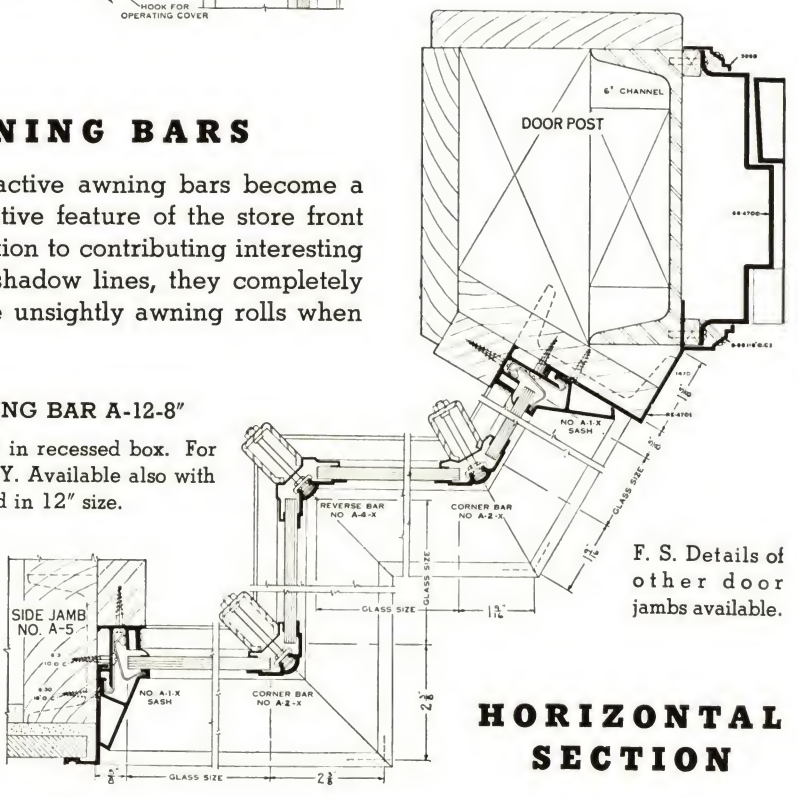



## AWNING BARS

These very attractive awning bars become a valuable decorative feature of the store front design. In addition to contributing interesting highlights and shadow lines, they completely or partially hide unsightly awning rolls when not in use.

### RECESSED AWNING BAR A-12-8"

Protects awning roll in recessed box. For outrigger arms ONLY. Available also with stationary cover, and in 12" size.

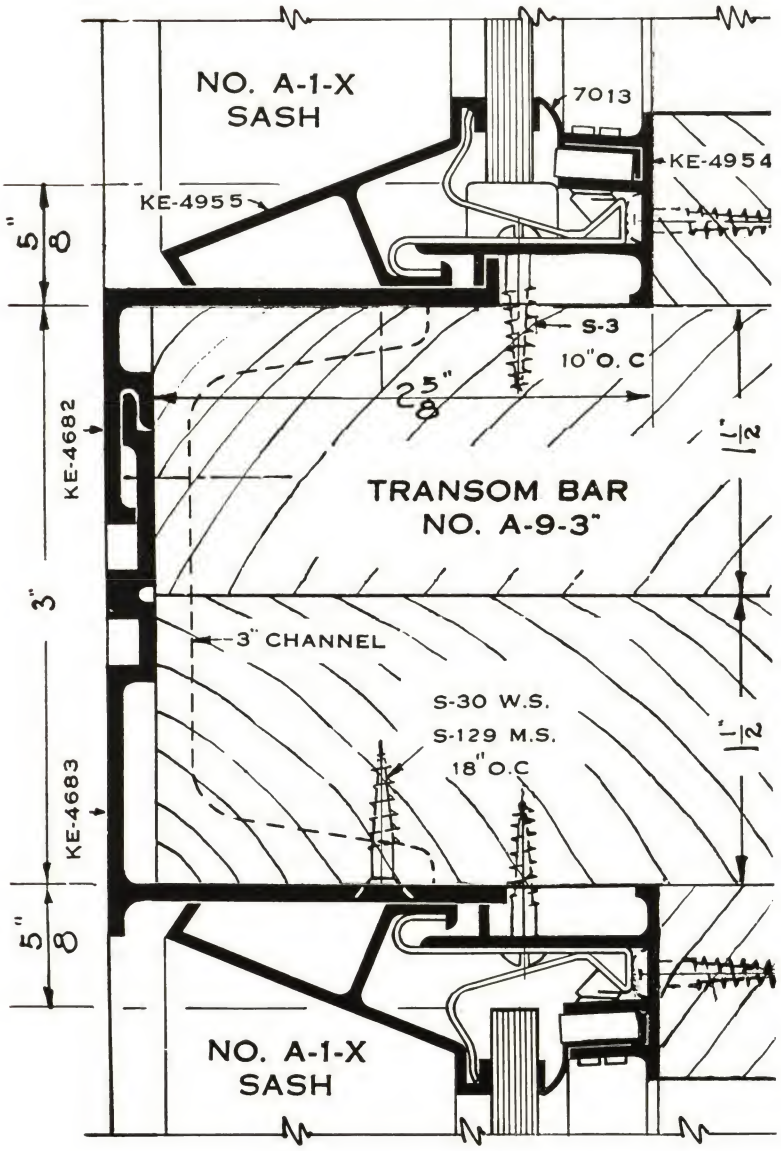



F. S. Details of other door jambs available.

QUARTER SIZE

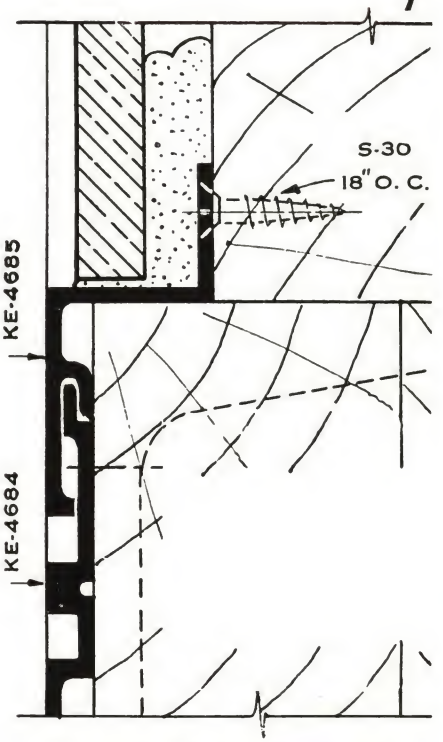
**HORIZONTAL SECTION**

## EXTRUDED STORE FRONT CONSTRUCTION






EXT. MLDG.
4684



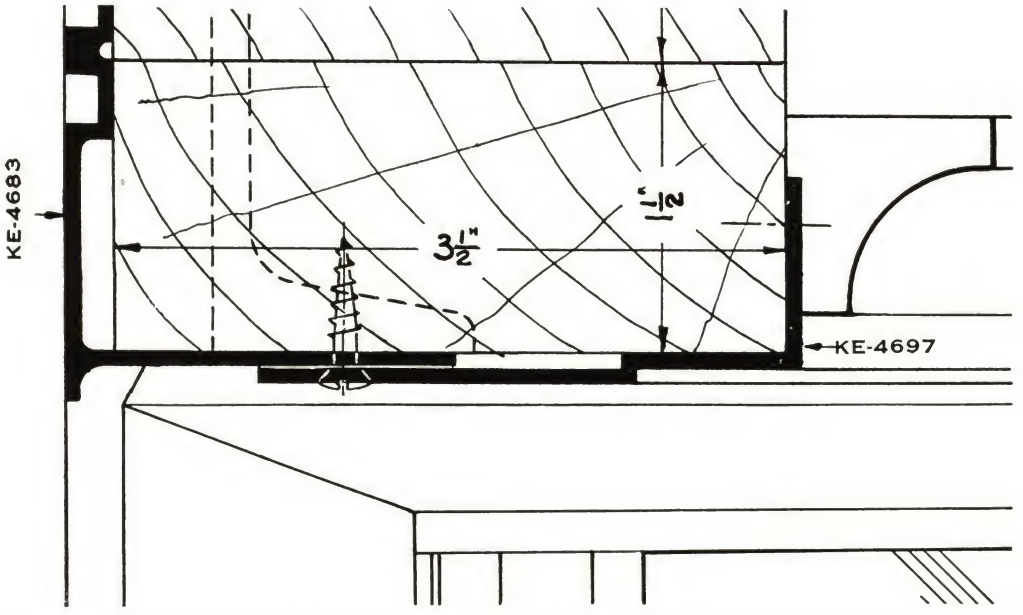

TRANSOM OR AWNING BAR WITH STR. GLASS

### TRANSOM BARS

Transom Bar No. A-9-3″, detailed at left, can be extended to 6″, 9″, and 12″ by use of Extension Moulding 4684, shown above. 1½″ Bar A-7 is shown with Vertical Section on page 9. 4″ Bar No. A-8 is similar in appearance to A-9 series, but one shape only is used.

FULL SIZE

TRANSOM OR AWNING BAR OVER ENTRANCE




### WINDOWS?

Second-story windows often become a problem when store fronts are planned. Your attention is directed to Kawneer Sealair Windows of solid aluminum or bronze, which harmonize ideally with Kawneer store front metal. See separate catalog in SWEET'S.

19/7

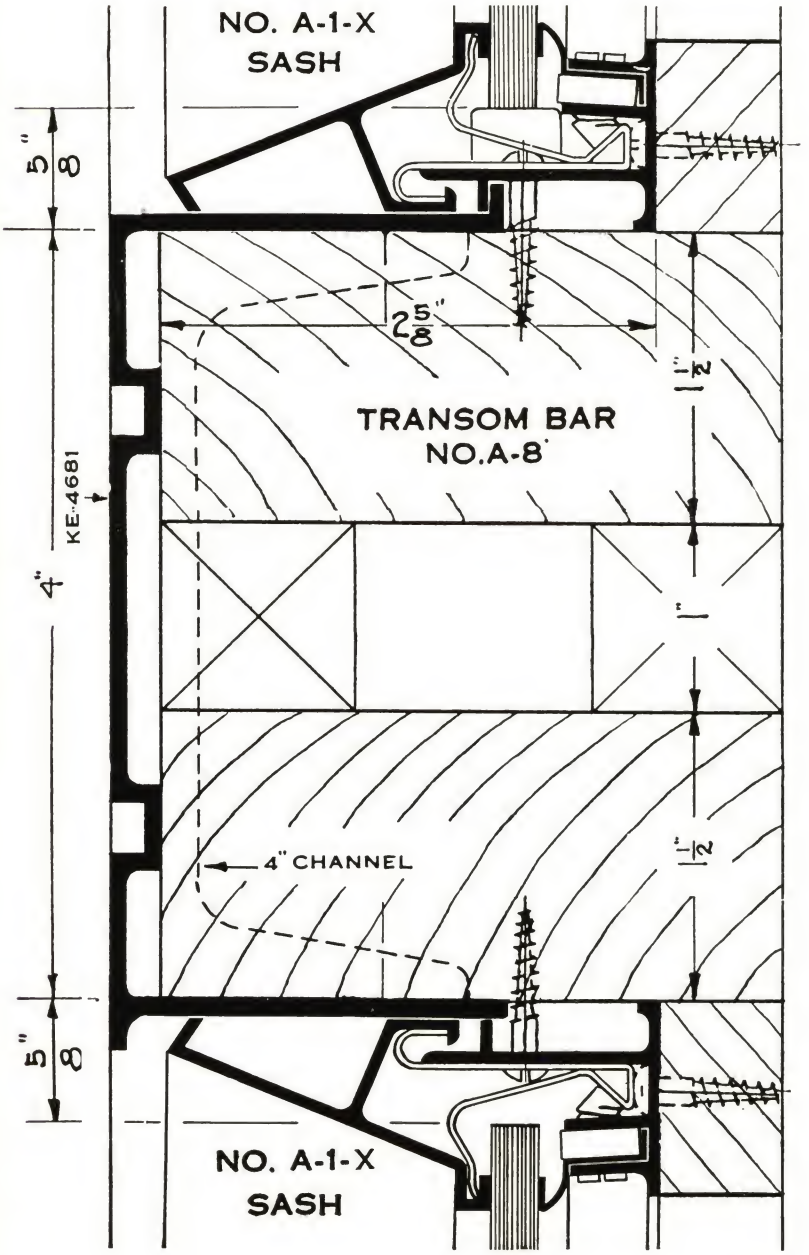
# EXTRUDED STORE FRONT CONSTRUCTION



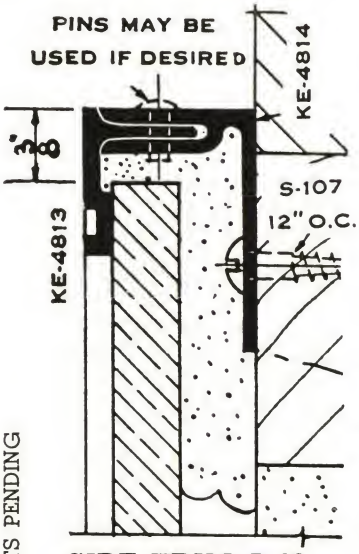



## RUSTLESS METAL DOORS

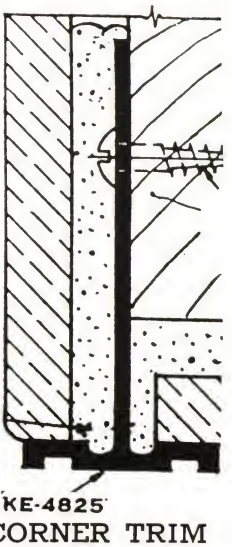
Beautiful and durable Kawneer Doors are almost universally used in the newer store fronts. Refer to catalog on Kawneer Windows, Doors, and Architectural Metal Work, also in SWEET'S, or write for special booklet.



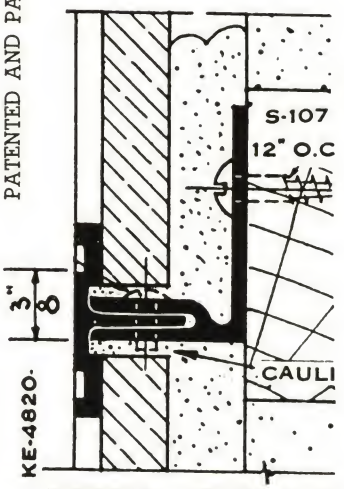

PATENTED AND PATENTS PENDING



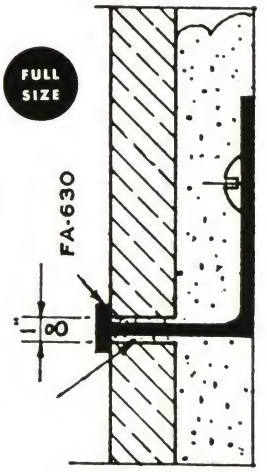

SIDE TRIM A-19



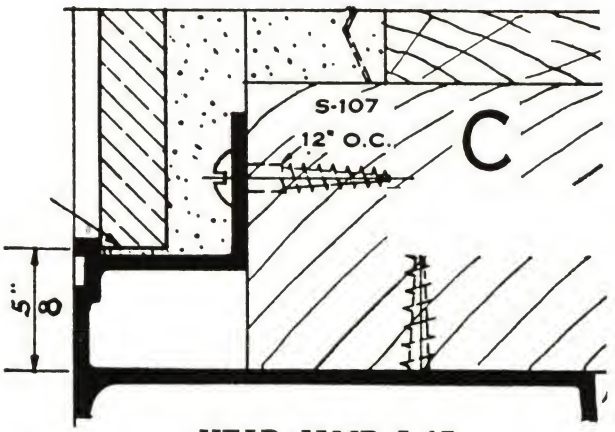

CORNER TRIM A-21




INTERM. TRIM A-20




TRIM A-27




HEAD JAMB A-17

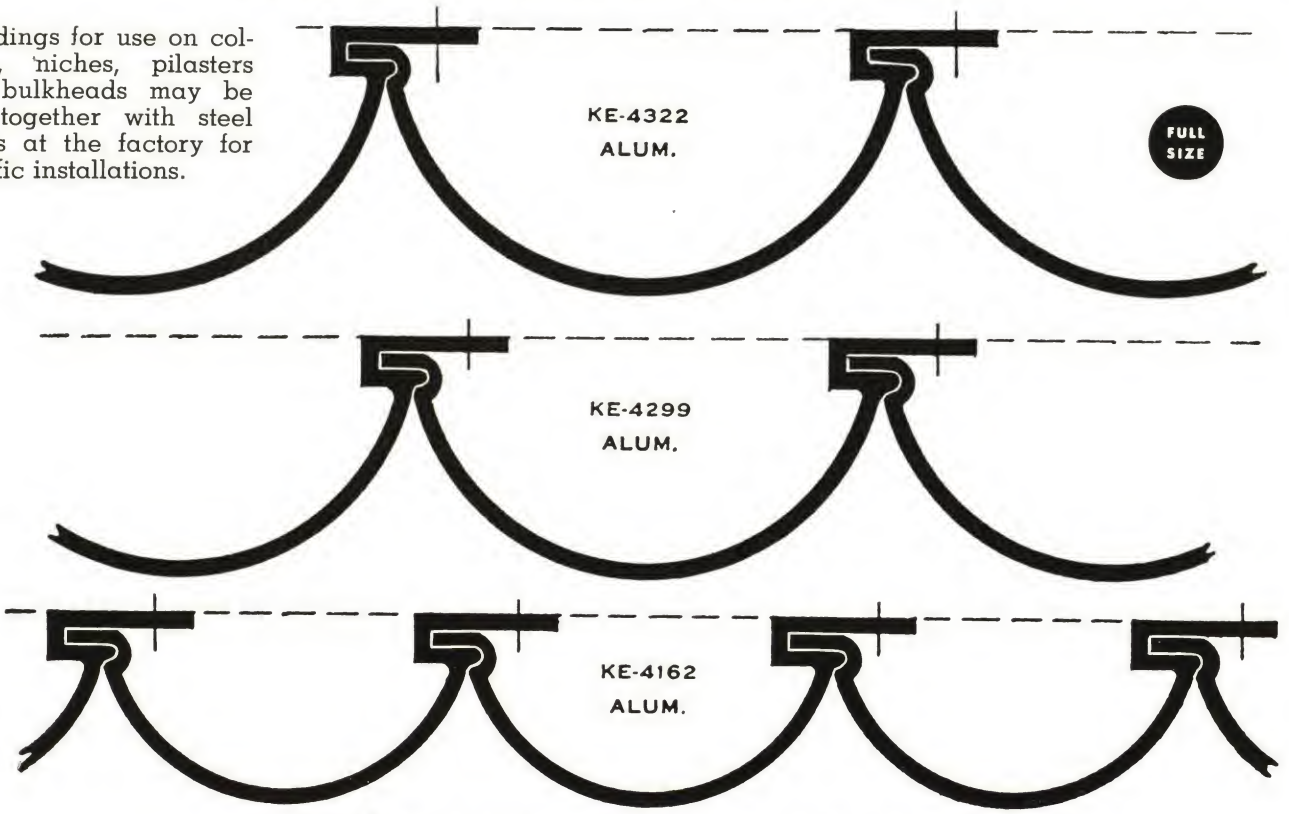
## MOULDINGS FOR STR. GLASS

These strong mouldings add life and contrast, and help support the structural glass. Head Jamb A-17 is for use with Extruded Sash. No. A-1-AX or with special sash and muntins for small panes of glass.

## EXTRUDED STORE FRONT CONSTRUCTION

19/7

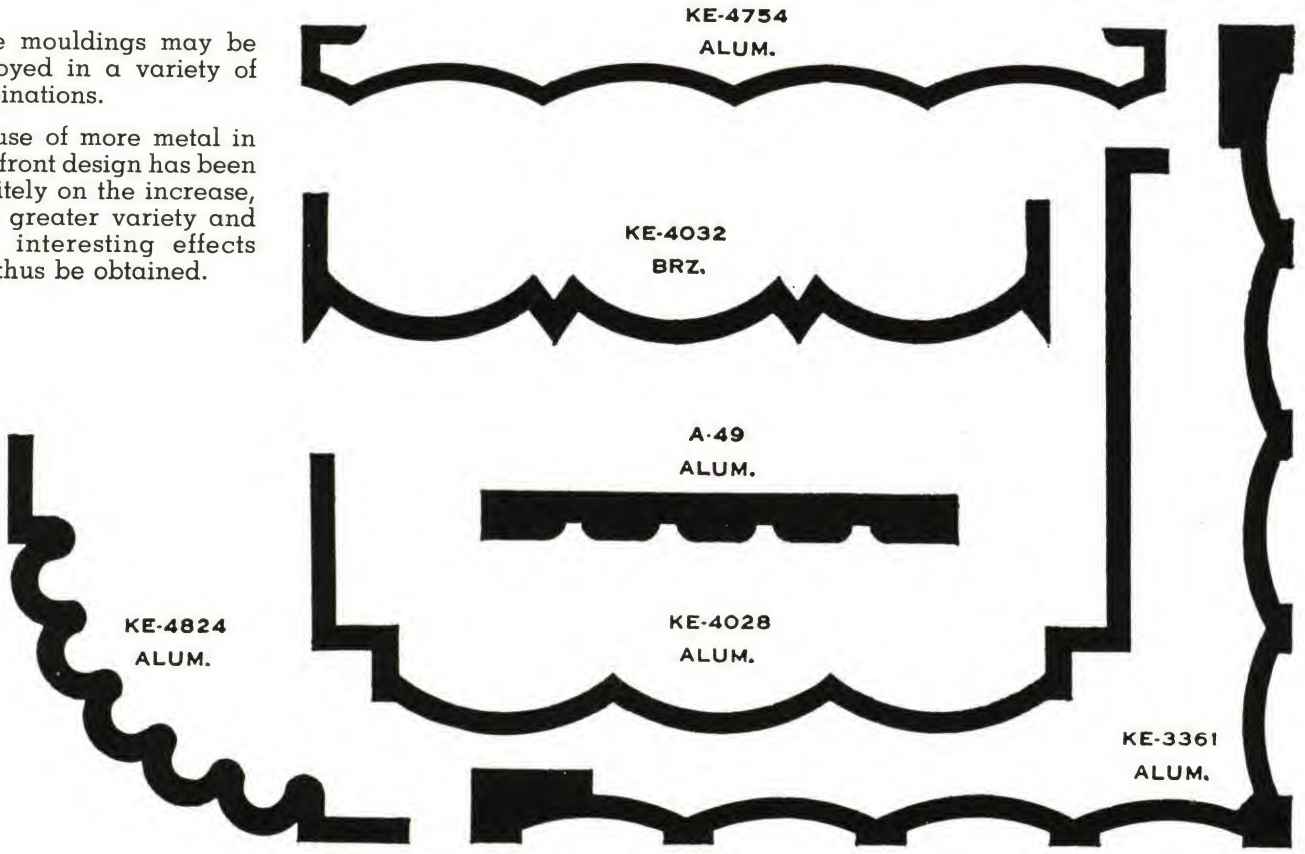
Mouldings for use on columns, niches, pilasters and bulkheads may be tied together with steel bands at the factory for specific installations.




**EXTRUDED REED MOULDINGS**

These mouldings may be employed in a variety of combinations.

The use of more metal in store front design has been definitely on the increase, since greater variety and more interesting effects may thus be obtained.

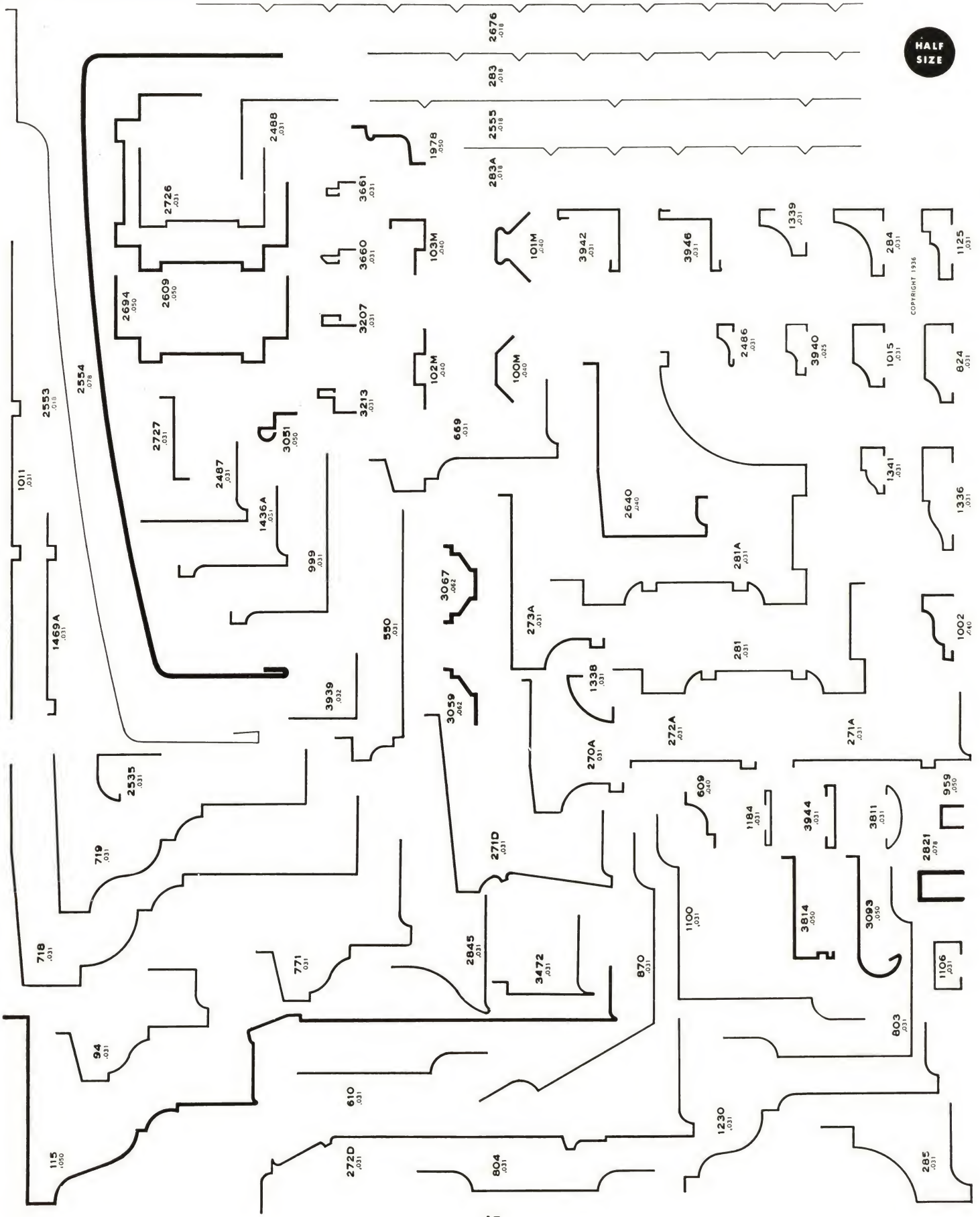



**EXTRUDED PILASTER MOULDINGS**

19/7 COLD ROLLED ALUMINUM

# STOCK MOULDINGS

BRONZE, OR STAINLESS STEEL

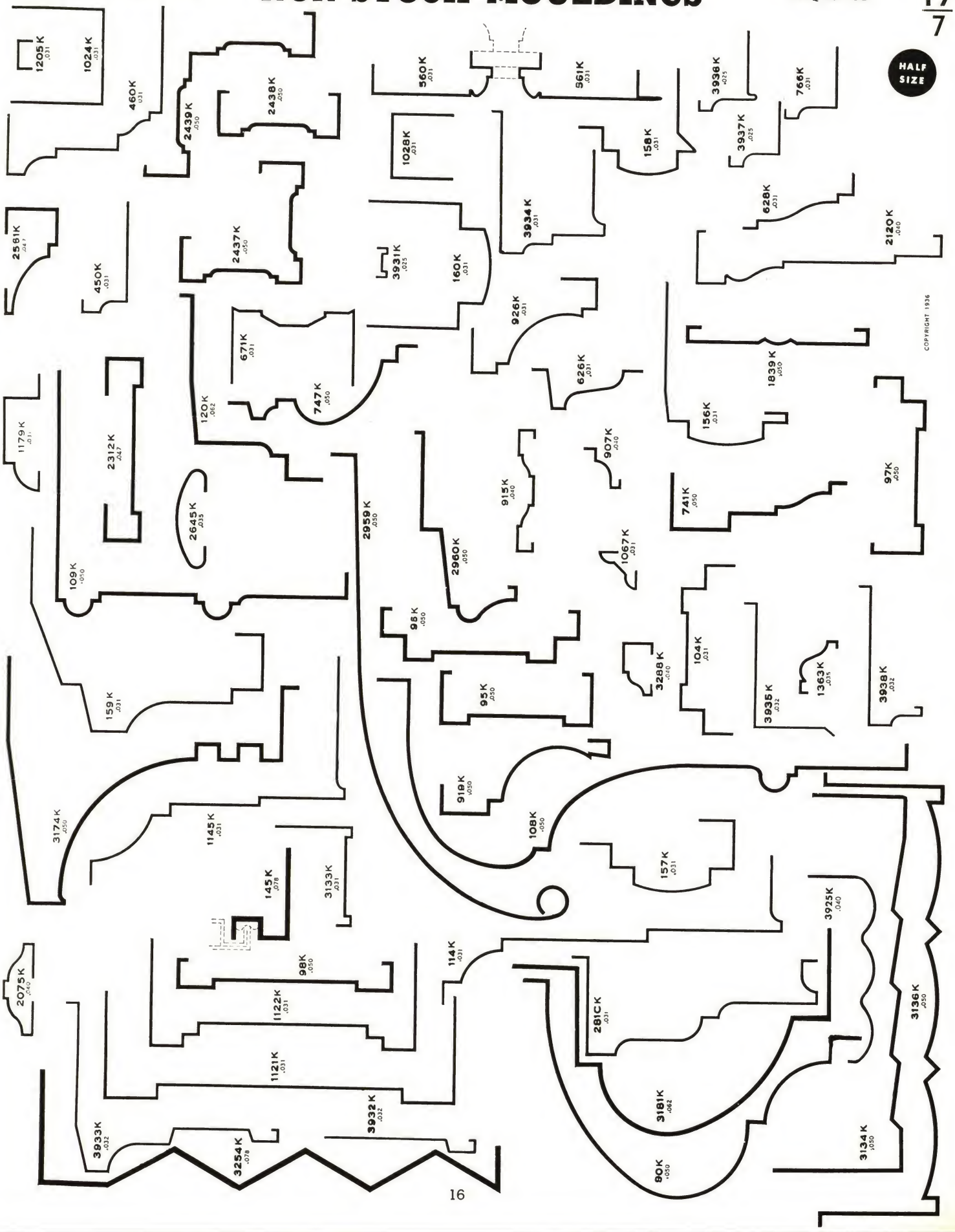


SPECIAL SET-UP

# NON-STOCK MOULDINGS

REQUIRED 19/7

HALF SIZE




COPYRIGHT 1936

19/7

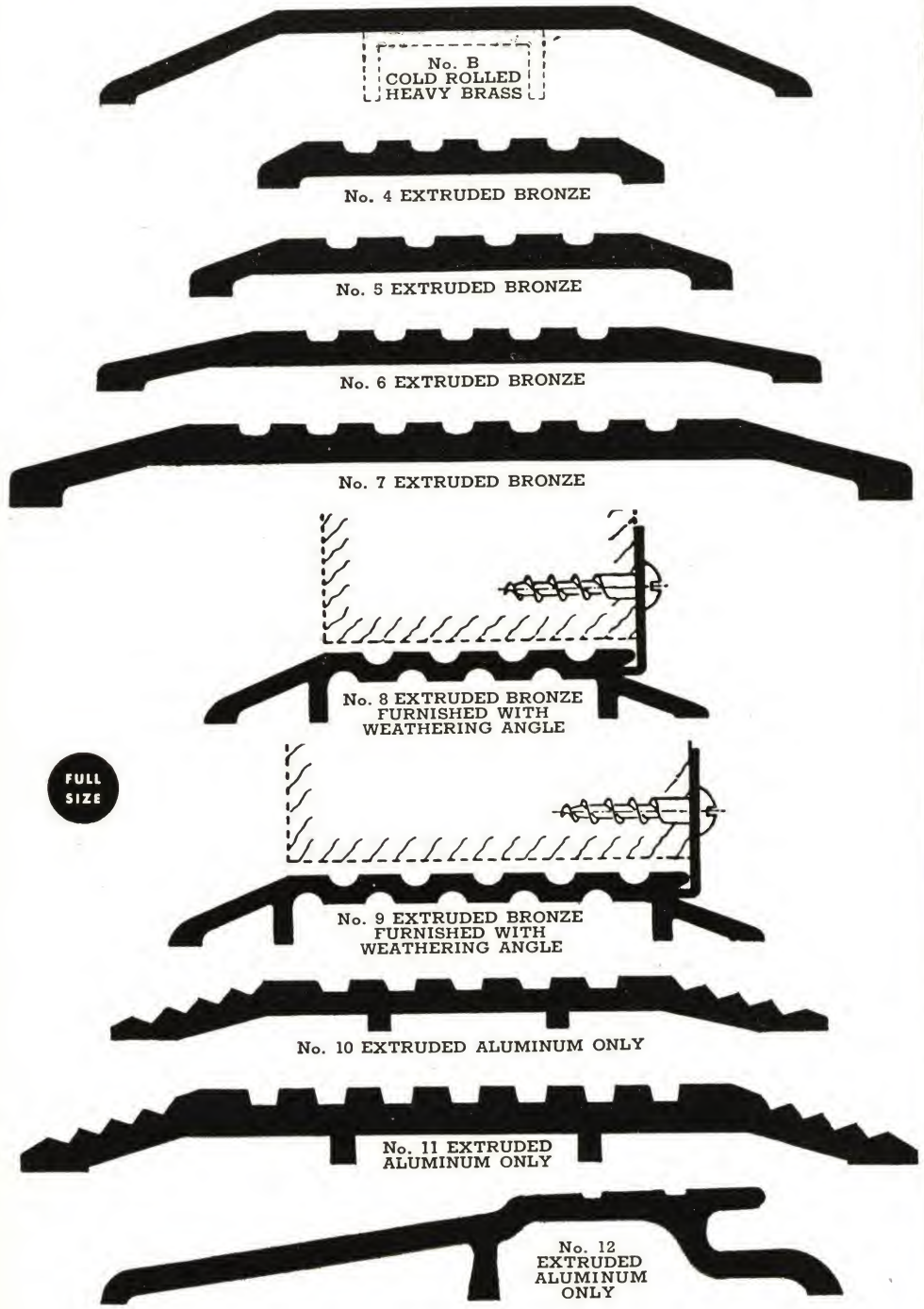
# ADDITIONAL ITEMS

In addition to the mouldings, shapes and parts, detailed in this catalog, Kawneer furnishes rustless metal store front construction for every need. Write for data on items not covered.

KAWNEER METAL SHOWCASE DOORS are furnished with or without transom, equipped with necessary hardware and frame. Corners are mitered and strongly welded. Felt cushions keep out dust.

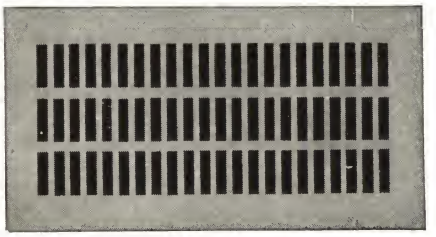
PIVOTED VENTILATORS come in several styles, with frames, for use in transoms, bulkheads, etc.

METAL PANELING, POSTER FRAMES, CAST ENRICHMENTS, AND MOULDINGS FOR USE WITH GLASS BLOCK are also available.

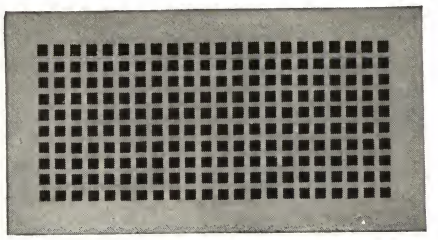



## THRESHOLDS

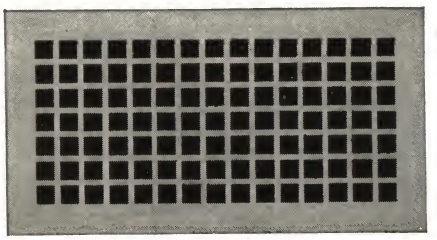
GRILLES are furnished in .050 and .109 gauge metal, sharply cut from bronze and aluminum. Also in stainless steel — .050 gauge only. Maximum size, 114″ x 24″.



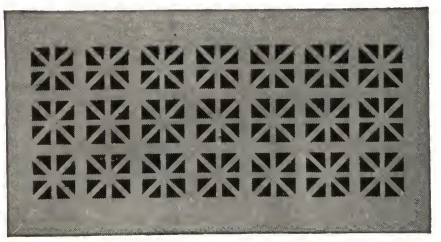
TYPE 1-G. Rectangular Interstices. Stock sizes: 11″ x 5″, 18″ x 9″, 24″ x 10″.



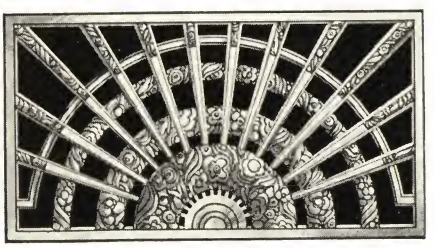
TYPE 2-G. Small Square Interstices. Stock sizes: 11″ x 5″, 18″ x 9″, 24″ x 10″.



TYPE 3-G. Large Square Interstices. Stock sizes: 11″ x 5″, 18″ x 9″, 24″ x 10″.



TYPE 5-G. Clustered Union Jack. Stock sizes: 11″ x 5″, 18″ x 9″, 24″ x 10″.



SPECIAL. Design Cut or Cast to Meet Architects' Requirements on time and material basis.

## GRILLES

# GROWING IMPORTANCE OF STORE FRONT METAL




● The increasing use of such fine rustless metals as aluminum with the durable alumilite finish, bronze, and stainless steel makes a vital contribution to the effectiveness of modern store fronts and buildings. Many interesting possibilities have been developed; many remain to be explored.

Kawneer is in step with this movement, is constantly improving and adding to its line of rolled and extruded metal construction, constantly widening its facilities for dependable service to designers.

Originally founded by a practicing architect, The Kawneer Company has had wide experience in the fabrication of rustless metals for all architectural purposes — understands thoroughly the problems of architect and builder. Thus Kawneer is a logical source for all types of architectural metal work.

Refer also to the Kawneer Catalog on Windows, Doors, and Architectural Metal Work; see the distributor; or write the factory for further data. Your inquiries will receive prompt attention.

MAIN PLANT THE **Kawneer** COMPANY NILES, MICHIGAN

BRANCHES: NEW YORK CITY, CHICAGO, BERKELEY, CALIF. • DISTRIBUTORS IN PRINCIPAL CITIES



# Kawneer

# STORE FRONTS

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https://archive.org/details/buildingtechnologyheritagelibrary

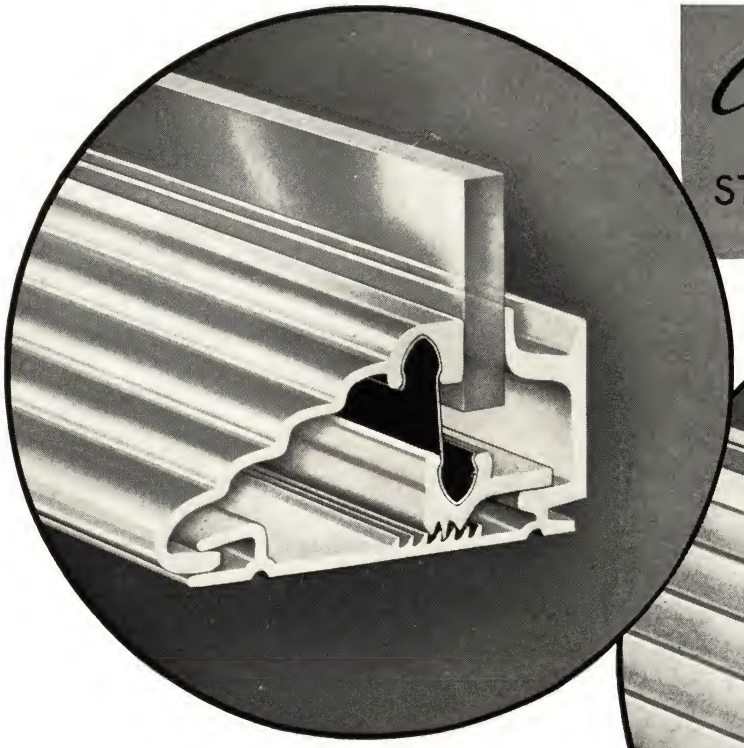
# LIBBEY-OWENS-FORD GLASS COMPANY

TOLEDO, OHIO

## EXTRUDALITE

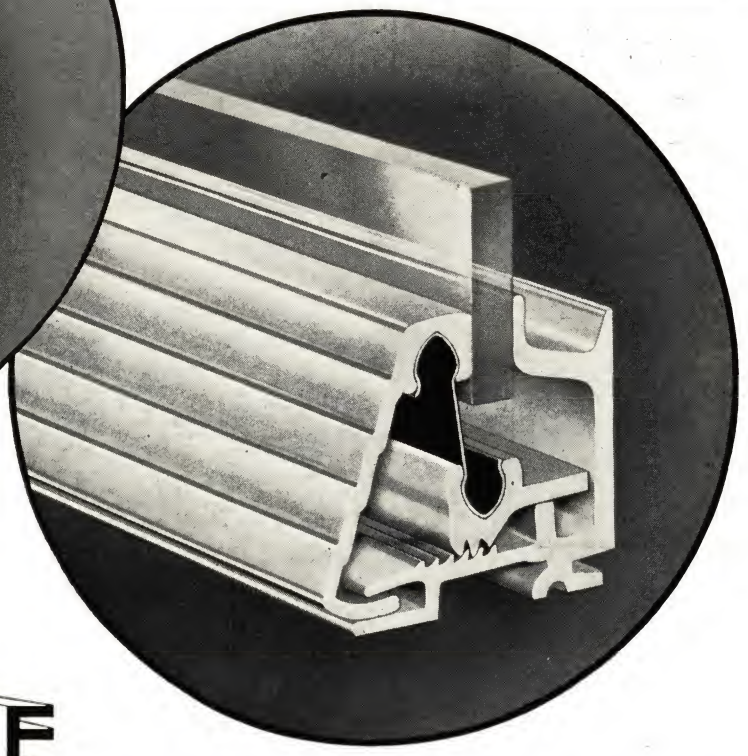
METAL STORE FRONT CONSTRUCTION

FOR COMPLETE DESCRIPTION AND DETAILS, SEE FILE INDEX



*A New Day in*

STORE FRONT CONSTRUCTION



LIBBEY-OWENS-FORD

ANNOUNCES

# EXTRUDALITE

**METAL STORE FRONT CONSTRUCTION**

**Featuring the Pressure-Controlled**

**Shock-Absorbing Sash**

Extrudalite is a fundamentally new principle of store front construction and design offering outstanding advantages hitherto unobtainable. Extrudalite's patented sash construction definitely minimizes plate glass breakage.

All pressure contacts between metal and glass are automatically controlled to a predetermined degree and constant pressure is maintained through spring cushioning.

124

# STANDARD STORE FRONTS

## Manufacturers of Rustless Metal Store Front Construction

NILES, MICHIGAN

### Products

STANDARD fabricates a complete line of up-to-date rustless metal store front construction, in both rolled and extruded types. Items furnished include: SASH, BARS, AWNING BARS, GRILLES, THRESHOLDS, DOORS, VENTILATORS, SHOWCASE DOORS, METAL PANELING, POSTER FRAMES, CAST ENRICHMENTS, METAL SIGN LETTERS, SNAP-ON AND OTHER MOULDINGS, and SPECIAL METAL WORK.

### Metals and Finishes

Cold-rolled metal is available in satin finish aluminum, bronze, or stainless steel. Extruded metal, in alumilited aluminum, or satin finish bronze. Special finishes are also applied when specified. The alumilite finish on aluminum is especially recommended, since it provides a hard, durable surface on the aluminum itself, which resists abrasion and all normal atmospheric conditions, is easily cleaned, and presents an unusually attractive appearance.

### Write for Further Data

Complete full size details, an illustrated catalog, and further information will be sent on request. Write STANDARD STORE FRONTS, Niles, Michigan.

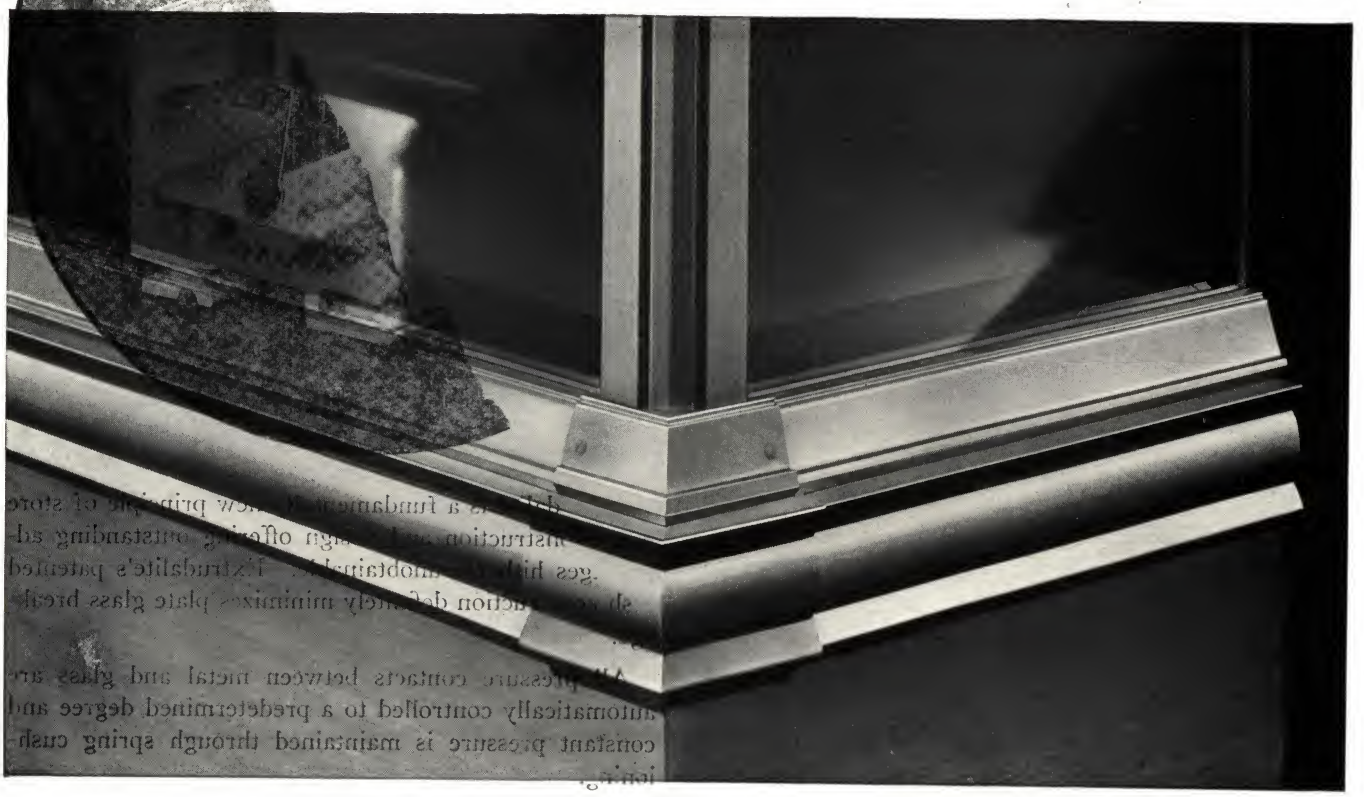
### COLD-ROLLED CONSTRUCTION

True, straight lines, graceful curves, interesting shadow lines, appealing lustre, and modern simplicity make Standard construction highly useful to today's store front designer.

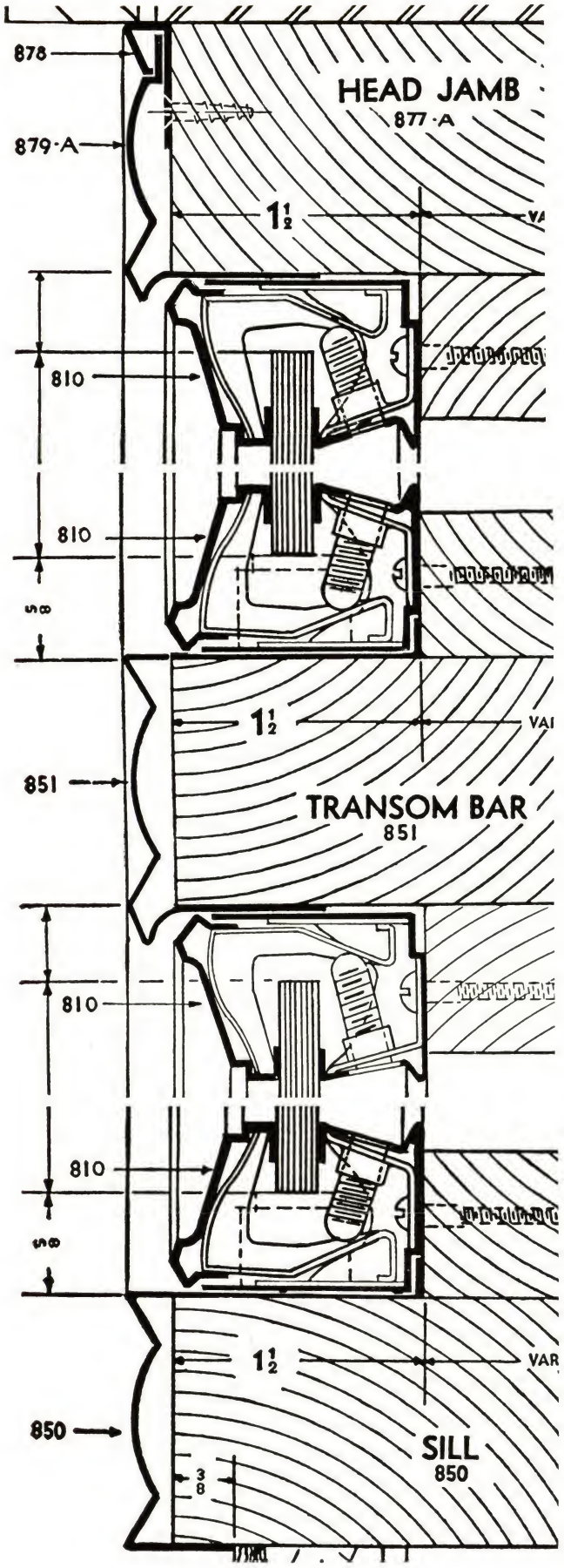
From the practical side, Standard construction offers sizes to fit standard dimension lumber, easy installation, and lasting glass protection. Rolled Sash and Bars produce a full cushion grip, applied continuously along both sides of glass, and spread out evenly, regardless of variations in thickness of glass.

Glass is thus held securely at all points, yet with *resiliency* which allows for shock, vibration, and movement to which glass is subjected, and for the customary swelling, shrinkage and twisting of framing material. This is unquestionably a safe glass setting.

No screw-heads appear on face of Sash No. 810. Sash may be perforated for drainage and ventilation. Dust slides are available. Caps are included for finishing joints.

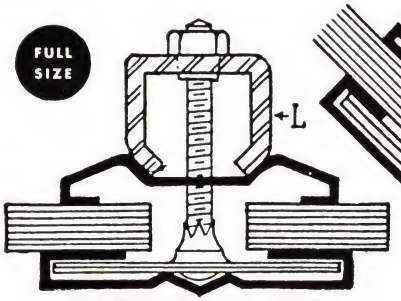


# STANDARD

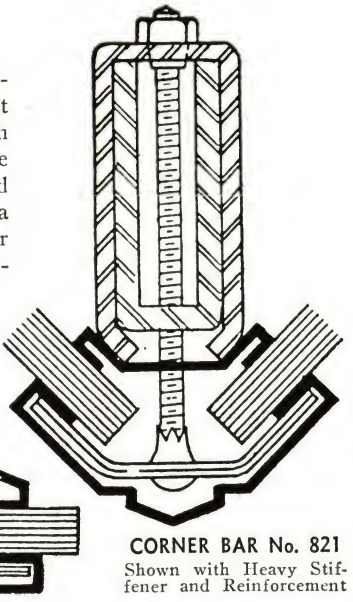



## BARS
### (Extruded Bars similar)

Corner, Division, and Reverse Bars are furnished at any angle—should be used in all store fronts. Not only is the harmony of design maintained and the merchandise given a suitable frame, but the danger of glass breakage is also minimized.

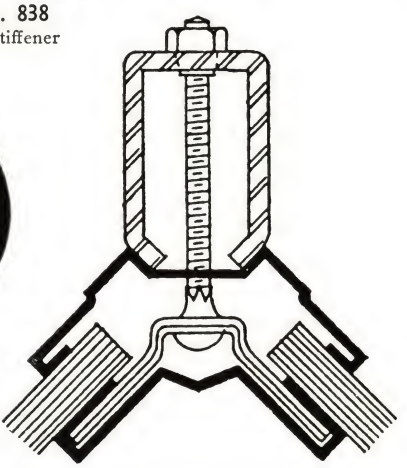



**DIVISION BAR No. 838**
Shown with Light Stiffener

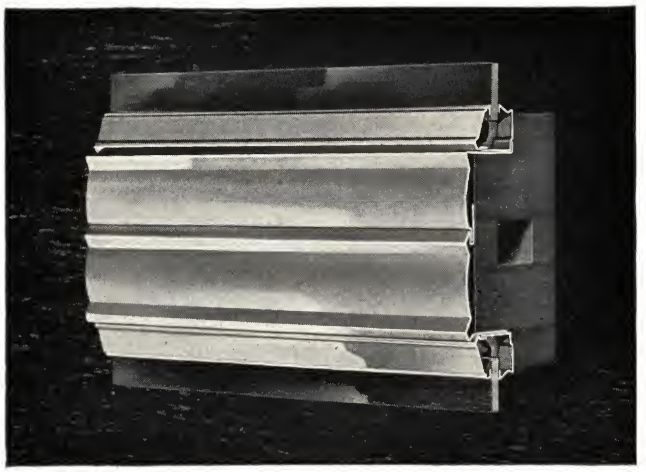


**CORNER BAR No. 821**
Shown with Heavy Stiffener and Reinforcement

**WRITE FOR DATA ON ITEMS NOT SHOWN**



**REVERSE BAR No. 829**
Shown with Medium Stiffener



**TRANSOM BAR**

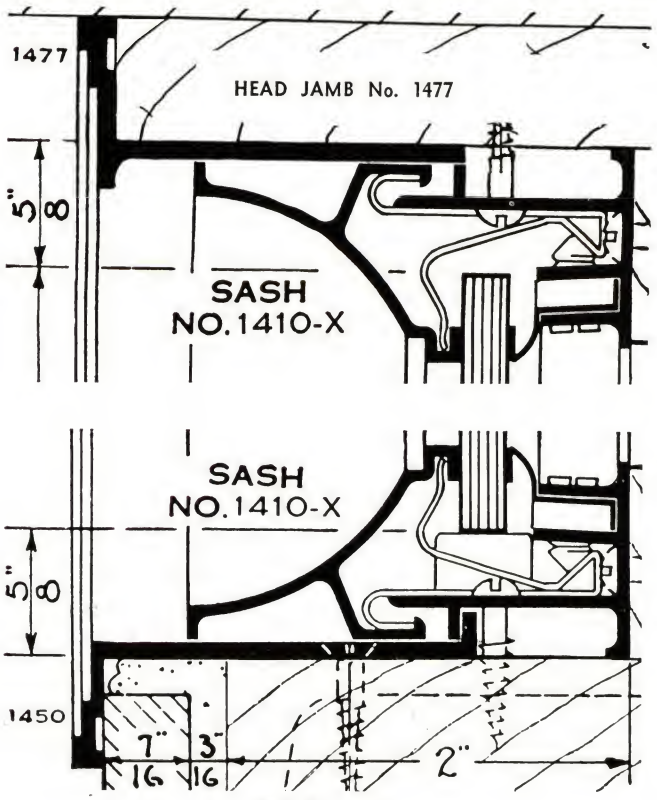
**Sash No. 810,** detailed at left, is the most widely used STANDARD sash. A screw-pressure type No. 870, and a self-supporting sash, No. 875 are also available. Transom Bars are 4 in., adjustable to 6, 8, 10 and 12 in. Rolled Awning Bars are similar to extruded types shown on page 4.

# STANDARD

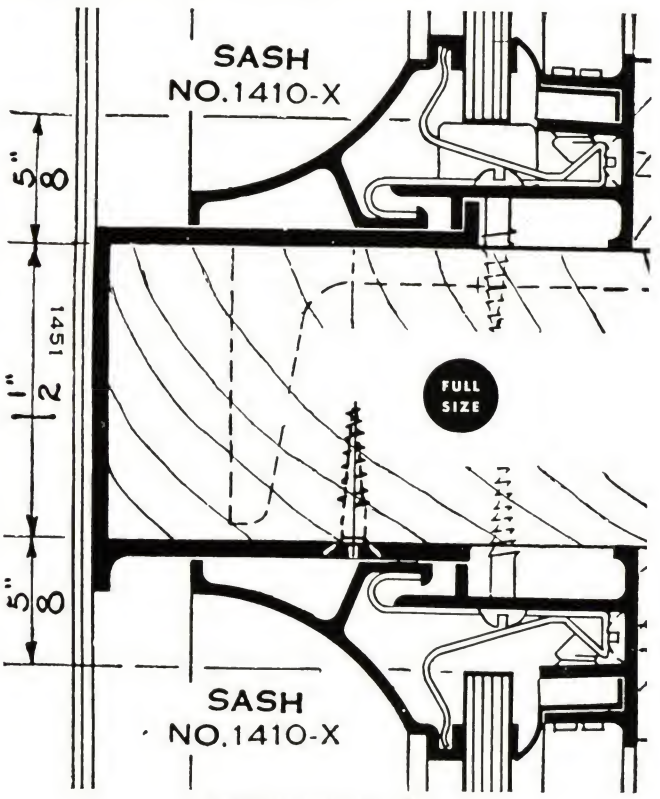


## STANDARD EXTRUDED CONSTRUCTION

Here, at last, is a strikingly beautiful extruded store front construction which also offers absolutely safe and dependable glass protection. Note the *fully resilient* mechanisms and springs, which provide the necessary flexibility to avoid breakage, and yet hold glass in a firm, continuous grip along the entire surface and on both sides. Harmoniously designed members are available for every store front function.

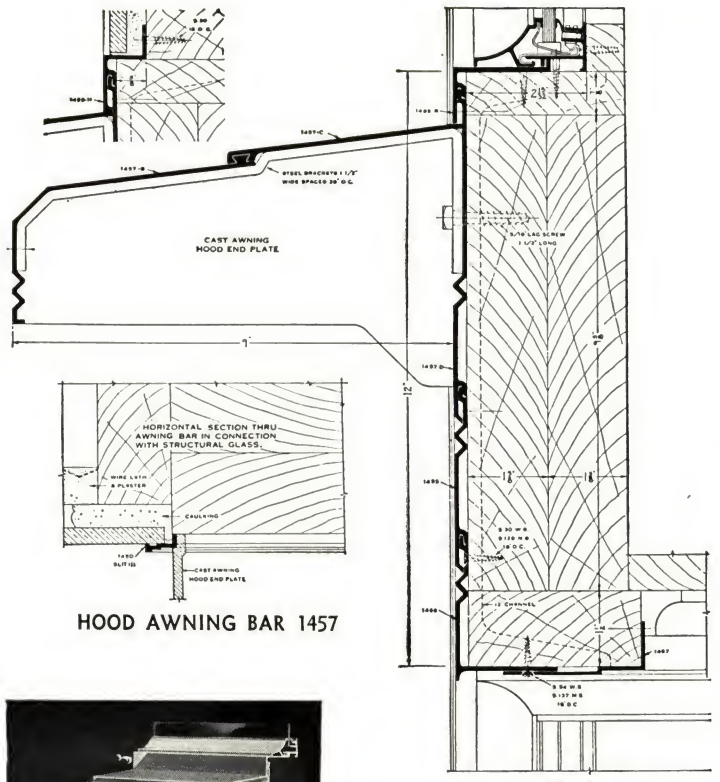



SILL No. 1450

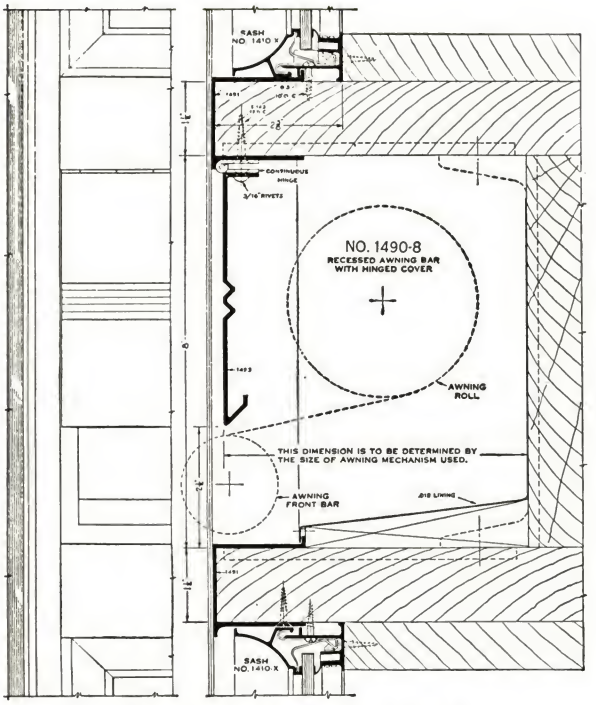



TRANSOM BAR No. 1451

# STANDARD




HOOD AWNING BAR 1457



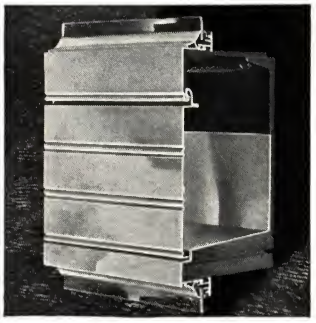

RECESSED AWNING BAR 1490-8



HOOD TYPE



RECESSED TYPE



CONCEALED TYPE

QUARTER SIZE

## AWNING BARS
### (Rolled construction similar)

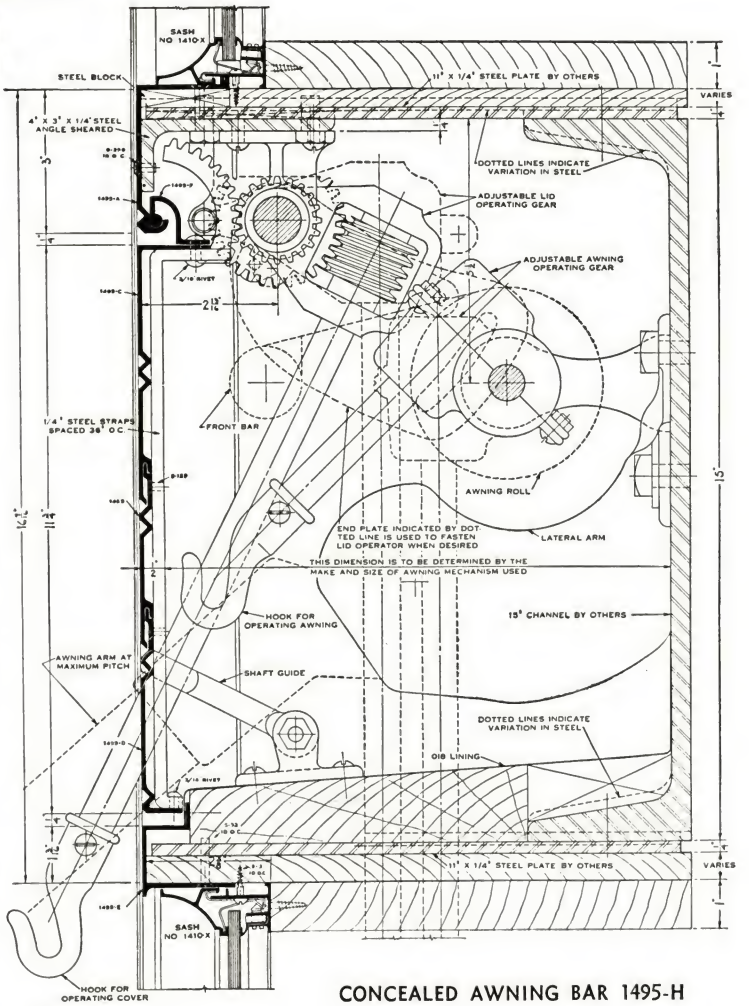
The most modern awning bars available—with valuable features for the protection and hiding of the awning roll.

HOOD type is especially graceful and attractive.

RECESSED type houses roll in recessed box. For outrigger arms only.

CONCEALED type hides roll completely from view when not in use. For lateral arms only. Awnings and mechanisms by others.

**WRITE FOR FURTHER DATA.** This catalog illustrates the beauty and basic soundness of Standard construction. Full information is available on request.




CONCEALED AWNING BAR 1495-H

# NATIONAL STORE FRONT COMPANY

## Manufacturers of Metal Store Front Construction and Metal Covered Doors

Roxbury District

BOSTON, MASS.

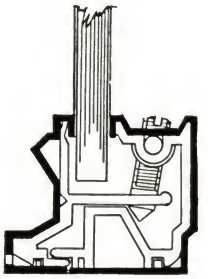
The NATIONAL Store Front line, complete in every phase of store front construction and available in every practical metal in all finishes, offers architect and owner a most efficient combination in beauty of design, ease of installation, and versatile adapability to every type of store front.

NATIONAL sash and bar sections for securing the plate glass have met with instant approval over the entire country for their marked improvement in being a fully resilient construction, avoiding entirely costly breakage of glass and eliminating use of non-metallic substances, such as rubber or felt, for making a construction resilient. Users of NATIONAL are assured of having a safe, economical, and beautiful store front for many years.

We are fully equipped to furnish all types of special curved and straight brake mouldings, fluted or reeded pilasters, ornamental bulkheads, valances, push bars, stainless steel doors and adjoining trim. Upon detailed specifications, we can furnish cast grilles in bronze and aluminum, crestings, and all similar ornamental work.

### No. 90 Sash (Patented)

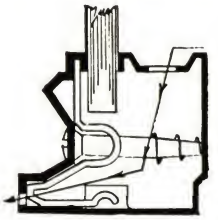
This remarkable clamping arrangement in our No. 90 sash is featured only in the NATIONAL line. Action is positive and its adjustment micrometic, by means of the unique swivel nut and inclined pressure plane. Also notice the distinctive profile of the face moulding with its simple lines and planes designed to absorb and reflect light refractions that make outstanding any store front on which NATIONAL is used.



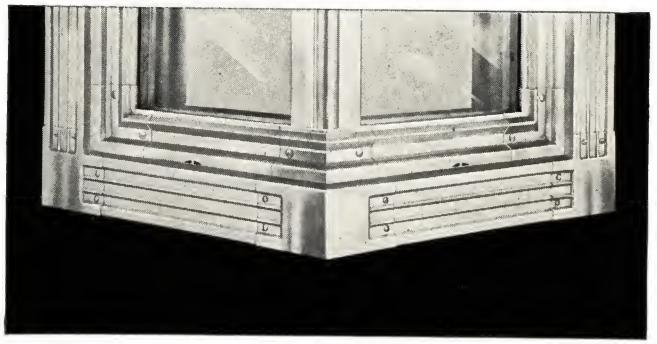
Sash No. 90

### No. 91 Sash

This clip in our No. 91 Sash is also featured only in the NATIONAL line and is, we think, without doubt the best yet developed for an outside set or direct screw pressure set sash. Its "double bearing" feature allows the screw to go but one way, and that is straight, so that there are no crooked screw heads to remain outstanding when the job is finished.



Sash No. 91



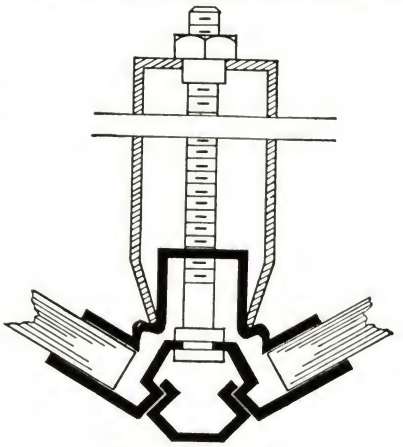
Typical Corner Section

### Structural Glass Joint Moulding

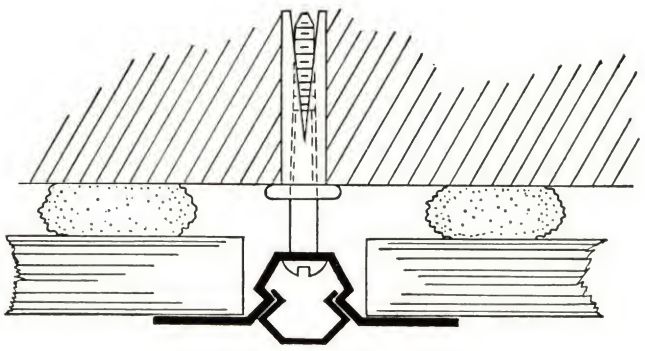
Since the advent of structural glass in the store front field, the building laws in various cities in the United States require a mechanical fastening for this type of wall surface. JM moulding is generally used on any two parallel sides of each applied, rendering at the same time distinctive lines to the job as each course is laid.

### No. 22 Corner Bar

Our newly developed line of corner, division and reverse bars, available in all standard angles again shows versatility of NATIONAL products. The center filler piece snaps into place firmly and securely, and combinations of any two contrasting metals may be used to give the bar unique distinction, adding to beauty of the job.



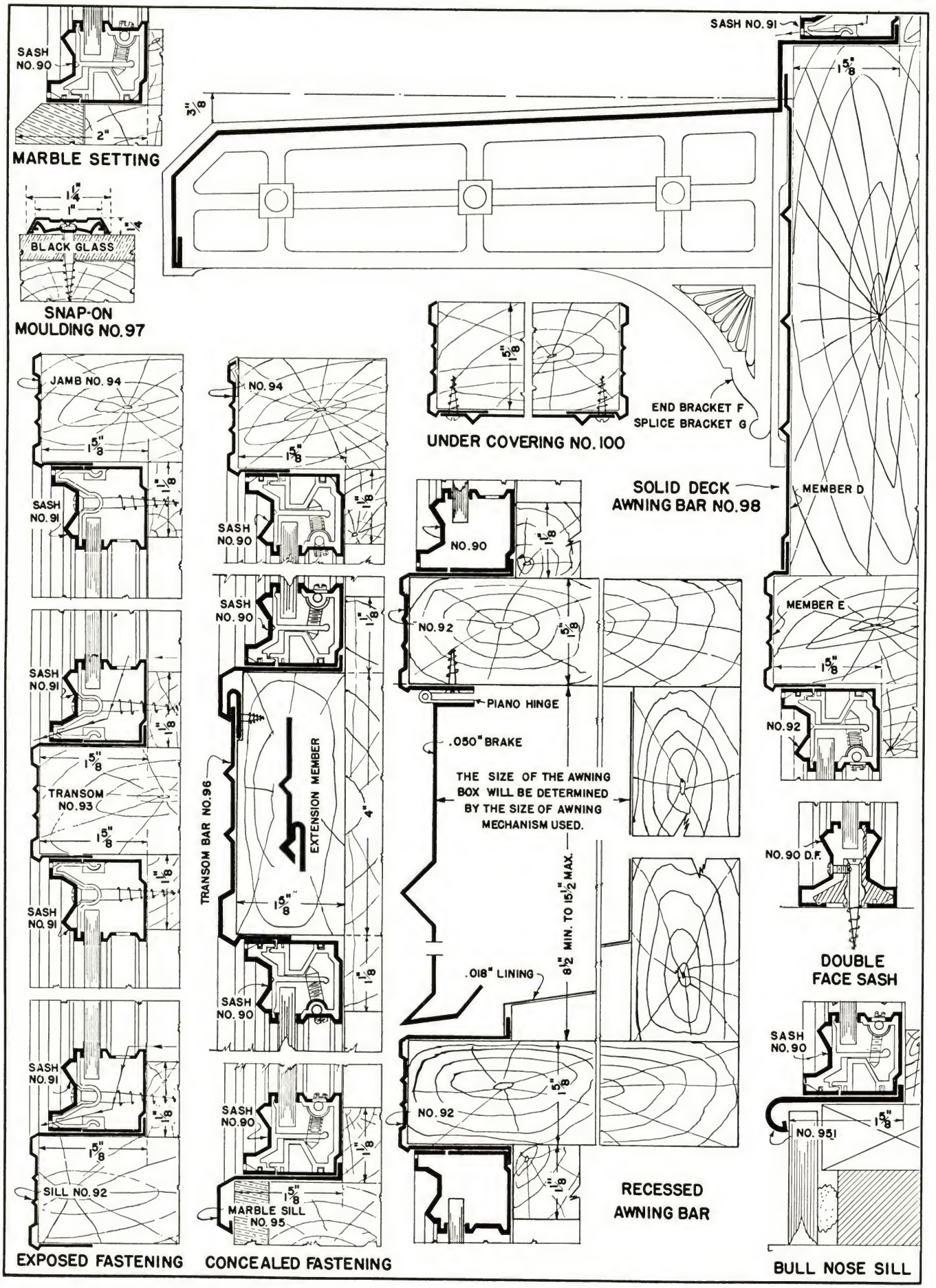
Corner Bar No. 22



No. 22F Joint Moulding

### No. 22F Joint Moulding

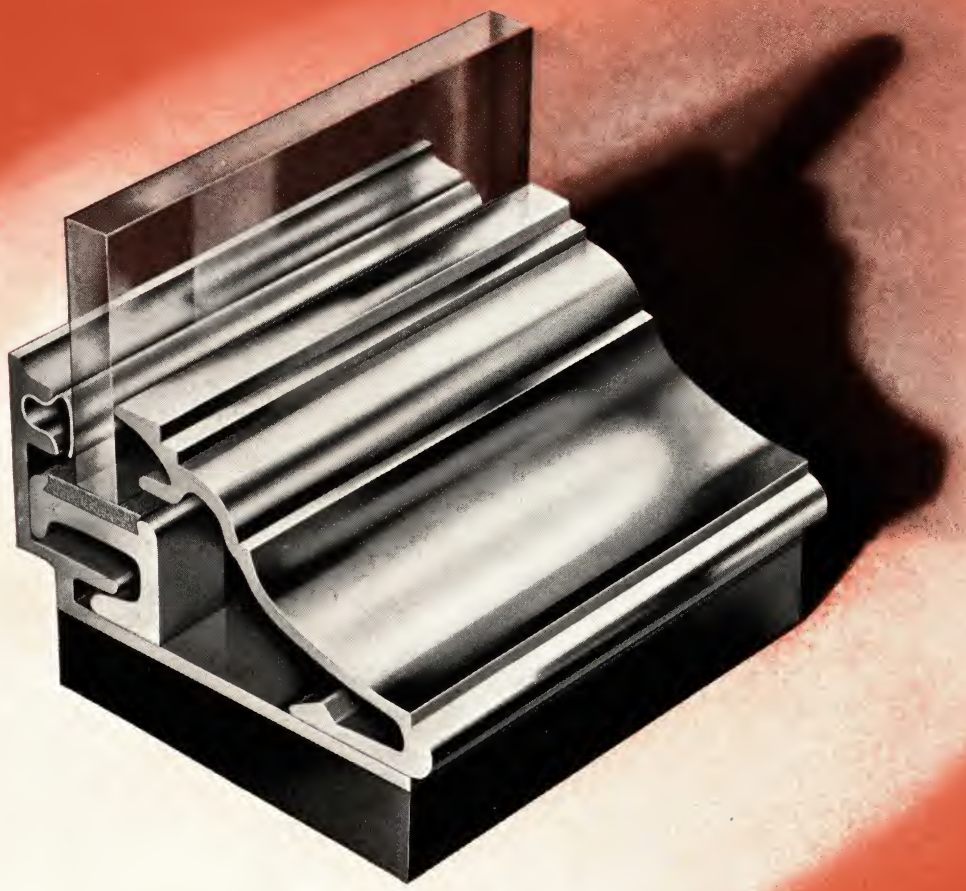
Using only the face of the bar (corner, reverse, or division) as a snap-on moulding, offers amazing possibilities in designing wall surfaces, both exterior and interior, with any of the popular wall coverings, such as structural glass, composition board, etc. Moreover, the bar may be applied at the joints in a combination of two contrasting metals with no visible fastening.


SASH NO. 90
2"
MARBLE SETTING
1¼"
1"
BLACK GLASS
SNAP-ON MOULDING NO. 97
SASH NO. 91
3⅜"
1⅝"
END BRACKET F
SPLICE BRACKET G
UNDER COVERING NO. 100
SOLID DECK AWNING BAR NO. 98
MEMBER D
MEMBER E
JAMB NO. 94
NO. 94
NO. 90
NO. 92
PIANO HINGE
.050" BRAKE
THE SIZE OF THE AWNING BOX WILL BE DETERMINED BY THE SIZE OF AWNING MECHANISM USED.
TRANSOM NO. 93
TRANSOM BAR NO. 96
EXTENSION MEMBER
4"
6½" MIN. TO 15½" MAX.
.018" LINING
NO. 90 D.F.
DOUBLE FACE SASH
SILL NO. 92
MARBLE SILL NO. 95
NO. 951
RECESSED AWNING BAR
BULL NOSE SILL
EXPOSED FASTENING
CONCEALED FASTENING

MEMORANDA

# PITTCO

## STORE FRONT METAL



Paint • PITTSBURGH PLATE GLASS COMPANY • Glass

# PITTCO STORE FRONT METAL

Modern merchandising methods have made the effective display of goods in the retail store window a veritable science . . . with its object the injection of maximum invitation and sales appeal into the modern store front. Of prime importance in designing store fronts of real personality is the metal store front construction. And therefore, as merchandising methods have become more and more aggressive, store front metal construction has grown in importance accordingly. No longer are architects, contractors, merchants satisfied with a metal construction which merely holds the glass . . . their need is for a metal construction which will be beautiful, practical and versatile enough to help them solve their display problems in a modern manner. It was to meet this definite need that PITTSBURGH PLATE GLASS COMPANY, after long research and experimentation, developed Pittco Store Front Metal. It was designed deliberately and all at one time, as a complete line of units to meet every demand which today's store front would make upon a metal construction. It has gained a wide use among leading architects, builders and property owners . . . and has proved eminently satisfactory from every standpoint in all its installations. Here, at last, is store front metal construction truly worthy of use in modern store fronts.

## SASH SET FROM OUTSIDE




1

First the Inner Member is set; then the setting block (which is actually 2½" long) is pressed into its groove and . . .

2

The glass is lifted into place.

3

Then the glass holding member is installed, and finally . . .

4

The face member snaps on to finish the assembly.



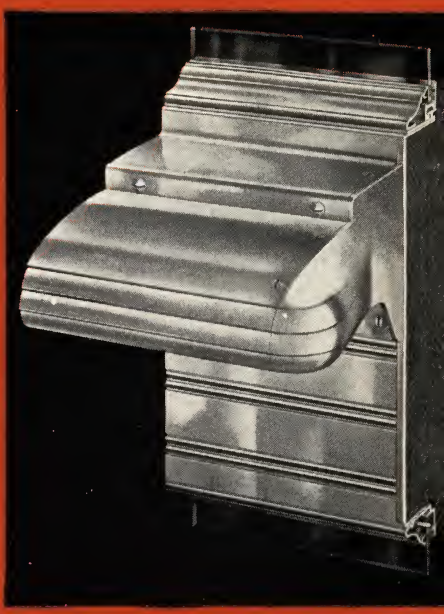
Paint · PITTSBURGH · Glass
PLATE GLASS COMPANY



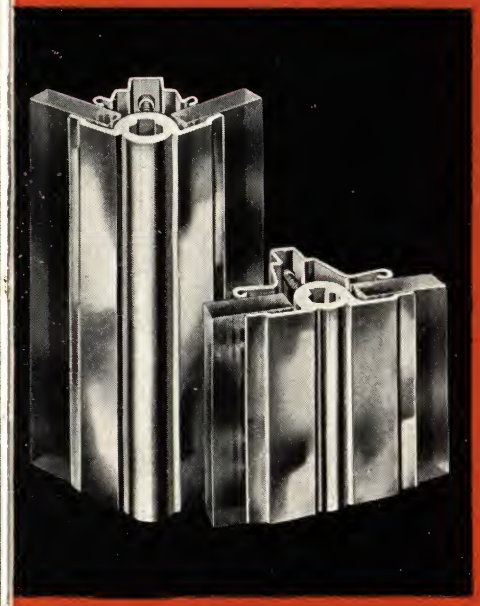
TRANSOM BAR No. 56

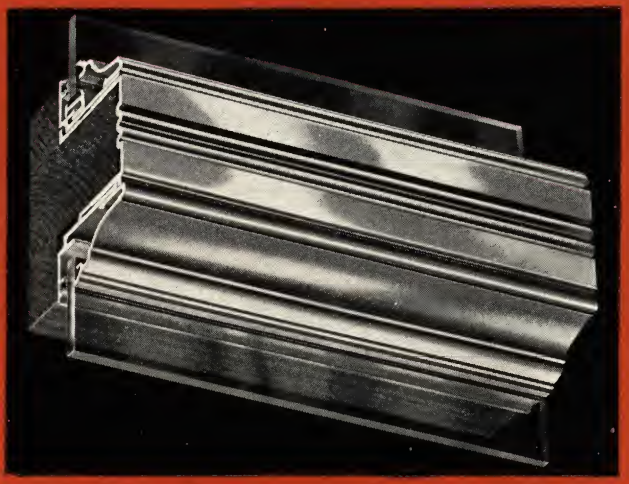


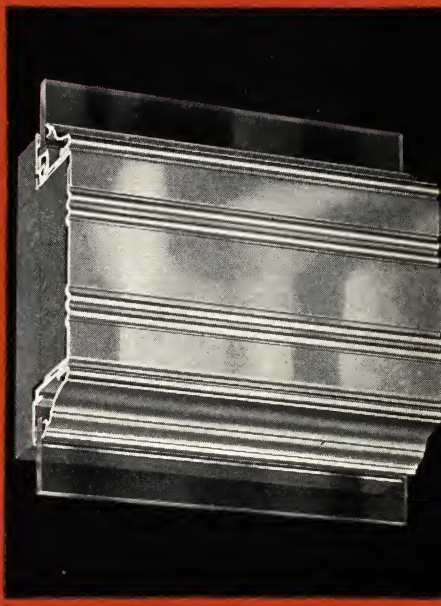
MOLDINGS



AWNING BAR No. 69







ABOVE: TRANSOM BAR No. 40
AT LEFT: VERTICAL BARS
AT RIGHT: TRANSOM BAR No. 44

# ARCHITECTURAL ADVANTAGES OF PITTCO

## STORE FRONT METAL

BEAUTY . . . Pittco Store Front Metal was designed as a complete line of metal members . . . all at one time. As a result, it has a pleasing unity of design . . . a harmonious relationship between members. It has a style all its own, different, distinctive and refreshing. It is primarily a quality construction, being fabricated from only the choicest materials and finishes.

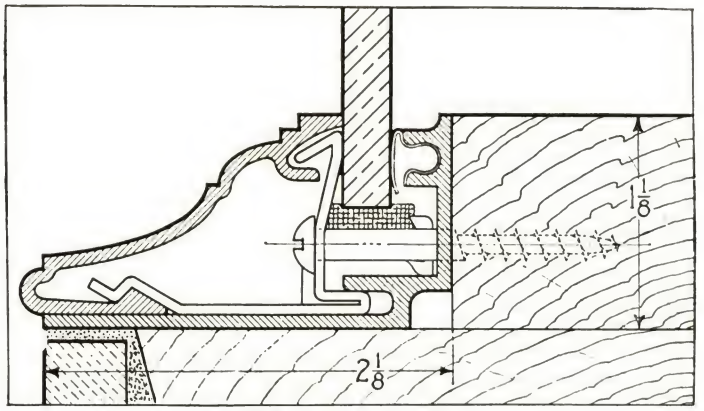
MODERN FINISHES . . . Pittco Metal is furnished in clear, lustrous Alumilite . . . and in Architectural Bronze, Satin or Polished finish. *Caution*: The "Alumilite" finish will be attacked when subjected for any length of time to wet mortar, plaster, whiting, cleaning acids or similar materials. If these materials are immediately removed with a wet sponge or cloth, no attack may occur. It is recommended, however, that the finish be protected during building operations by the use of masking tape or suitable wax to avoid any possibility of disfiguring stains.

ACCURACY and STRENGTH . . . To insure clear-cut moldings of ample strength and a high standard of workmanship, the extruded process is used in forming exposed Pittco members.

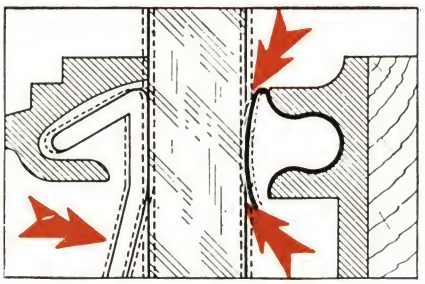
PRACTICAL ADVANTAGES . . . Pittco is as practical as it is beautiful. It is easy to install, all setting operations being carried on outside the window. Its special Cushion-Grip on glass gives the glass it holds greater protection against strains and jars. Rear members of sash and plate glass may be set, the window made ready for display and the face of the building washed down, before outer members of sash are applied. Pittco Sash may be provided with means for drainage when specified. Pittco bars, comprised of only a few moldings, are readily adjustable to all angles.

# EIGHT

## DISTINCTIVE FEATURES OF PITTCO STORE FRONT SASH

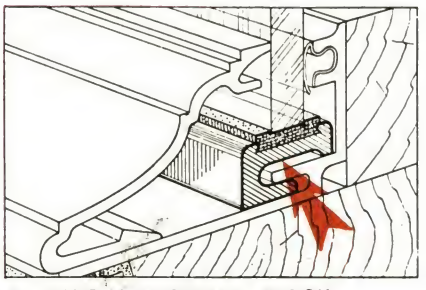



Full size cross-section



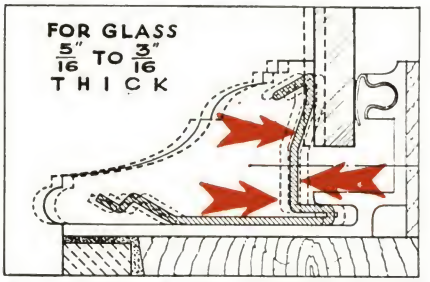
**1. CUSHION GRIP ON GLASS**

The metal surfaces which contact the sides of glass act as a yielding cushion, absorbing dangerous shocks and jars.



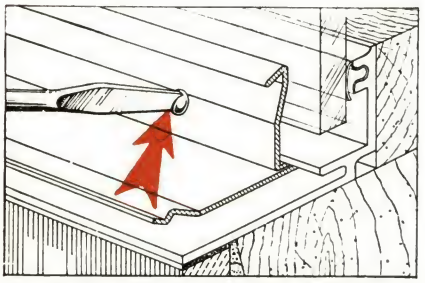
**2. FIXED SUPPORTING BLOCK**

Non-ferrous metal supporting blocks are firmly wedged in groove, thus preventing tipping, rocking or sliding out of line during setting of glass.



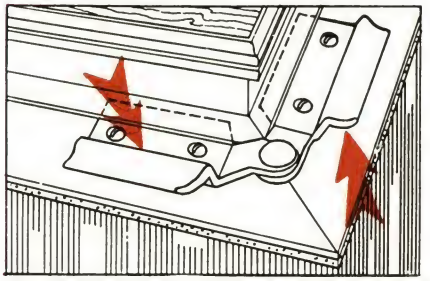

**3. ADJUSTABLE TO VARIOUS GLASS THICKNESSES**

Glass-holding units and face members are self-adjusting to various glass thicknesses without tilting inward or outward.



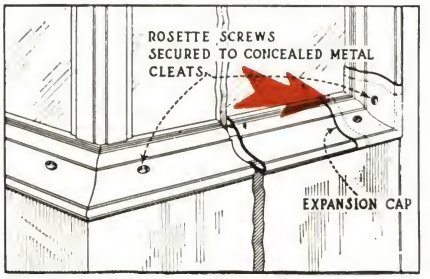
**4. INSTALLATION OPERATIONS ALL FROM OUTSIDE**

Both glass and sash are set from outside by standard wood or machine screws. No special keys or tools required.



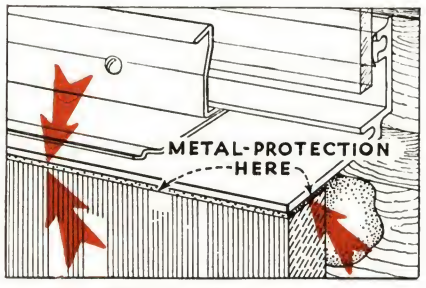
**5. CORNER CLEAT TO ASSURE TIGHT MITRE**

Heavy Metal Cleats are used at the corners to secure mitres against spreading due to expansion or contraction.



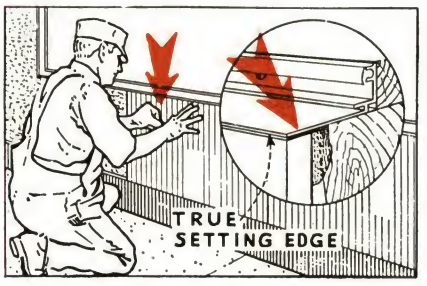

**6. EXPANSION IS CONTROLLED**

Expansion in long lengths of aluminum is controlled by combining expansion cap, cleats and rosette screws. See also 5.




**7. PROTECTION FOR CARRARA**

A sturdy, square-cut, continuous metal flange projects over edge of Carrara, shielding the area which is most vulnerable.




**8. TRUE SETTING EDGE**

The outer edge of inner member serves as a true, unvarying line to which face of Carrara or similar materials are set.

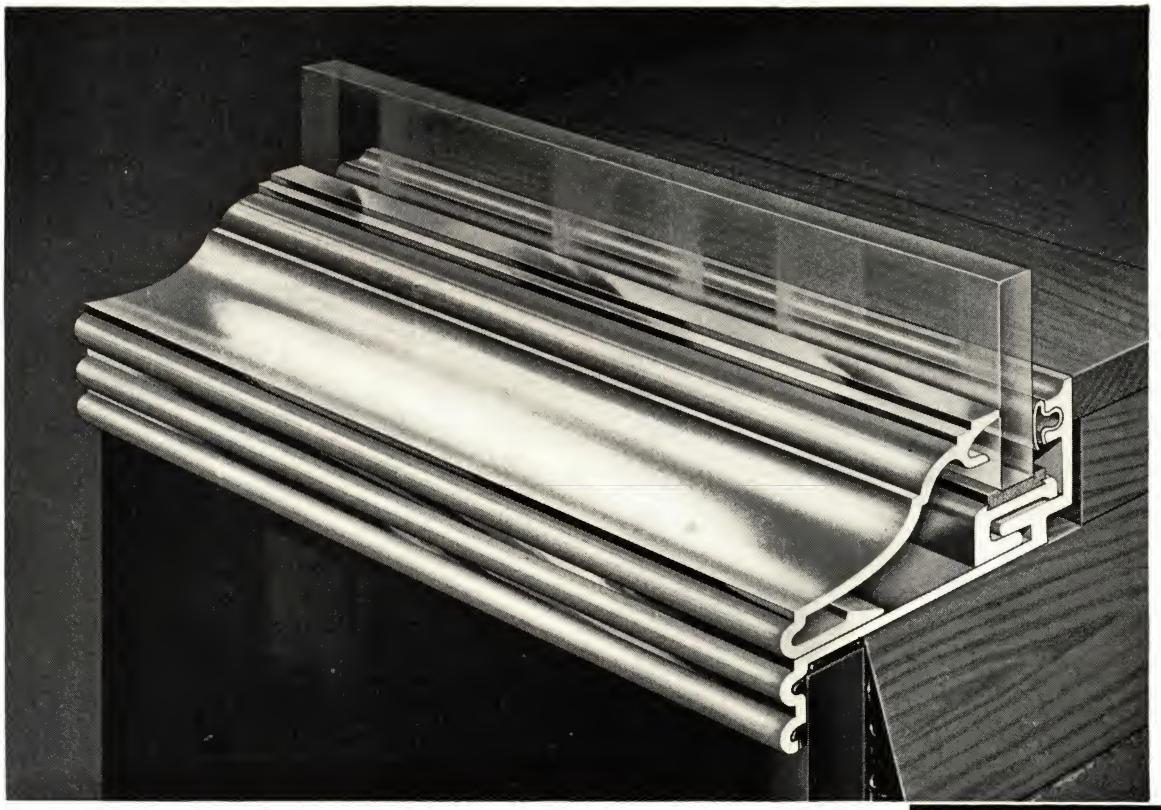
PITTCO
STORE FRONT METAL

## STANDARD PITTCO SHAPES

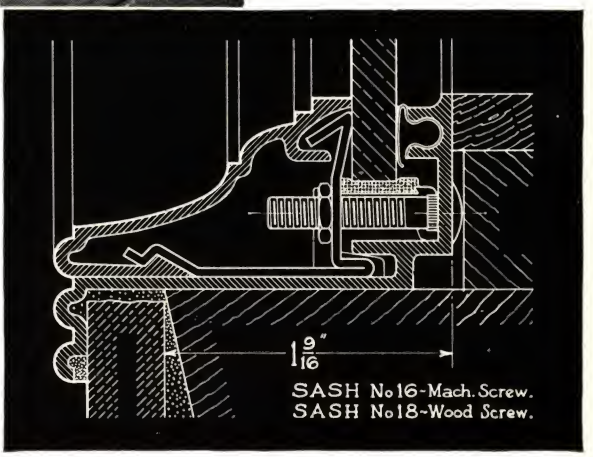
There is a Pittco shape for practically every architectural or decorative need which might arise in connection with store front work. The warehouses of the Pittsburgh Plate Glass Company carry complete stocks of these moldings for prompt shipment, no matter where your job may be located. See back cover for list of branches and map.



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PLATE GLASS COMPANY

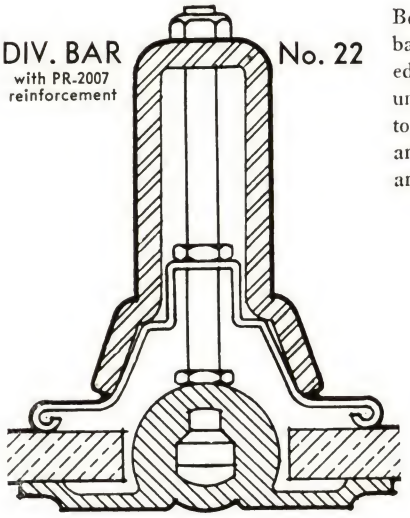


At left and below are shown the new Pittco Sash No. 16 and 18. This new Sash is a valuable addition to the Pittco Metal line for two reasons: first, because the double bead on the face member, combined with the bead on the sash itself, forms a striking and effective frame for the display window. And second, because the manner in which the sash overlaps the Carrara insures even greater protection for the edges of the facing material.

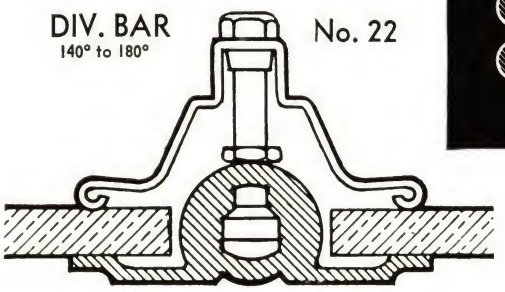



Below are shown in full size a variety of bars commonly used for adjoining the vertical edges of two plates of glass. To render them unobstructive, these bars are reduced exteriorly to a minimum; they possess pleasing profiles and can be reinforced to support practically any glass area.

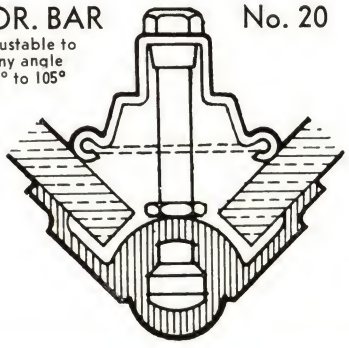
DIV. BAR No. 22
with PR-2007 reinforcement

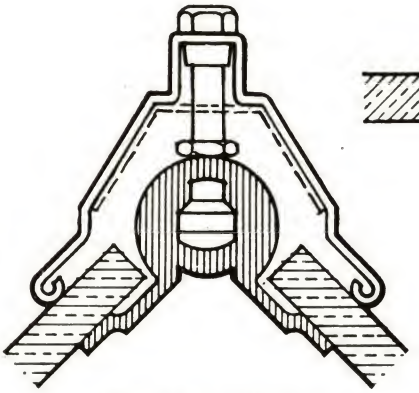


DIV. BAR No. 22
140° to 180°

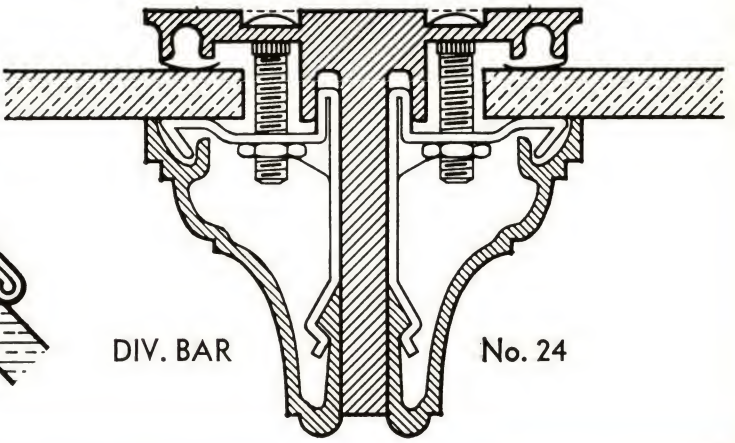


COR. BAR No. 20
adjustable to any angle 90° to 105°





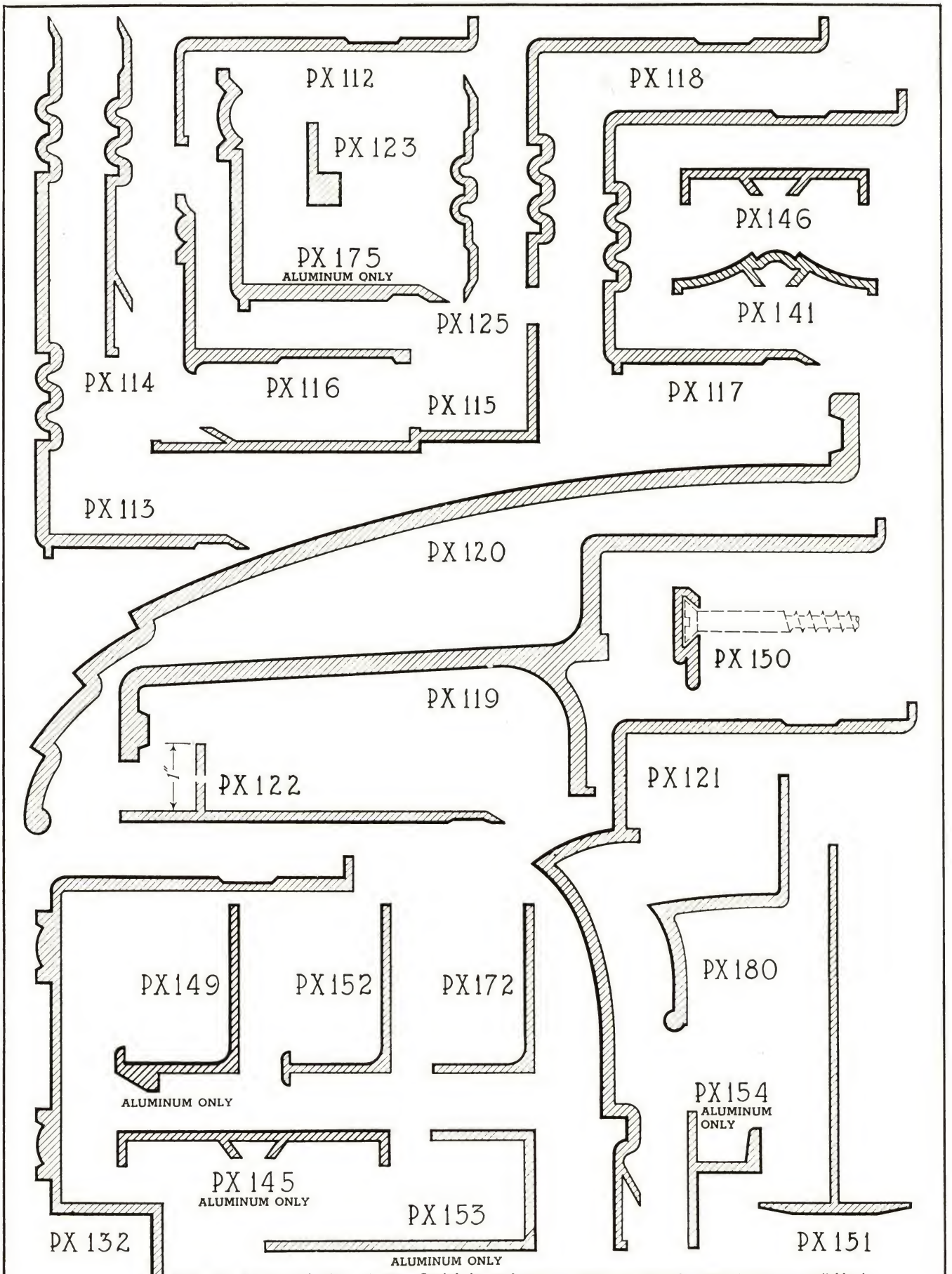
REV. BAR No. 30
90° - 180°



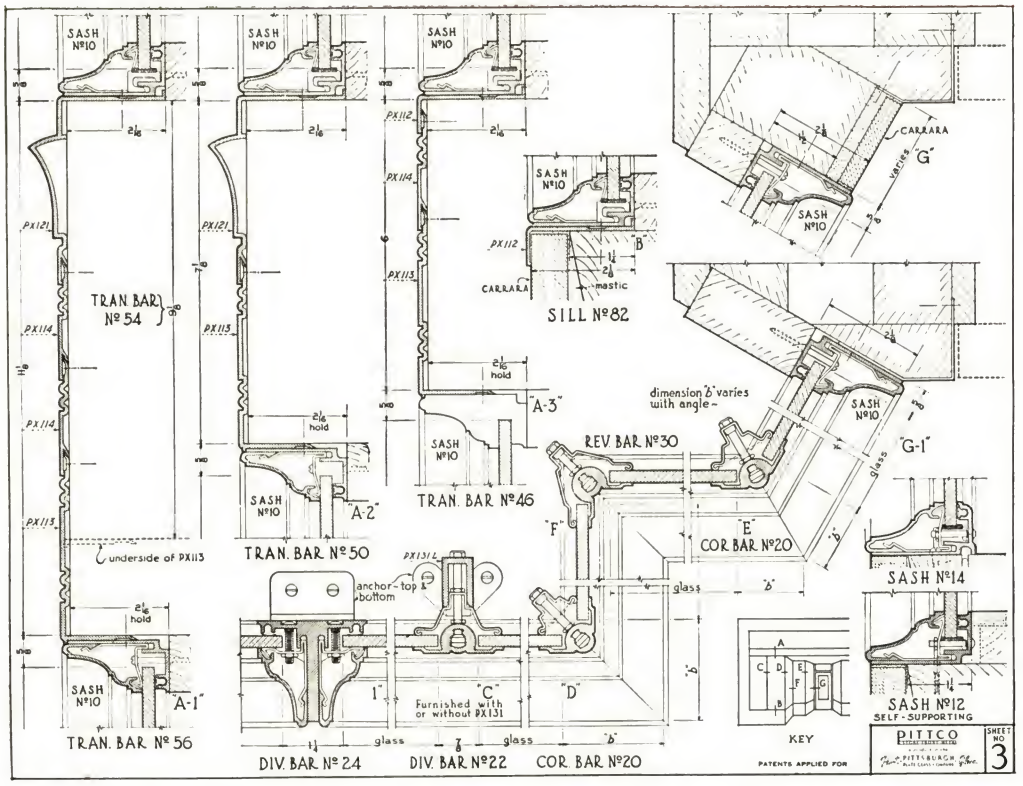
DIV. BAR No. 24



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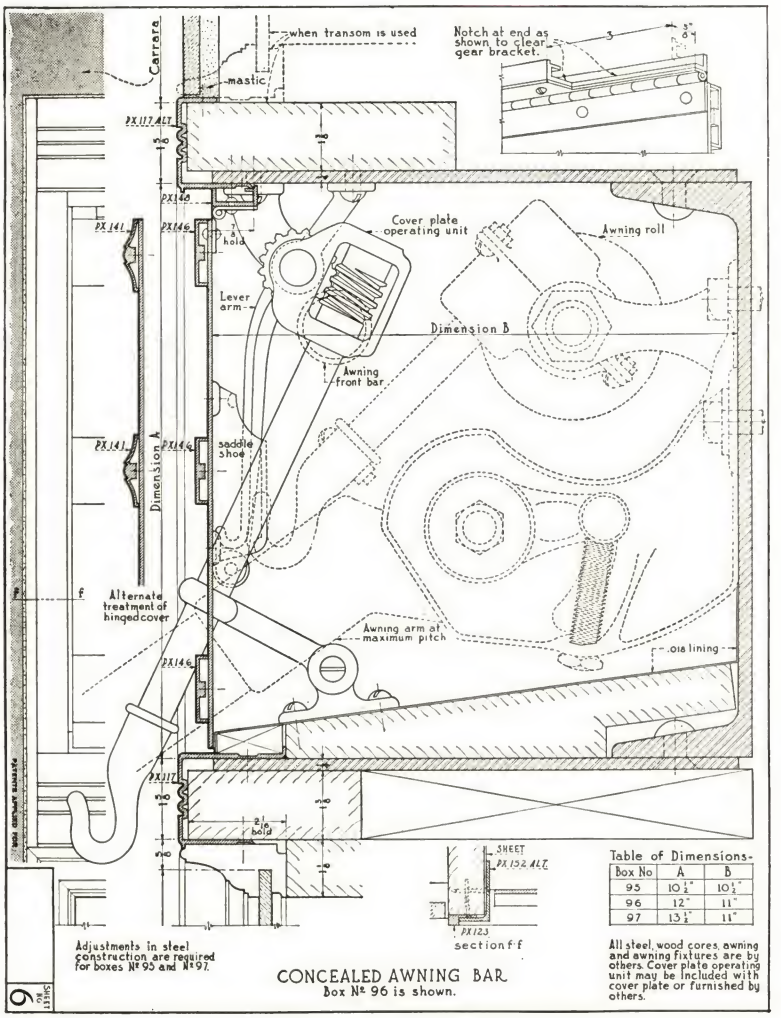



Full size drawings of Pittco shapes. Carried in stock. Unless otherwise indicated, these shapes are available in aluminum and bronze. See page 3 for standard finishes.




Typical vertical cross sections showing use of Pittco Metal units in connection with Carrara Structural Glass.

# QUARTER SIZE DETAILS OF PITTCO STORE FRONTS



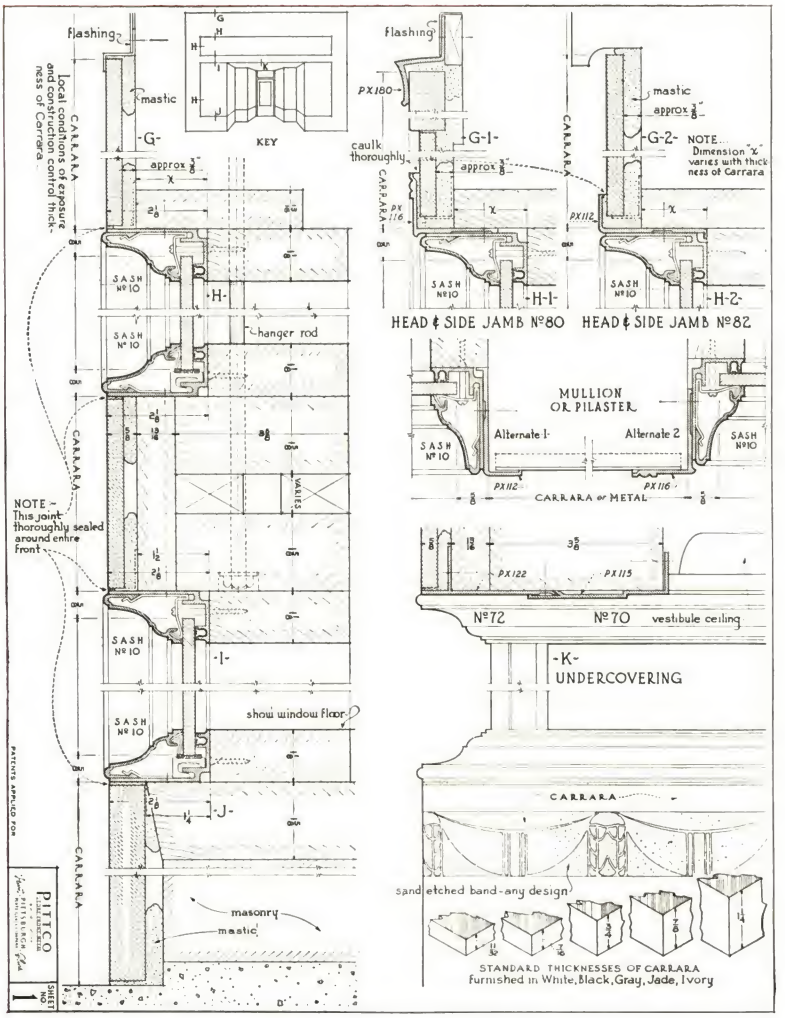

Detail of Pittco Metal Concealed Awning Bar.

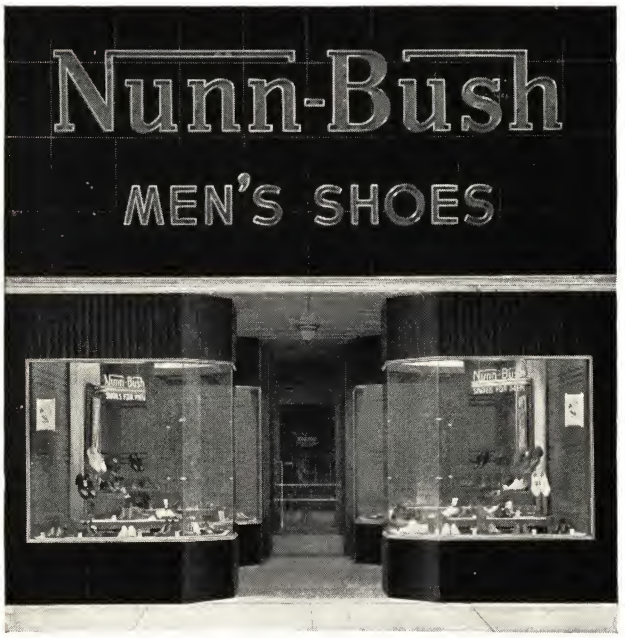


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PLATE GLASS COMPANY

# PITTCO-CARRARA GLASS
## STORE FRONTS

Pittco Store Front Metal was specially designed for use with Carrara Structural Glass. See Features 7 and 8, Page 4. When so employed, Pittco Metal enhances the richness and distinction of a store front's appearance, harmonizes in perfect fashion with the lustrous, polished surface of the glass facia, bulkheads, etc. The details on this and the accompanying pages show various applications of Pittco Store Front Metal in connection with Carrara Structural Glass.



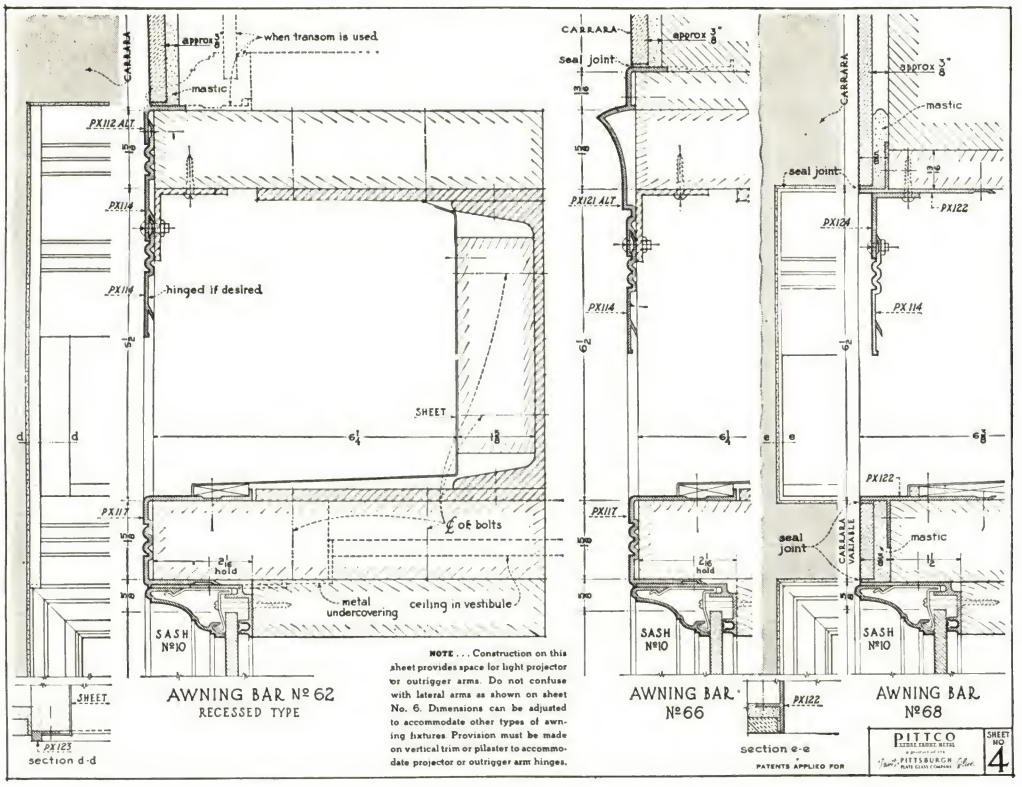

A modern shoe store in Philadelphia, Pa. which combines Black Carrara Glass and Pittco Metal.



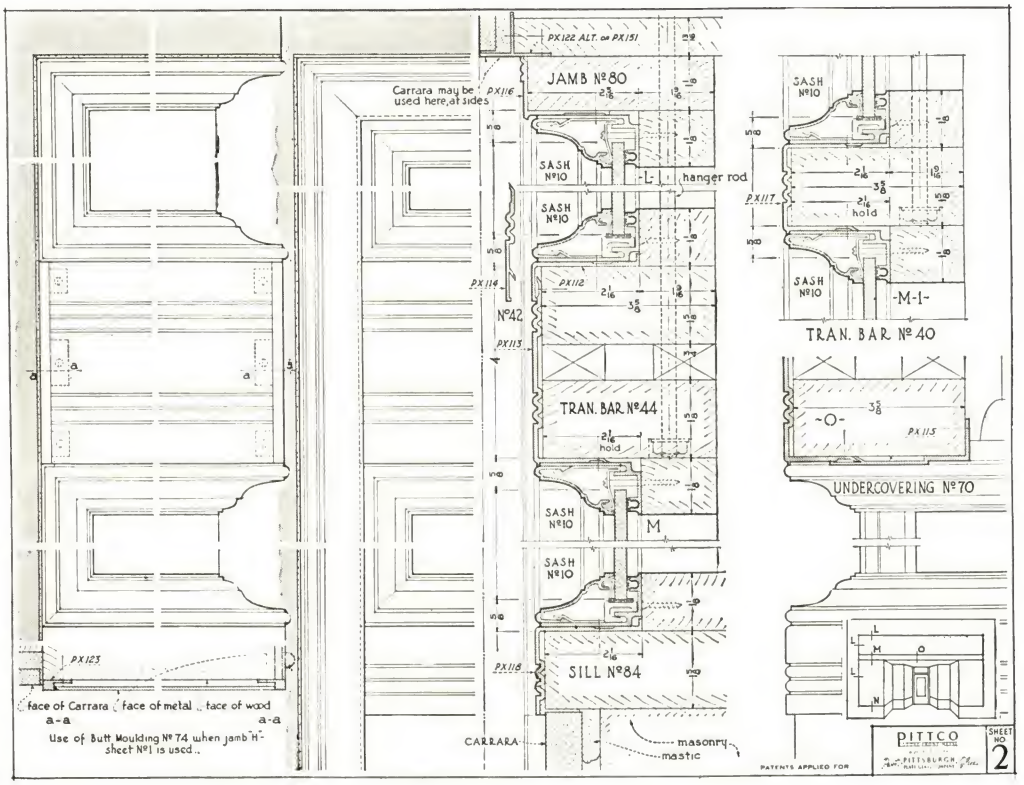

A restaurant in Chicago, Ill. which has been made attractive and inviting by the use of Carrara Glass and Pittco Metal.



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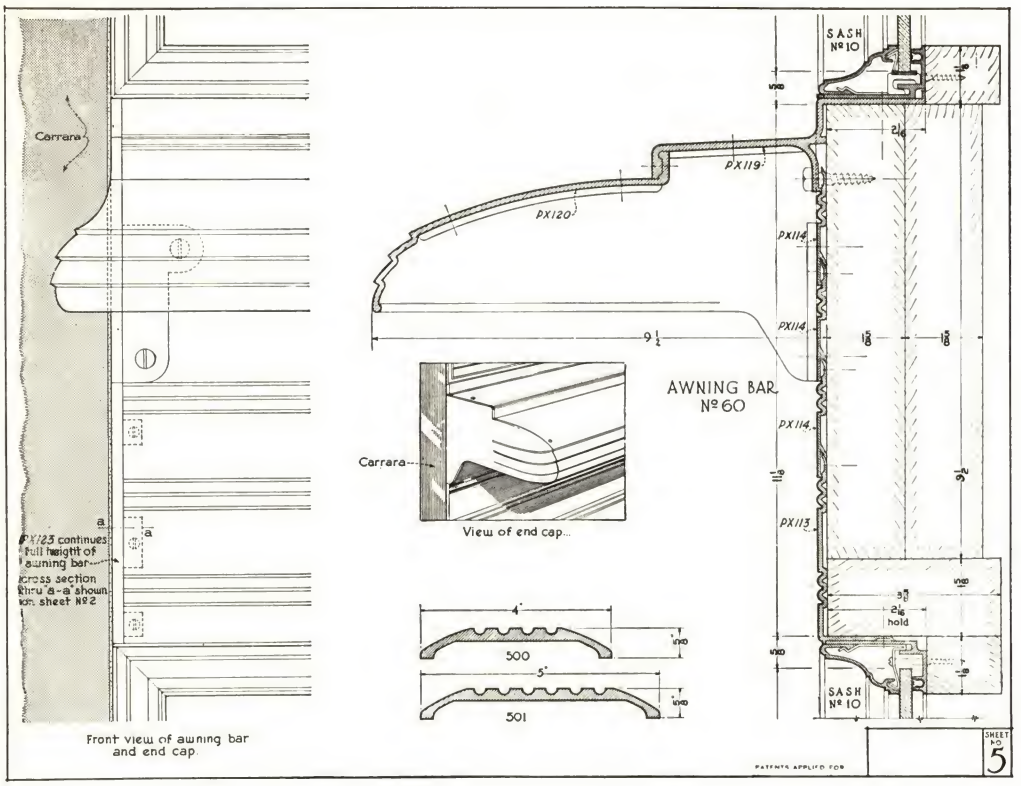



# QUARTER SIZE DETAILS OF PITTCO METAL STORE FRONT INSTALLATIONS



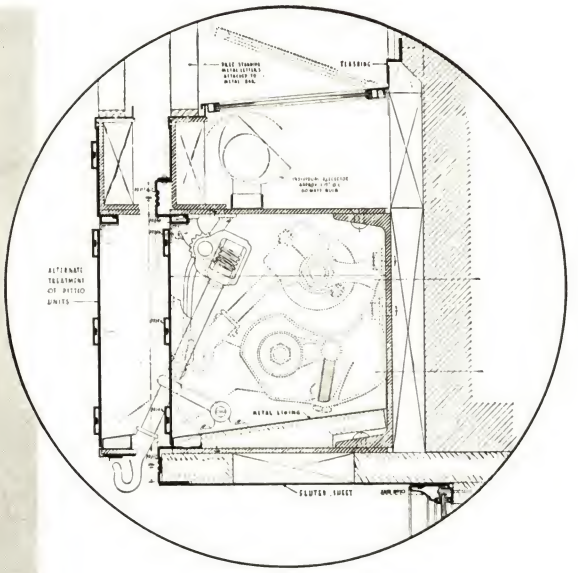



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Front view of awning bar and end cap



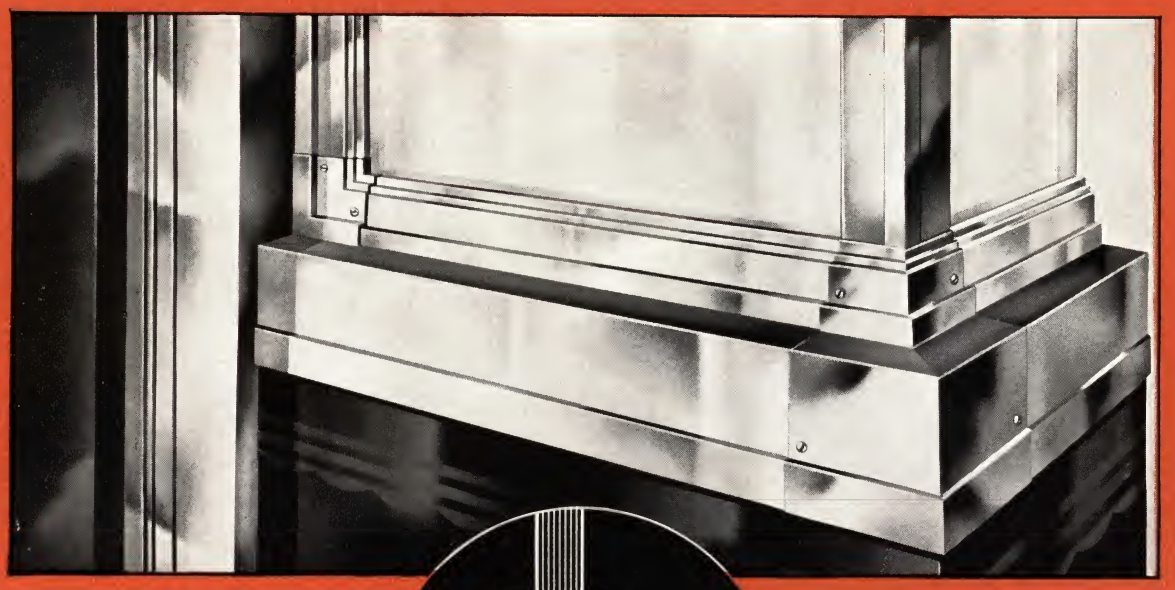



Pittco Metal may be used in the construction of a combination awning bar and light trough, as shown here. The light trough throws illumination over the face of the front and silhouettes effectively the free-standing letters supported by the awning bar.



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# EASYSET STORE FRONT CONSTRUCTION



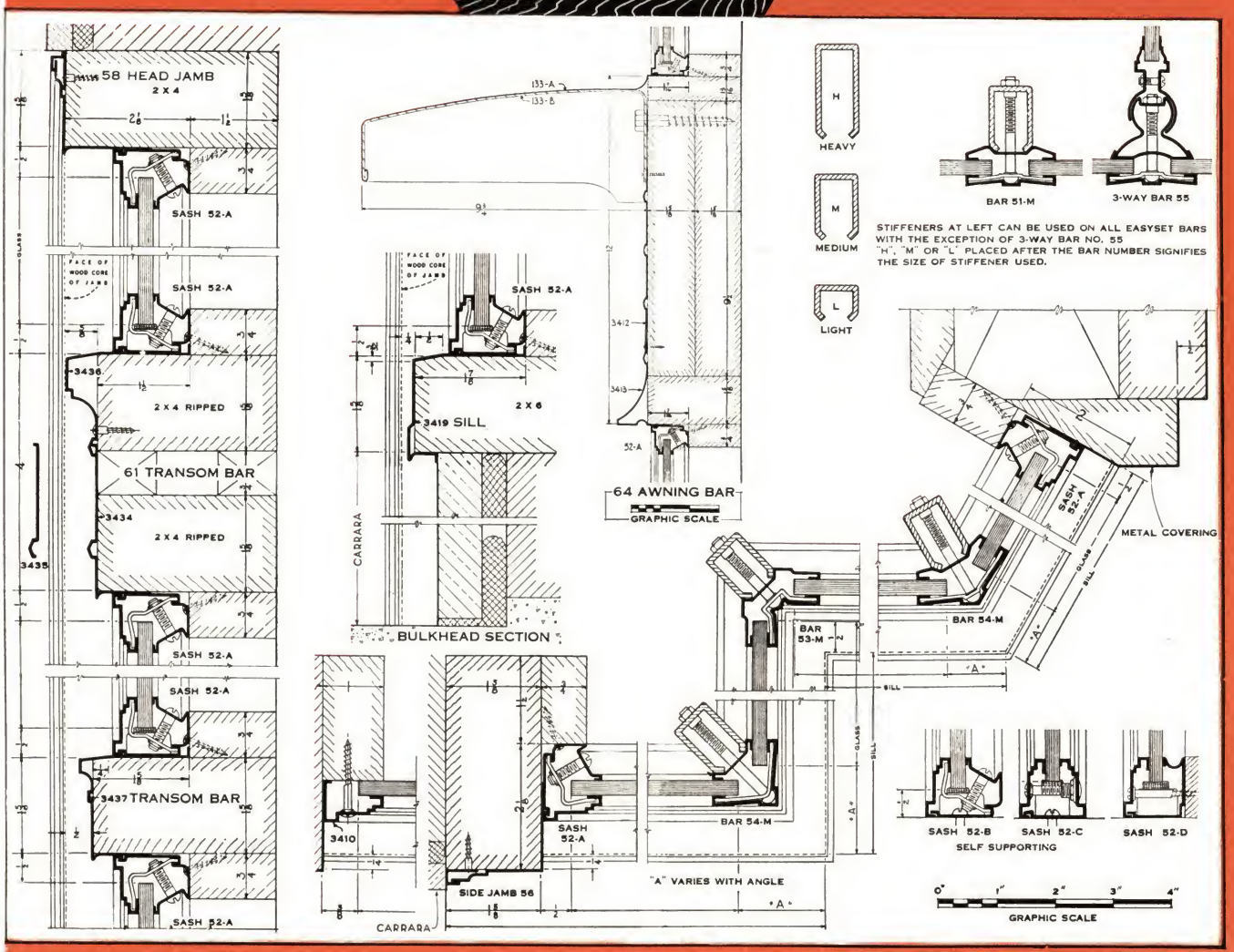
*Above*: View of 52-A EasySet Sash and accompanying members.

*At right*: Full size cross section through 52-A EasySet Sash.

*Below*: Reduced details of 52-A EasySet Sash and other important units such as jambs, transom bars, corner bars, division bars and sill.



Besides Pittco, we can also supply EasySet, an interesting line of cold rolled construction, in polished aluminum, satin aluminum, alumilite, polished bronze, satin bronze, statuary bronze (light or dark), stainless steel (polished or unpolished).



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## PLATE GLASS COMPANY




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MINNEAPOLIS, Minn.
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556 S. Fulton Ave.
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290 Elizabeth Ave.
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26 Mill St.
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915 S. Washington St.
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RICHMOND, Va.
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Tacoma, Washington
Spokane, Washington
Sacramento, Calif.
Walla Walla, Washington

Missoula, Montana
Butte, Montana
Portland, Oregon
Fresno, Calif.
Yakima, Washington

Los Angeles, Calif.
Santa Barbara, Calif.
San Diego, Calif.
San Francisco, Calif.

# DATA ON RUSTLESS METAL STORE FRONTS BY

# ZOURI

**Information, details, and illustrations on the complete line of Zouri Store Front construction in both Extruded and Cold-Rolled types.**




## WHY ARCHITECTS ARE USING MORE ZOURI STORE FRONT METAL



It is a significant fact that ZOURI Metal is being used more and more abundantly in the new store fronts—for signs, for entrance doors, as decoration, to secure contrast with other materials, and for its sheer beauty. Unquestionably the life and lustre of alumilited aluminum, bronze, and other modern alloys add much to the appeal of the modern store front.

You can depend on ZOURI for the best metal alloys, for careful fabrication, for attractive finish, and for expert service on any special requirements.

Stock items of the ZOURI line, in both Extruded and Rolled constructions, are shown in this catalog in fairly complete form, but many other stock and special items are furnished. For more information see your local ZOURI distributor, or write ZOURI STORE FRONTS, NILES, MICHIGAN.

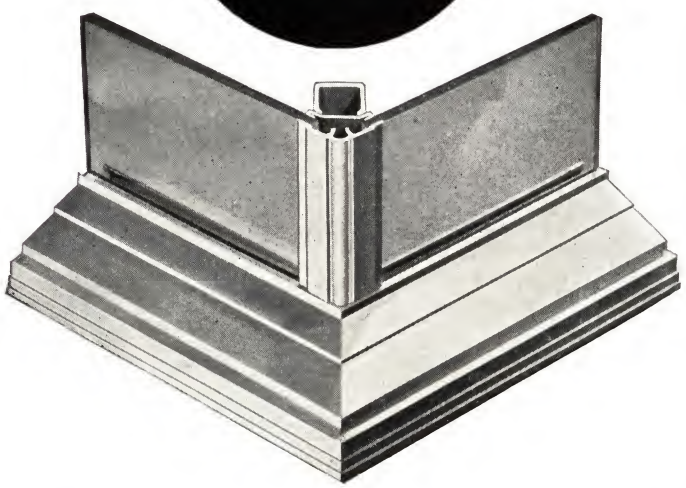
**ZOURI furnishes a complete line of extruded and rolled metal construction including: Sash, Bars, Awning and Transom Bars, Jambs, Door Jambs, Grilles, Thresholds, Snap-on Mouldings, Ventilators, Showcase Doors, Metal Paneling, Signs, Pilasters, Entrance Doors, and other Special Metal Work.**

# ZOURI STORE FRONTS

ALUMILITED ALUMINUM

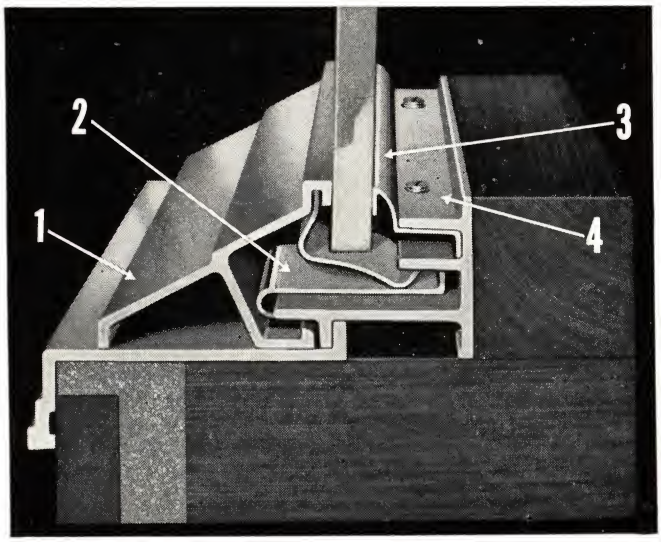
SATIN BRONZE

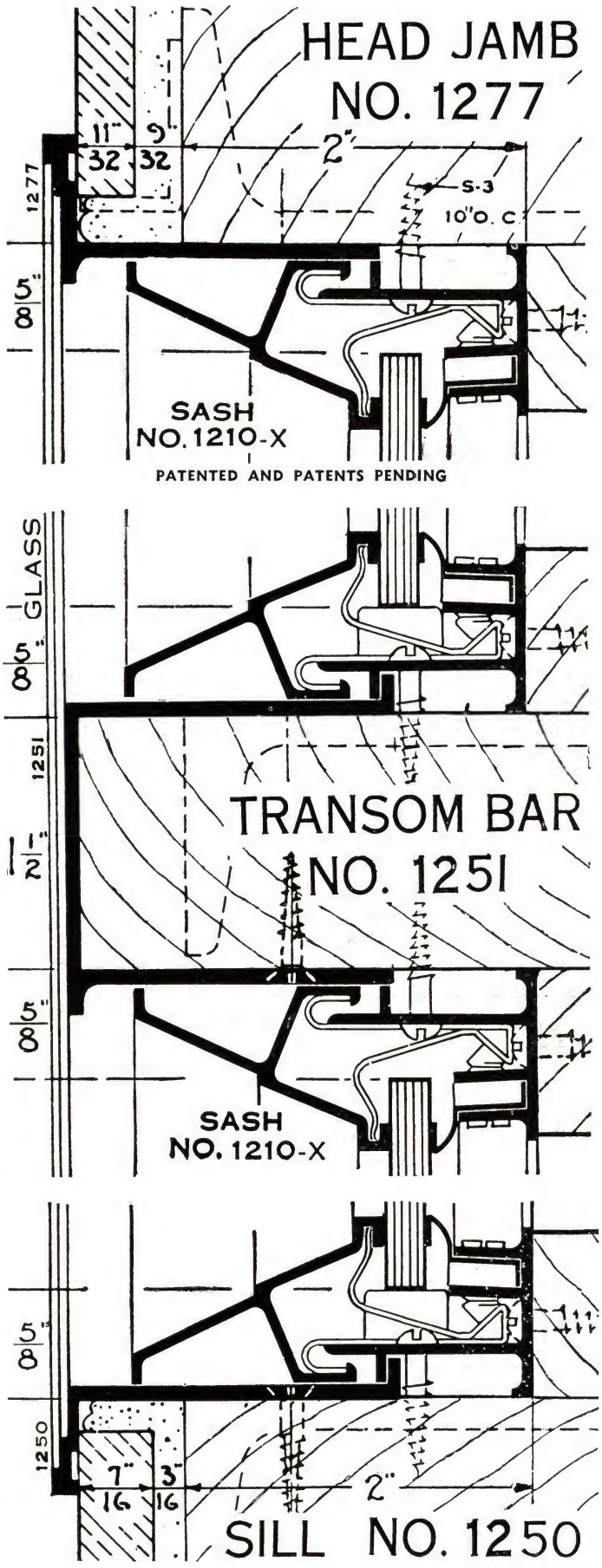
# ZOURI EXTRUDED CONSTR.

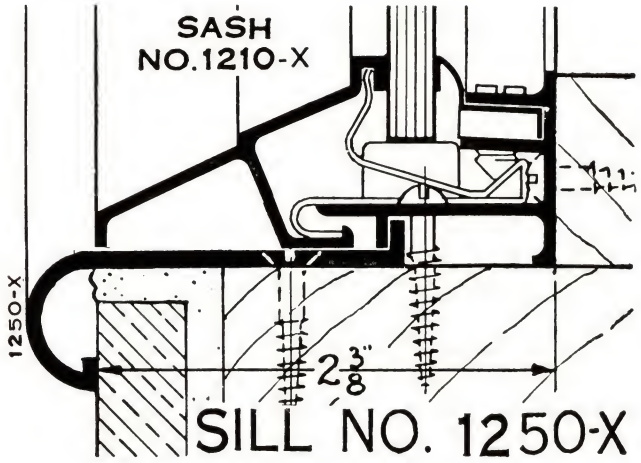


This complete ZOURI line of Extruded Store Front construction is unusually smart and modern. Lines are straight and true. Sash can be installed as a self-supporting unit, or used with wood backing. It can be mitered perfectly, but caps are supplied when specified. Drainage holes are provided in gutter, but ventilation holes made in sash face only when ordered.

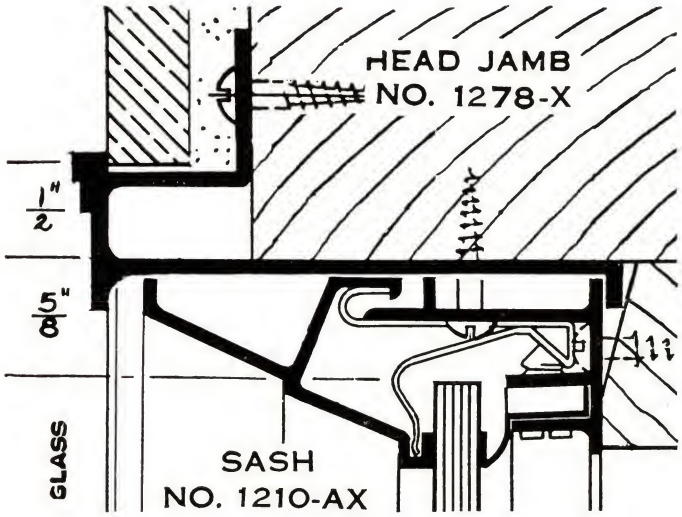
GLASS PROTECTION. Like the famous ZOURI Safety Key-Set Rolled Sash, Extruded Sash and Bars provide a full cushion grip on plate glass. This grip is firm and secure, is spread out along face of glass—equally effective on glass varying from $\frac{3}{16}$" to $\frac{5}{16}$". Yet it absorbs shocks and strains and provides an absolutely safe and dependable setting. No looseness, rattling, or rigidity. Illustration shows: 1. Attractive face moulding which distributes pressure along face of glass. Removable only from inside. 2. Flexible Spring Mechanism, and 3. Continuous Spring at back which provide cushion grip. 4. Wide, strong gutter.

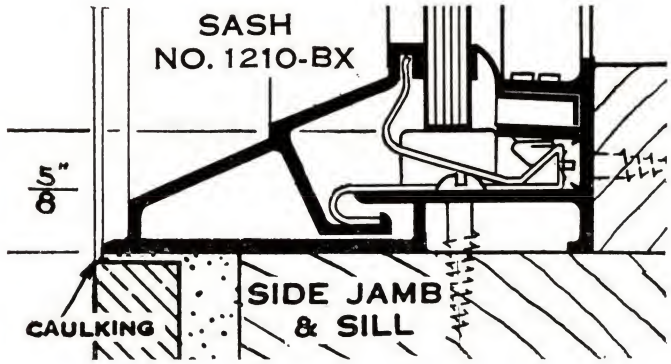


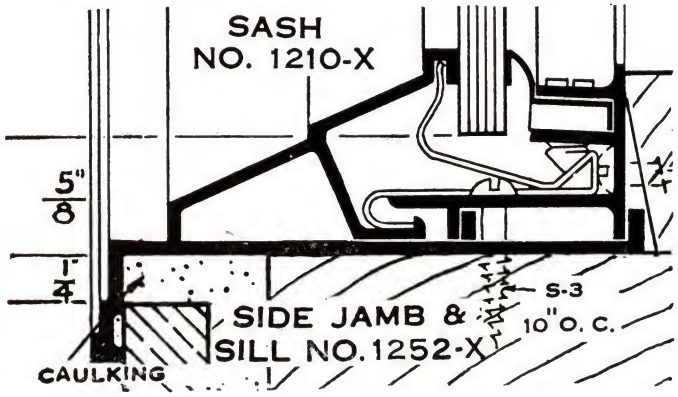



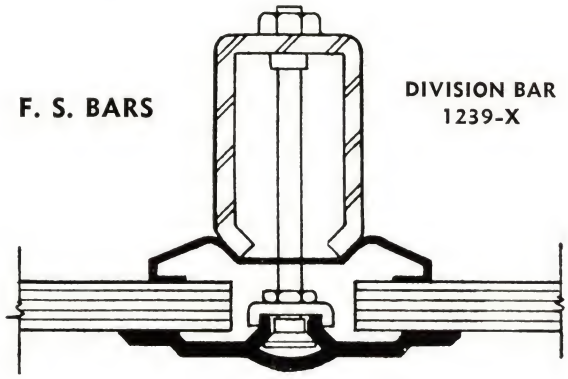



SILL NO. 1250-X

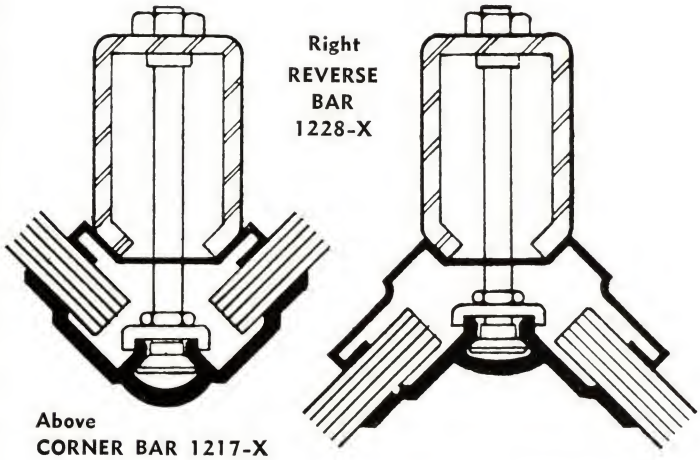


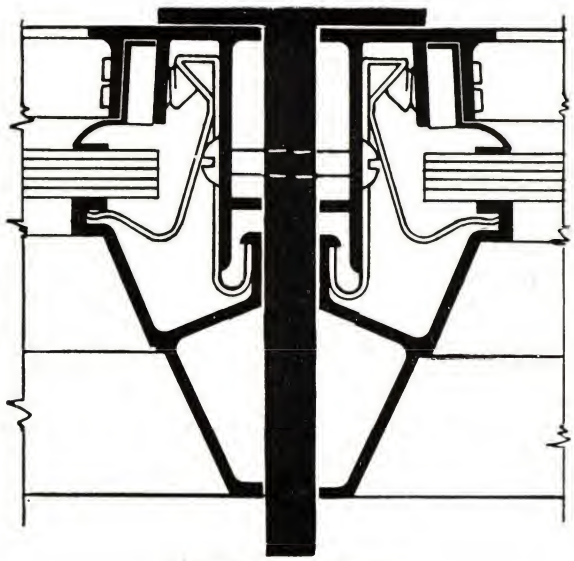



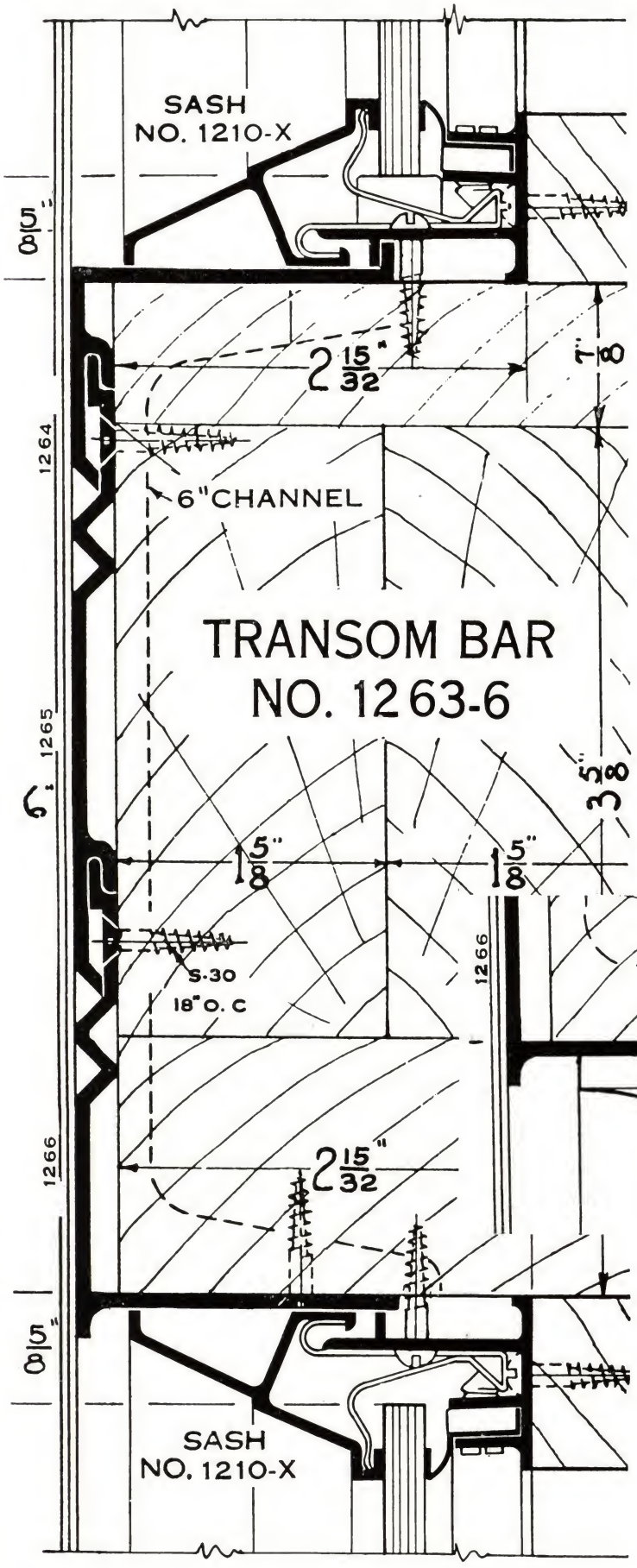

ZOURI Bars provide a full cushion grip at corners and divisions, complete the framing of the window, and protect customers against possible injury. If the front is to be complete and finished in appearance they should not be eliminated in favor of makeshift substitutes. Extruded Bars are furnished from stock at 90°, 110°, 120°, 135°, and 160° angles, or to order at any angle.

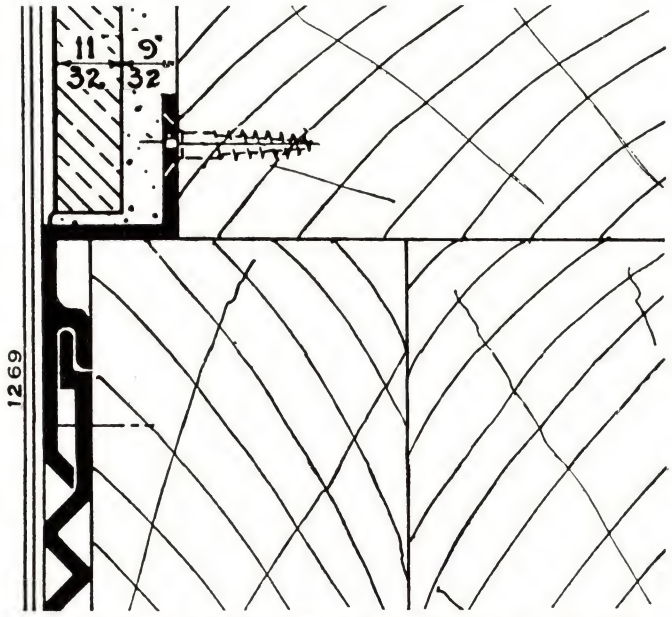



Above
CORNER BAR 1217-X



DIVISION BAR 1240-X

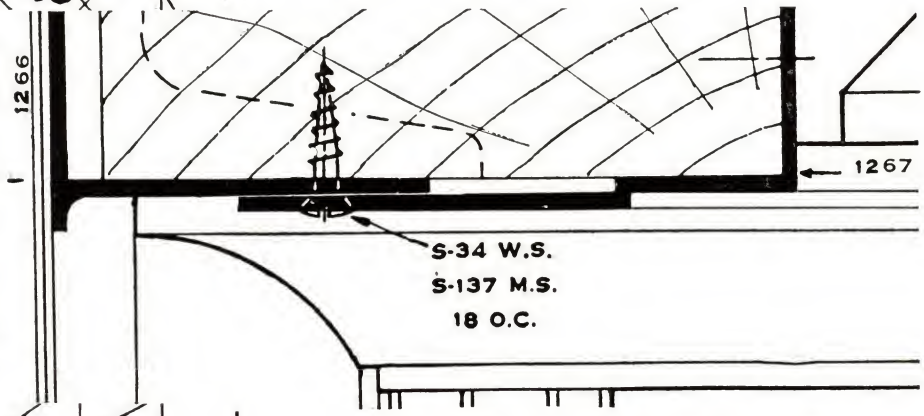



**TRANSOM BAR WITH STRUCTURAL GLASS**
**(AWNING BAR SIMILAR)**

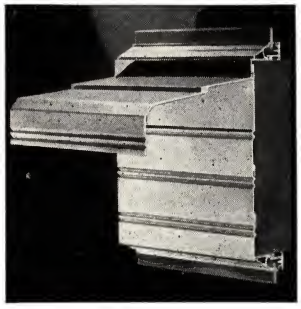
## TRANSOM AND AWNING BARS

ZOURI TRANSOM BARS are available in 1½", 4", and 6" sizes, and in 9", 12" and larger sizes by use of one or more units of extension moulding 1265. The 1½" Bar is detailed on page 2. The 4" Bar consists of one moulding, similar in appearance to the effect produced by the 6" Bar at left.

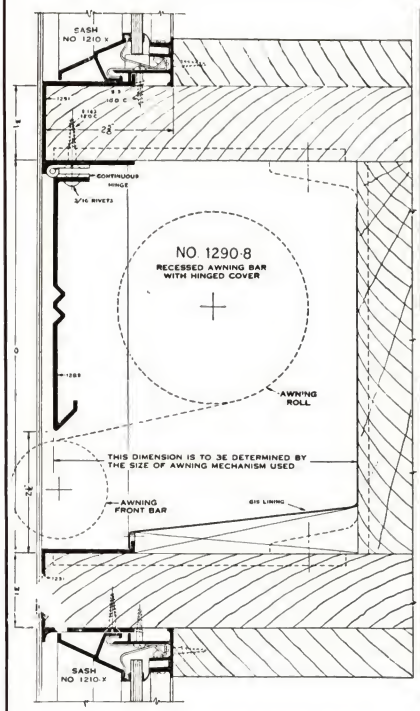


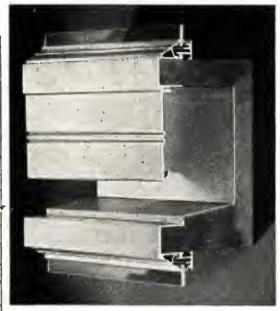

## TRANSOM BAR OVER ENTRANCE

ZOURI AWNING BARS are the last word in awning bar construction and beauty. They include Concealed and Recessed types which keep the awning roll out of sight. (detailed on page 5. Hood type is also effective.



**HOOD TYPE AWNING BAR**



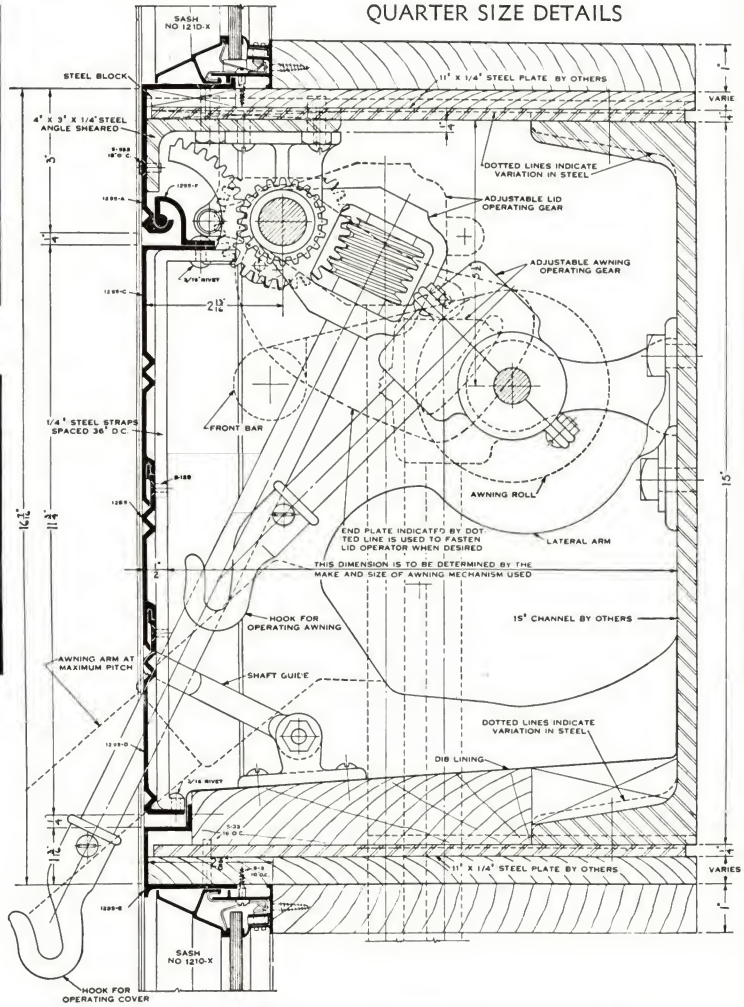



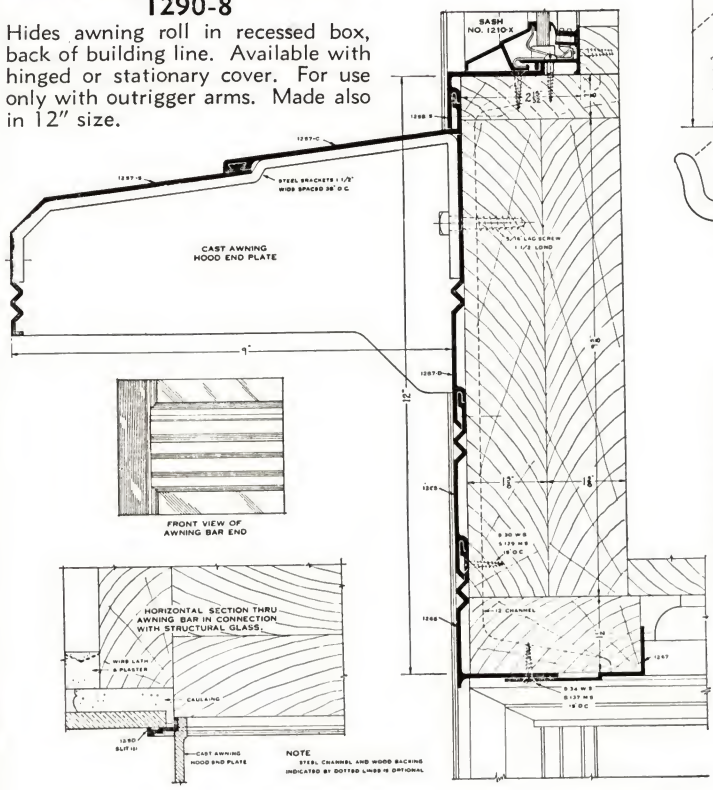


## RECESSED AWNING BAR 1290-8

Hides awning roll in recessed box, back of building line. Available with hinged or stationary cover. For use only with outrigger arms. Made also in 12″ size.

QUARTER SIZE DETAILS

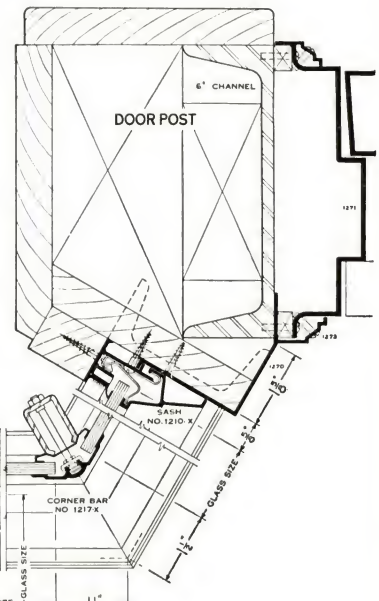



## CONCEALED AWNING BAR 1295-H

An especially desirable type of awning bar which improves the appearance of the front tremendously, especially when awning is not in use. Completely conceals roll. For use with lateral arms only. Pivoted cover also available.

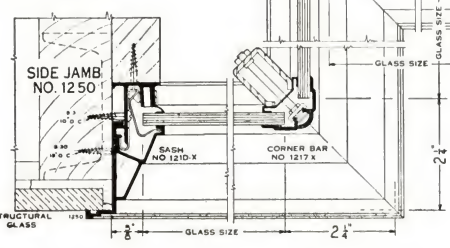
**PATENTED AND PATENTS PENDING**




## HOOD AWNING BAR 1257

This is a very distinctive hood type awning bar, and has proved effective in use. For either lateral or outrigger arms.

Details of several additional DOOR JAMB MOULDINGS will be sent on request.

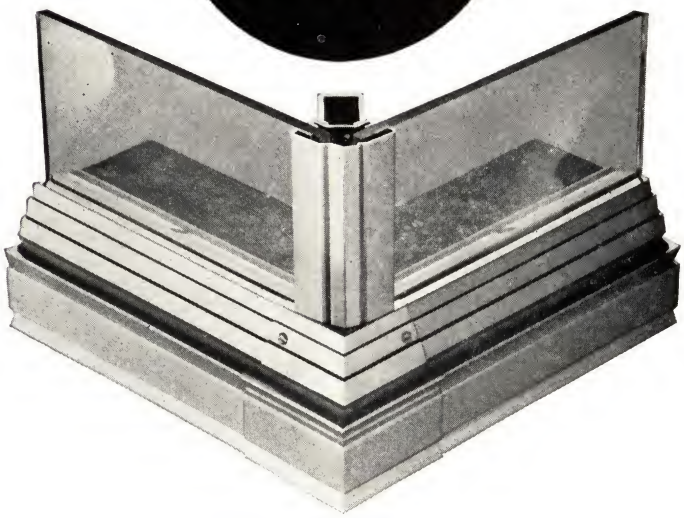



## HORIZONTAL SECTION

ALUMILITED ALUMINUM

BRONZE STAINLESS STEEL

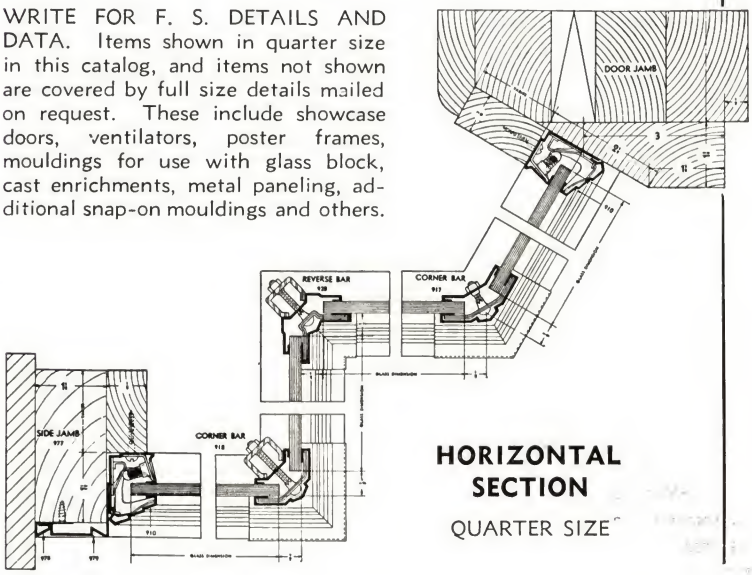
# ZOURI ROLLED CONSTR.



The complete ZOURI cold-rolled store front construction is well-known for its modern, attractive design, for its acutely sharp lines and truly flat surfaces. Carried in stock in alumilited aluminum, satin finish aluminum, bronze and stainless steel. Polished, statuary and other finishes are available.

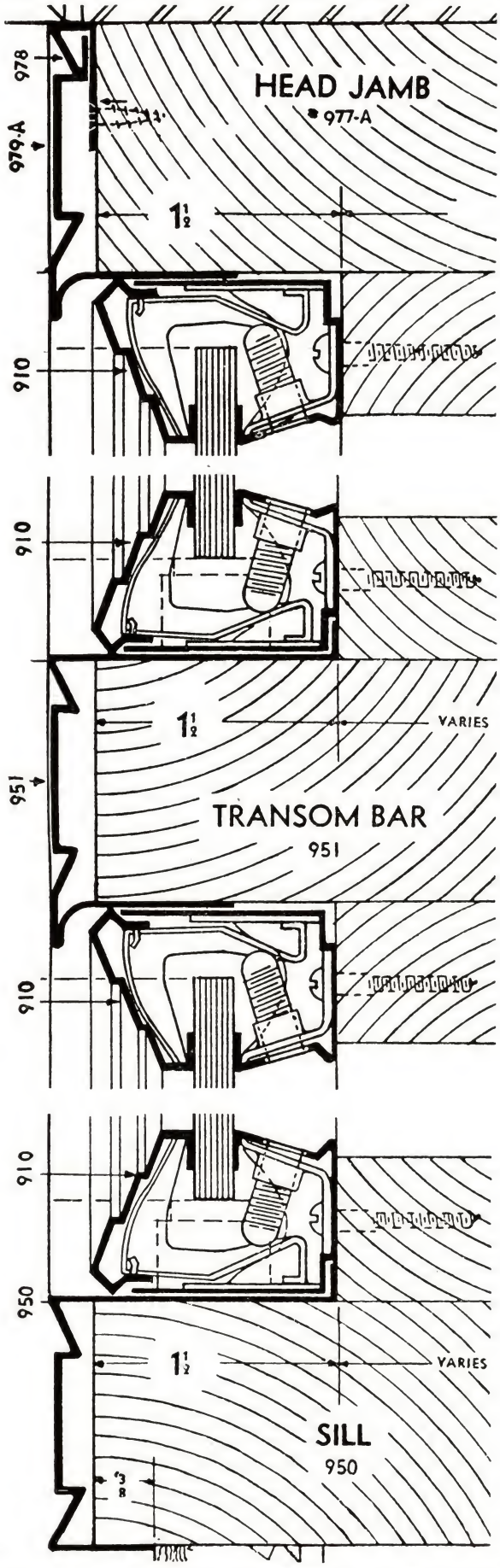
The famous ZOURI SAFETY KEY-SET SASH provides a full, evenly-distributed, cushion grip on plate glass, regardless of variations in thickness. Specially formed Spring Mechanism draws face moulding back in true alignment and holds glass in a strong, dependable grip. At the same time, ample flexibility is present to allow for movement of glass, due to vibration, pressure, or possible swelling, or twisting of wood framing. No screw-heads appear on face.

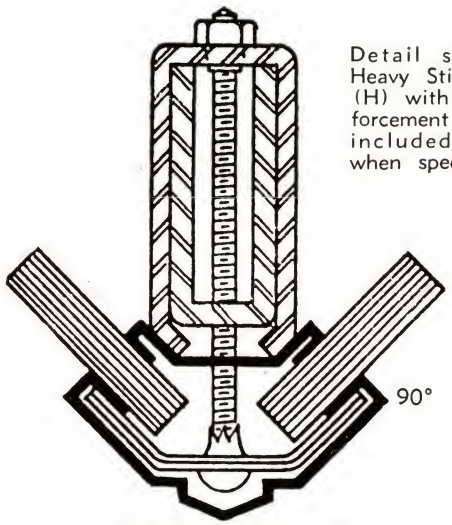
WRITE FOR F. S. DETAILS AND DATA. Items shown in quarter size in this catalog, and items not shown are covered by full size details mailed on request. These include showcase doors, ventilators, poster frames, mouldings for use with glass block, cast enrichments, metal paneling, additional snap-on mouldings and others.




**HORIZONTAL SECTION**

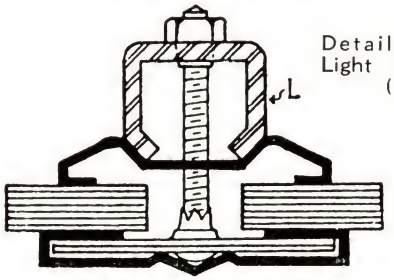
QUARTER SIZE





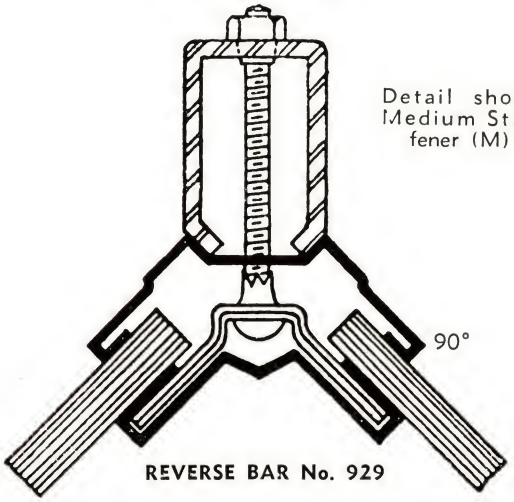

Detail shows Heavy Stiffener (H) with reinforcement X—included only when specified.

**CORNER BAR No. 921**




Detail shows Light Stiffener (L)

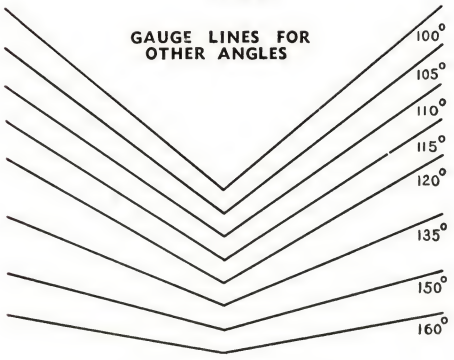
**DIVISION BAR No. 938**

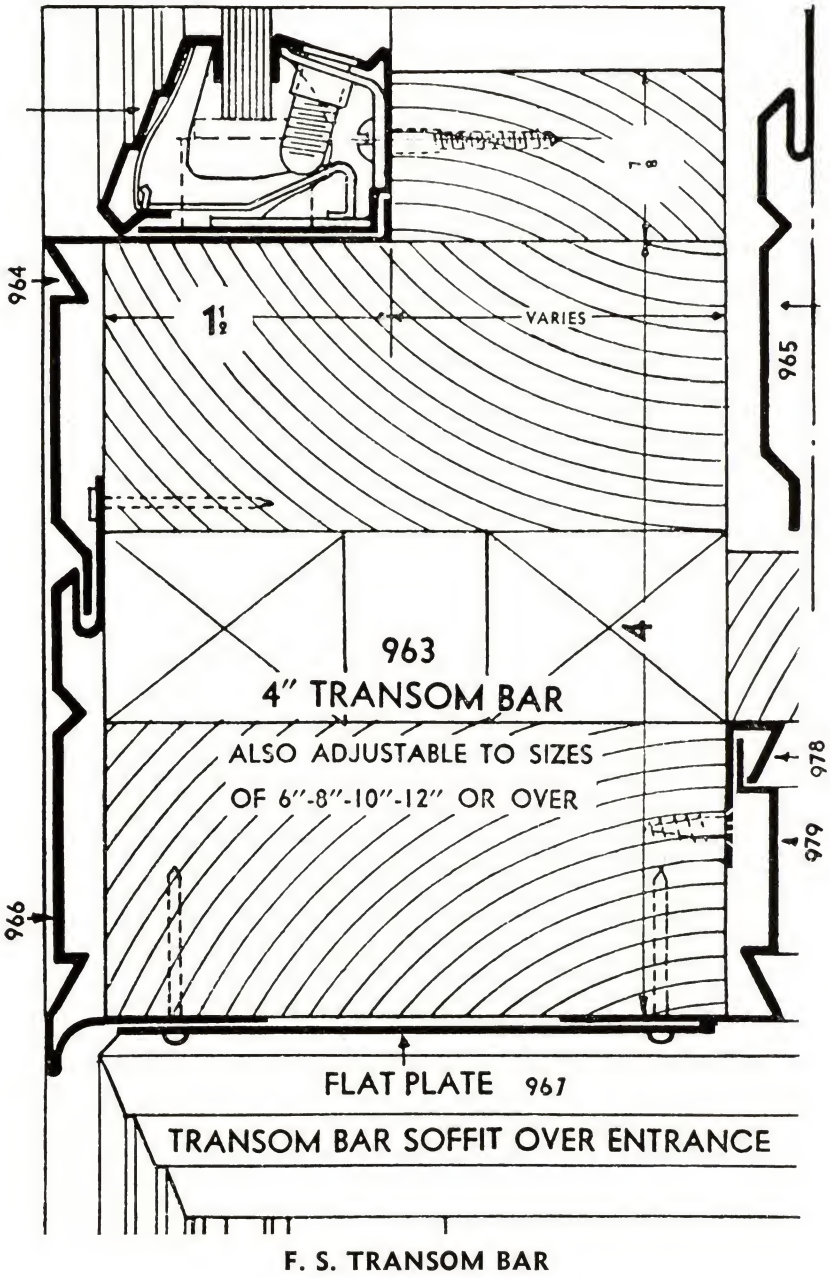



Detail shows Medium Stiffener (M)

**REVERSE BAR No. 929**

## BARS



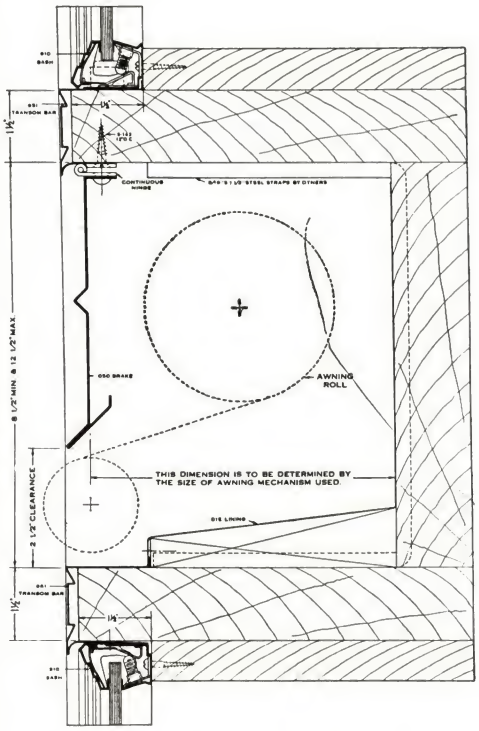

**F. S. TRANSOM BAR**

### TABLE OF BARS

In order to facilitate the selection of proper bars we submit a table which we believe will be of great assistance in ordering. We are also submitting a formula as an explanation of this table.

| STIFFENER | A | B | C |
|---|---|---|---|
| Light . . . . . | 60 in. | 100 sq. ft. | 55 sq. ft. |
| Medium . . . . . | 78 in. | 130 sq. ft. | 70 sq. ft. |
| Heavy . . . . . | 96 in. | 140 sq. ft. | 72 sq. ft. |
| Heavy-X . . . . . | 108 in. | 144 sq. ft. | 80 sq. ft. |

FORMULA—We recommend all of our bars as listed where the glass height does not exceed that given in column (A) and the combined area of the 2 plates is less than the square footage listed in column (B). The area of 1 plate must not exceed that listed in column (C).

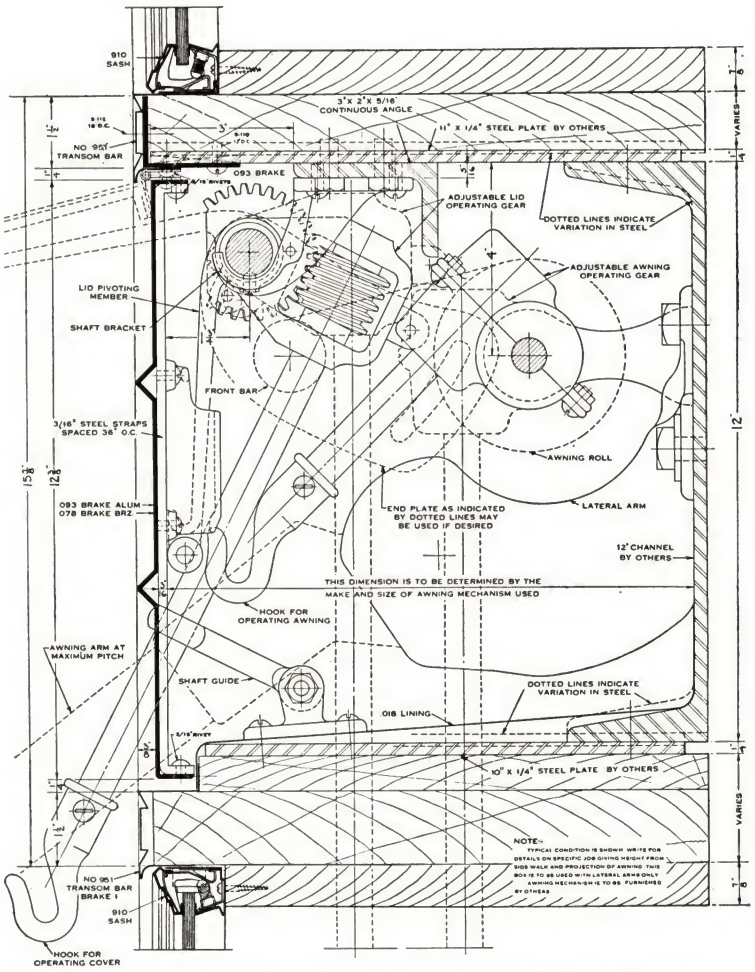



QUARTER SIZE DETAILS

PATENTED AND PATENTS PENDING

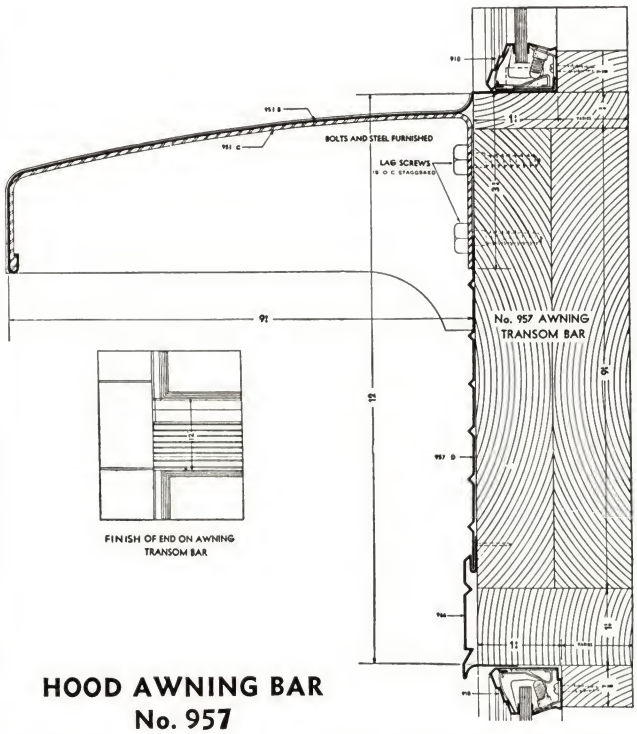
## RECESSED AWNING BAR No. 958

This modern awning bar hides awning roll in a recessed box. Furnished with hinged or stationary cover. For use with outrigger arms only.




## CONCEALED AWNING BAR No. 92-H

Protects awning roll when not in use, and completely conceals it from view. Also furnished with pivoted cover. For use with lateral arms only. Awning mechanism by others.




## HOOD AWNING BAR No. 957

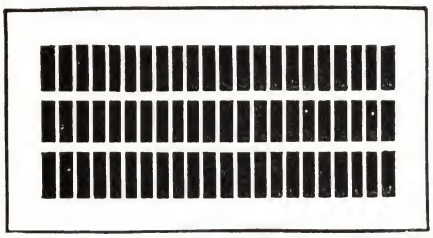
Designed in simple lines to conform with any type of front, this awning bar is easy to install and affords good protection. Either outrigger or lateral arms can be used.



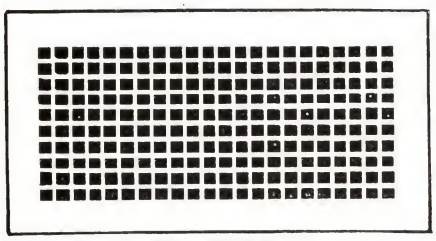




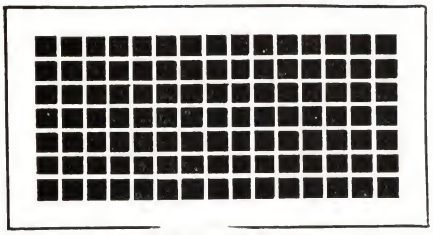
These up-to-date awning bars solve one of the store front designers most difficult problems. Recessed and Concealed types are widely used because they prevent weatherstained awnings from ruining the appearance of the front.



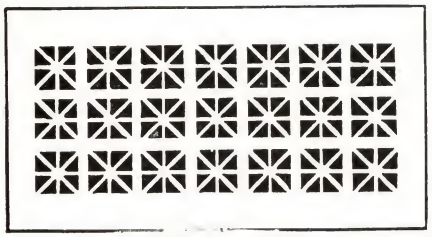
No. 370—Rectangular. Stock sizes 11″ x 5″, 18″ x 9″, 24″ x 10″.



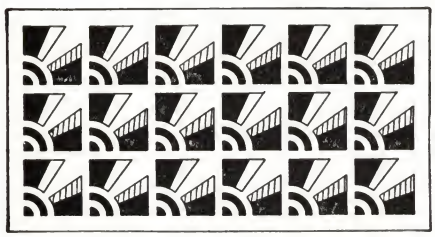
No. 371—Small Square.



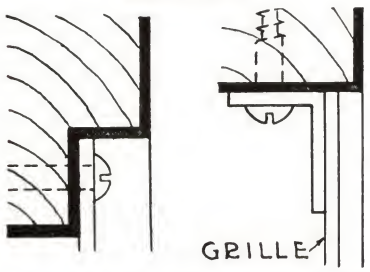
No. 372—Large Square.



No. 374—Union Jack.



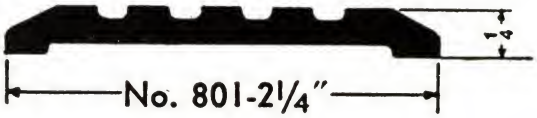
Special Design—Cut or Cast to Architect's Requirements




Stamped and cast grilles furnished in bronze or aluminum, or stainless steel (satin finish or alumilited). Stamped grilles are made in .050 and .109 gauge metal (.050 only in stainless steel).

Thresholds furnished in extruded bronze, with the exception of Numbers 808—4″, 809—5″, and 810—4 5/32″, which come in aluminum only. Kickplates are also available.

# GRILLES AND THRESHOLDS





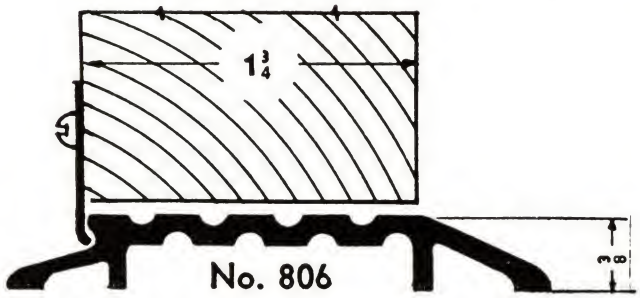


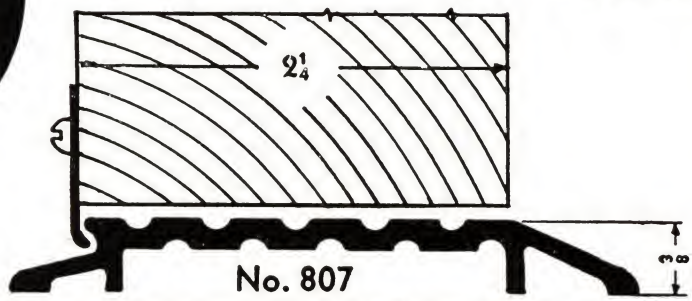






No. 805-6″ SIMILAR. ½″ HIGH




BOTH No. 806 AND No. 807 FURNISHED WITH WEATHERING GUIDE





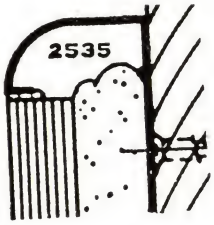







# MOULDINGS

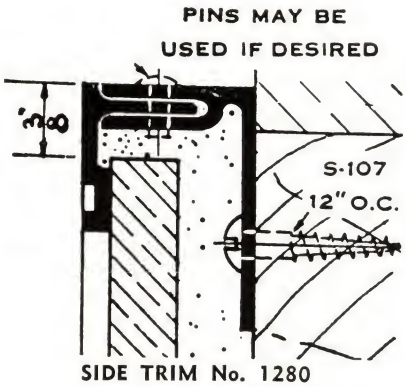
The most widely used ZOURI mouldings are shown on pages 10 to 13, but others are available and new mouldings are frequently added from time to time. If what you need is not shown, write for more information.



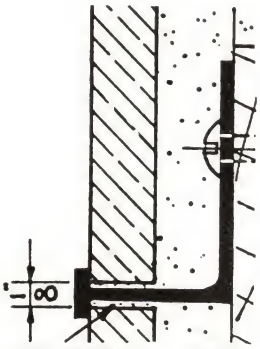

TRIM MLDG.

**EXTRUDED MOULDINGS FOR STRUCTURAL GLASS**

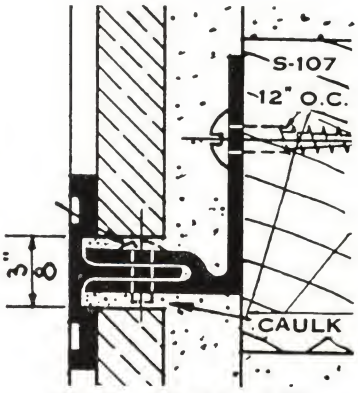
**(ALUMINUM AND BRONZE)**



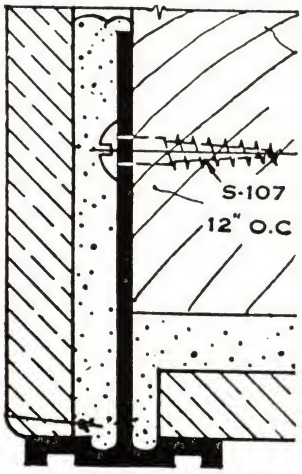

SIDE TRIM No. 1280



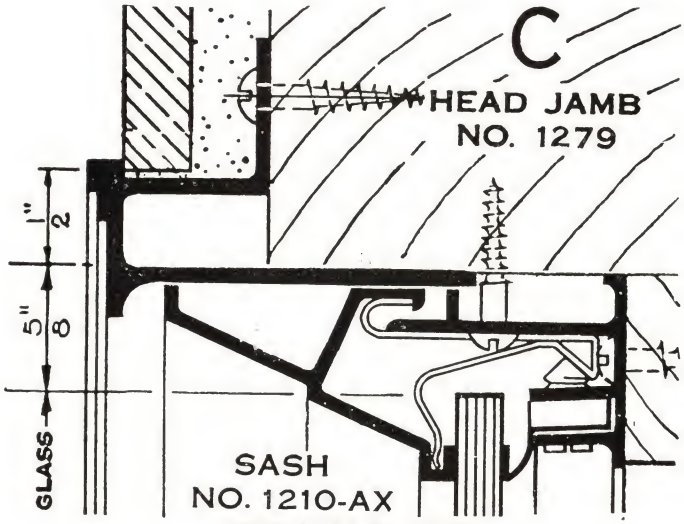

INT. TRIM No. 1281



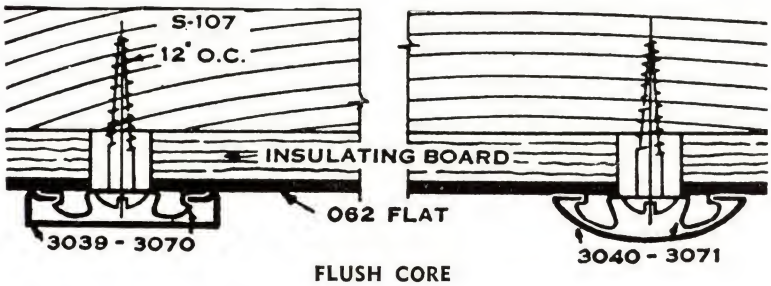

INTERM. TRIM No. 1282



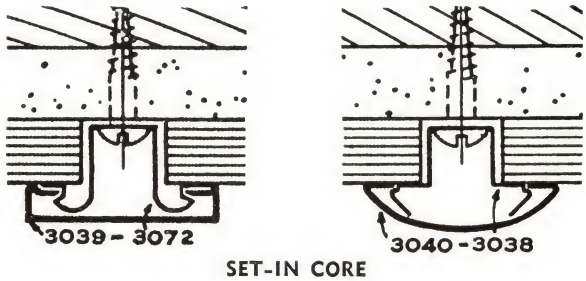

CORNER TRIM No. 1283



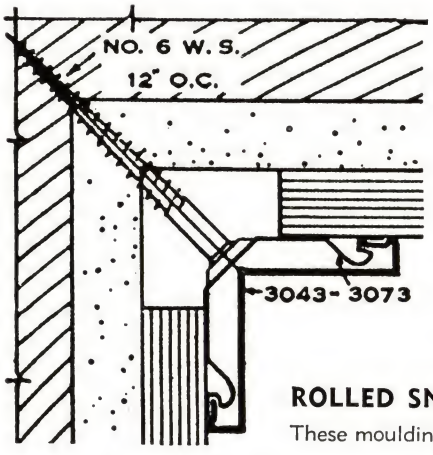

HEAD JAMB No. 1279

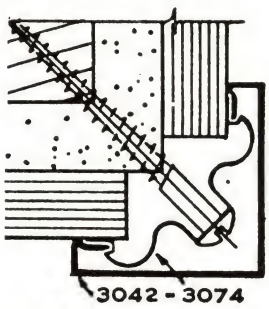



FLUSH CORE

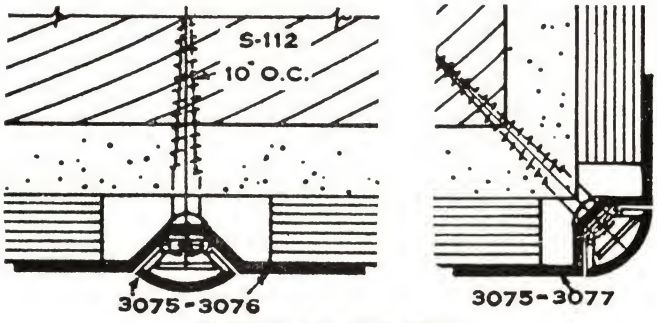



SET-IN CORE



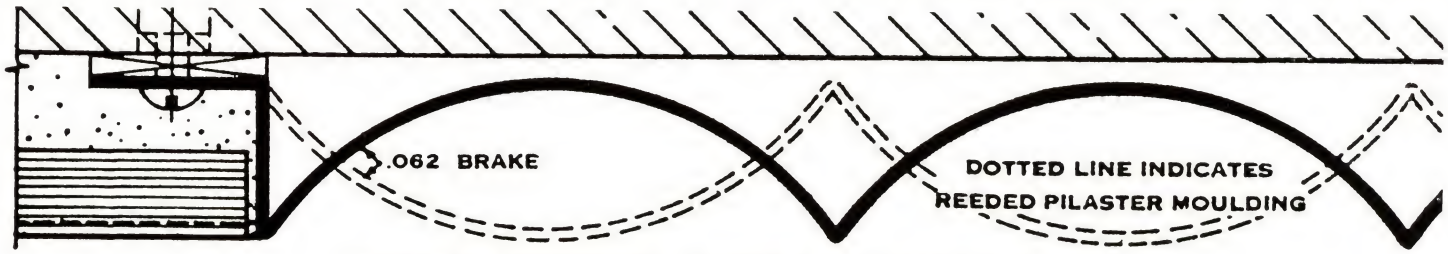

CORNER



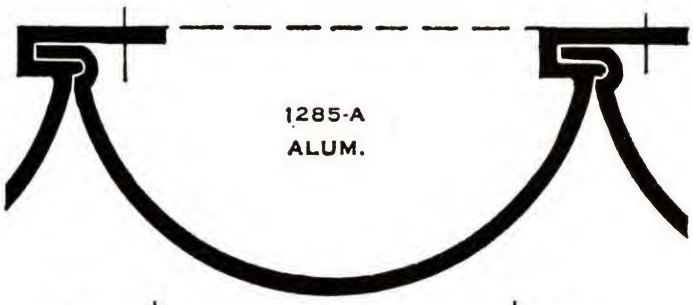

OUTSIDE SETTING TRIM

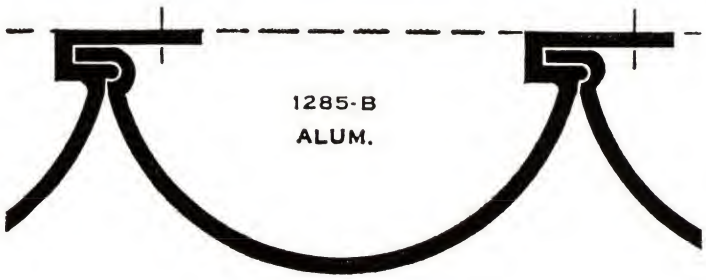
**ROLLED SNAP-ON AND TRIM MOULDINGS (ALUM. BRONZE AND STAINLESS STEEL)**

These mouldings are widely used for store front and interior work. Write for data on additional snap-on mouldings.




PILASTER MOULDINGS (FLUTES MAY VARY IN SIZE)

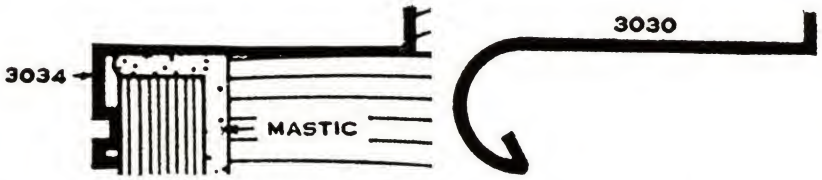


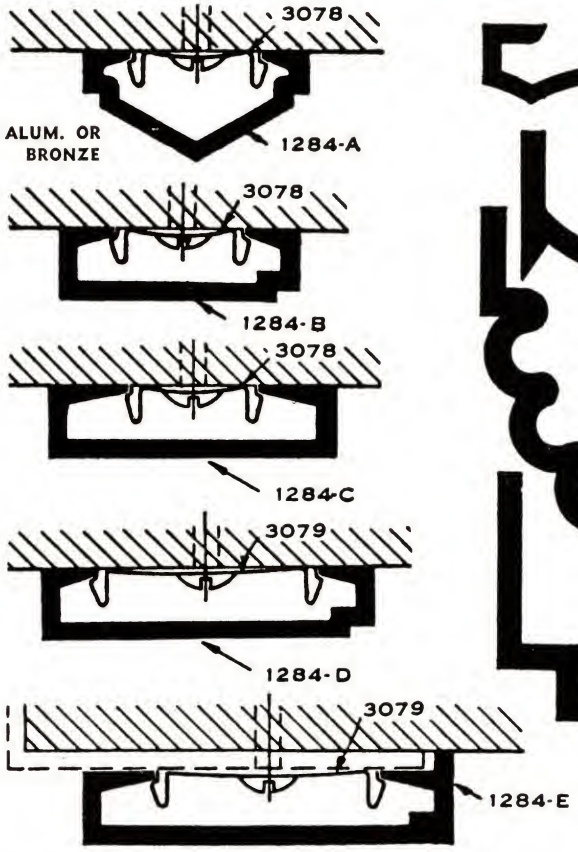




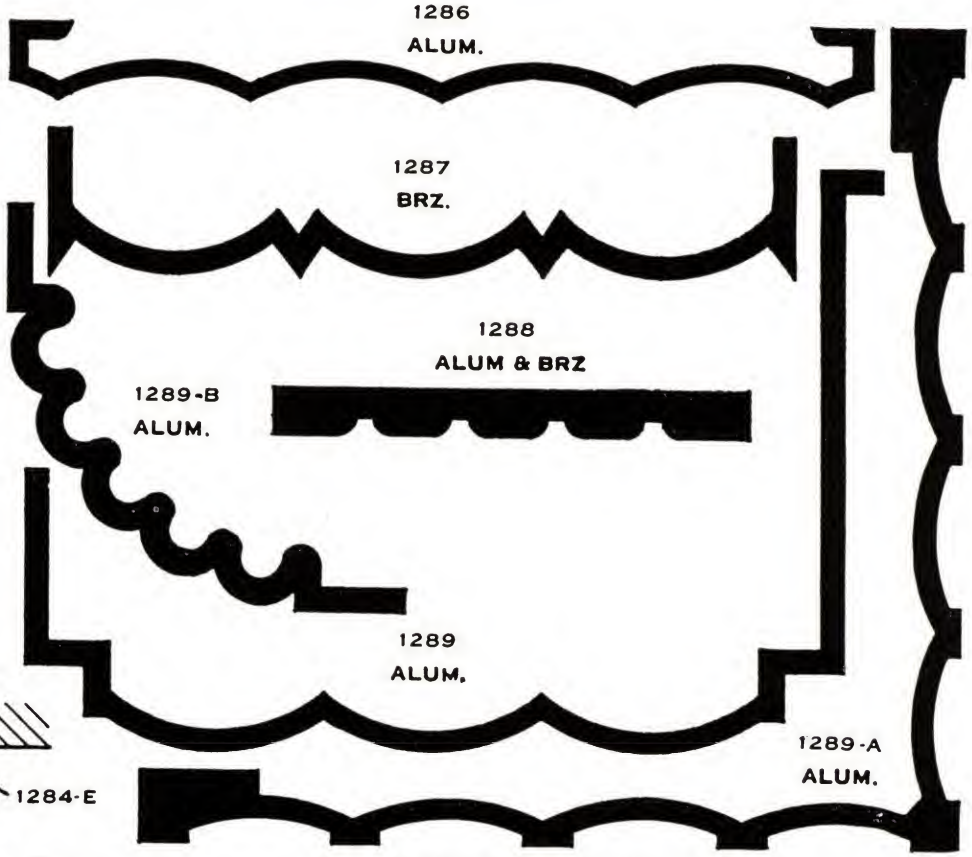
EXTRUDED REED MOULDINGS



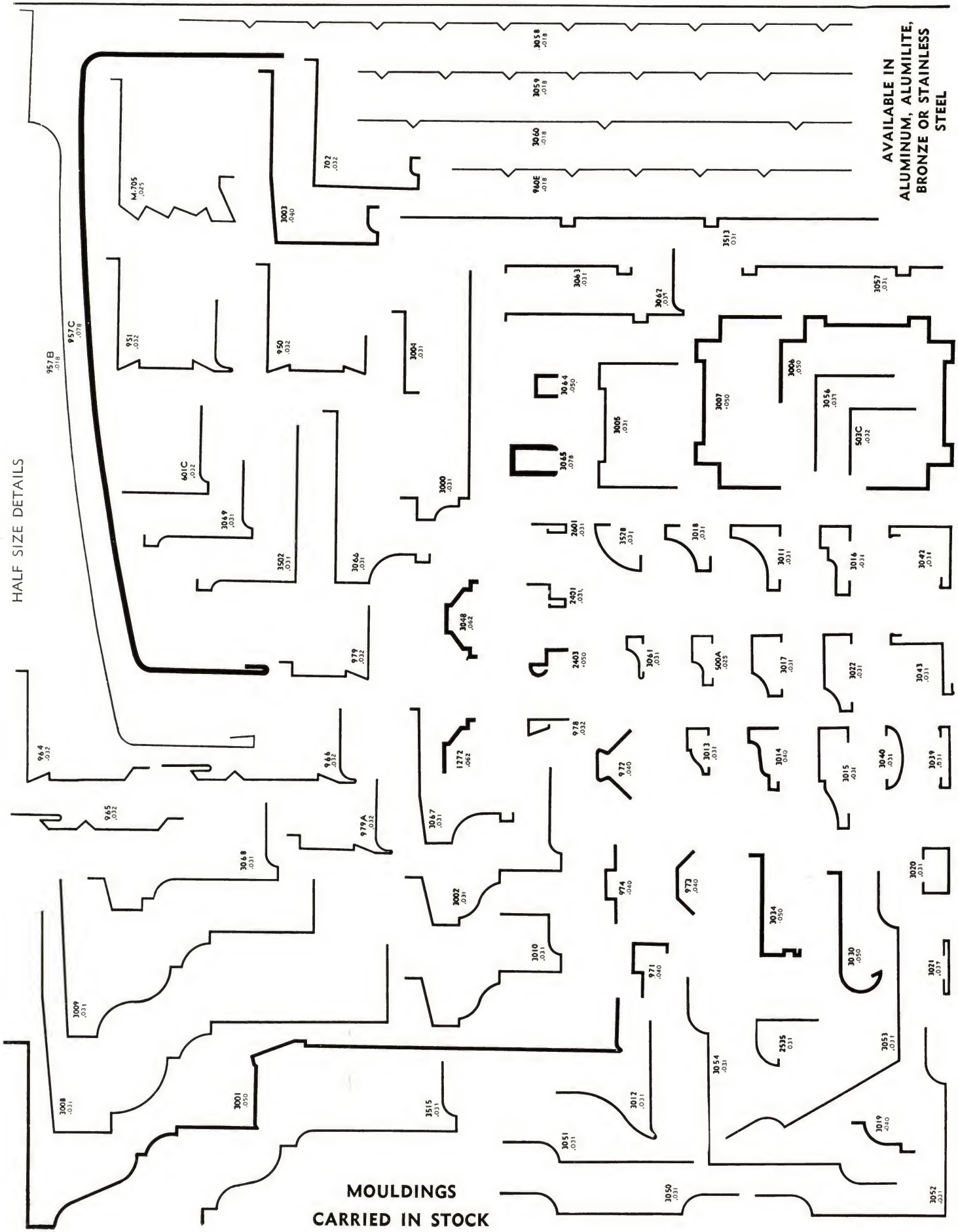

ROLLED SILL AND JAMB MOULDINGS

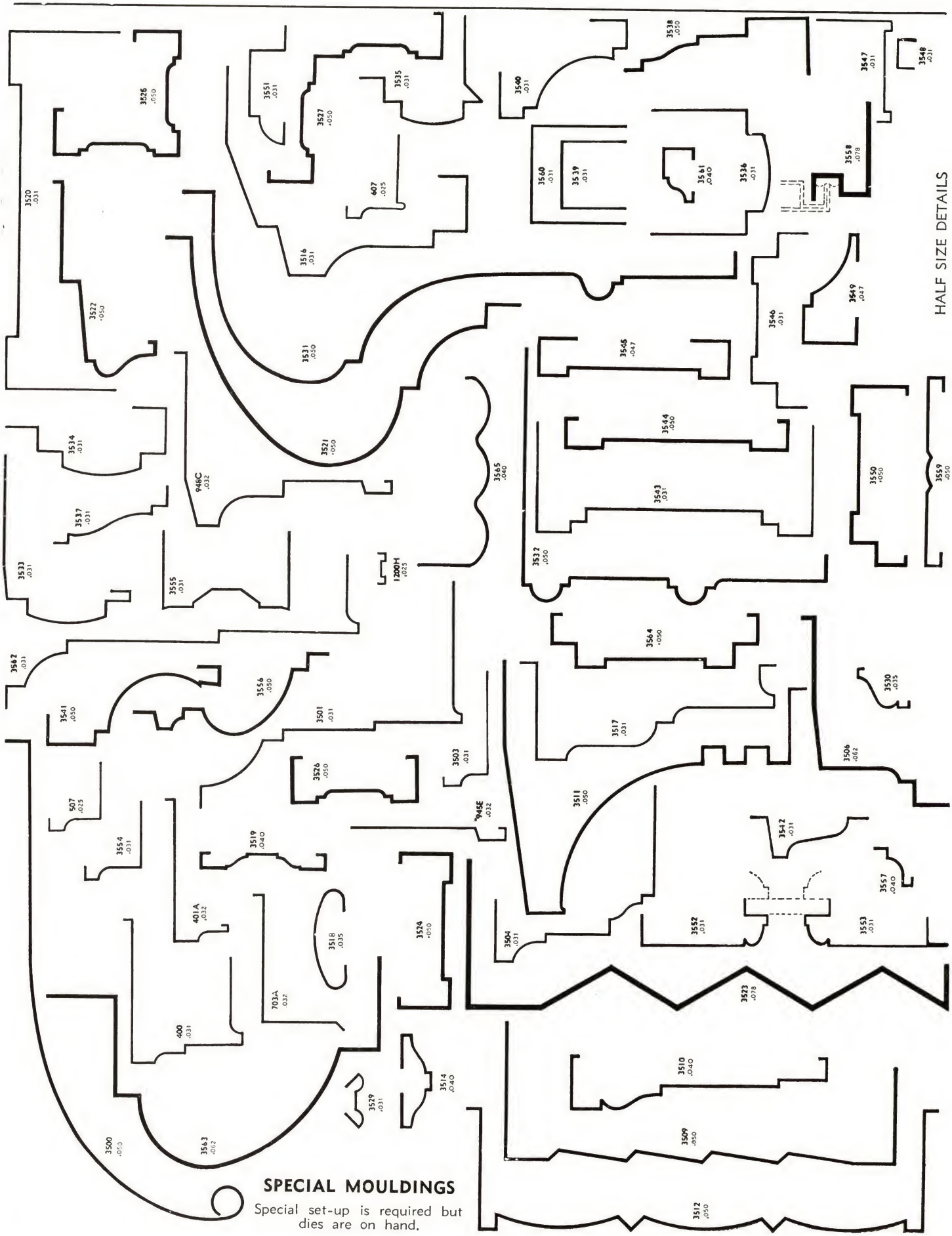



EXTR. SNAP-ON MOULDINGS (Alum. Only)




EXTRUDED PILASTER MOULDINGS


AVAILABLE IN ALUMINUM, ALUMILITE, BRONZE OR STAINLESS STEEL
HALF SIZE DETAILS
3058 .018
3059 .018
3060 .018
960E .018
702 .032
M-705 .025
3003 .040
3513 .031
3063 .031
3062 .035
3057 .031
957B .018
957C .078
951 .032
950 .032
3004 .031
3064 .090
3006 .030
3007 .090
3056 .031
3005 .031
503C .032
3065 .078
601C .032
3049 .031
3000 .031
3502 .031
3046 .031
2601 .031
3528 .031
3018 .031
3011 .031
3016 .031
3042 .031
3048 .062
2401 .031
979 .032
2403 .050
3061 .031
500A .025
3017 .031
3022 .031
3043 .031
964 .032
965 .032
1272 .062
978 .032
3013 .031
3014 .040
3015 .031
3040 .031
3039 .031
972 .040
3047 .031
979A .032
3068 .031
974 .040
973 .040
3020 .031
3034 .050
3002 .031
3010 .031
3030 .050
971 .040
3021 .037
3009 .031
2535 .031
3053 .031
3054 .031
3008 .031
3001 .050
3515 .031
3012 .031
3019 .040
3051 .031
3059 .031
3052 .031
MOULDINGS
CARRIED IN STOCK




## SPECIAL MOULDINGS

Special set-up is required but dies are on hand.

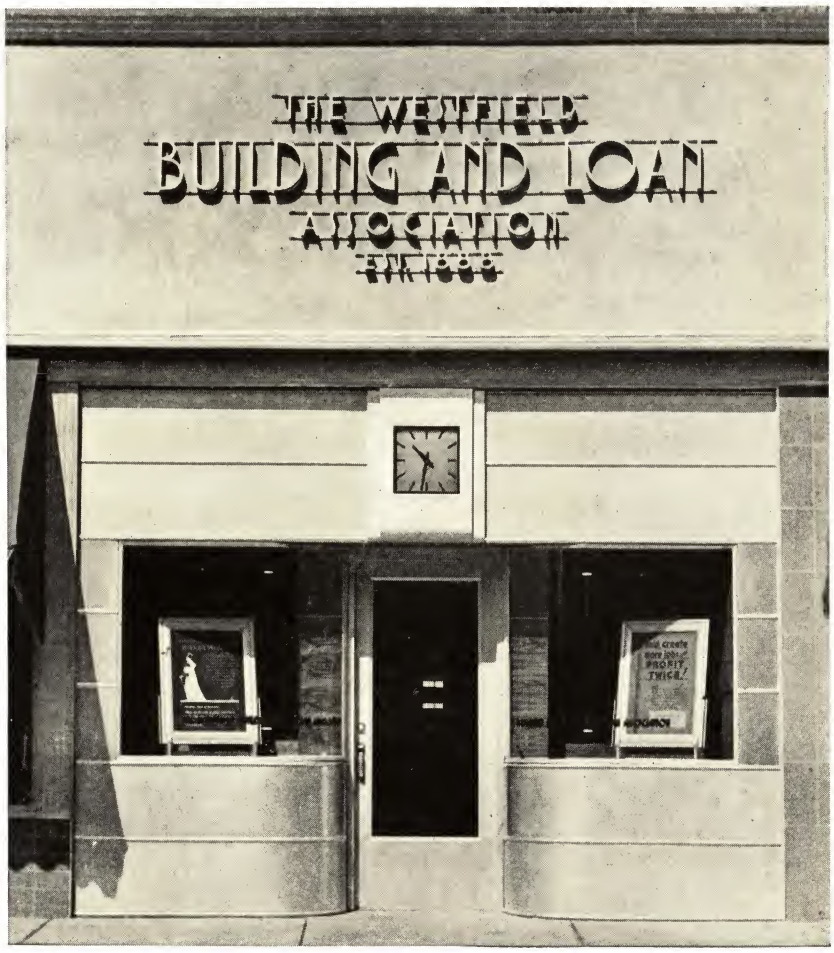
## SPECIAL METAL WORK




ZOURI sign letters are recommended for architectural beauty and visibility. Fabricated to special details.



ZOURI Metal Entrance Doors and pilasters create an inviting entrance for this restaurant.




ZOURI craftsmen have had wide and varied experience in fabricating all types of special metal work for store front and other architectural purposes. Such work includes metal sign letters, entrance doors, (also available in standard types) cast ornaments, bulkheads, pilasters, metal paneling, clock frames, and special mouldings, shapes, and decorations.

Since modern store front design is making more and more use of metal, this ZOURI service is especially helpful. Discuss your problems with the ZOURI distributor, or write the factory for specific information. Your details and specifications will be carefully followed.



ZOURI entrance door, special sign, and muntins.

**WRITE ZOURI STORE FRONTS, NILES, MICHIGAN, FOR FURTHER DATA**

19
12

# DATA ON RUSTLESS METAL STORE FRONTS BY

# ZOURI

**Information, details, and illustrations on the complete line of Zouri Store Front construction in both Extruded and Cold-Rolled types.**

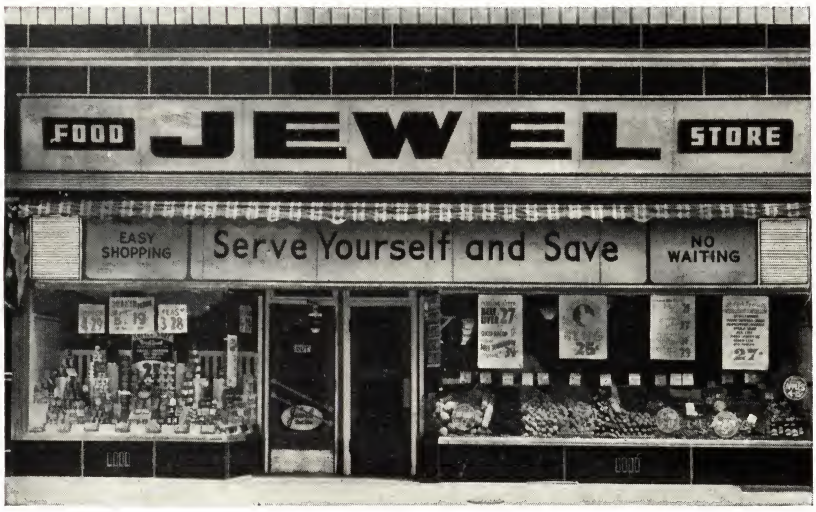
TELEPHONE
Monument 2-4788

# THE VENTILOUVRE COMPANY, INC.

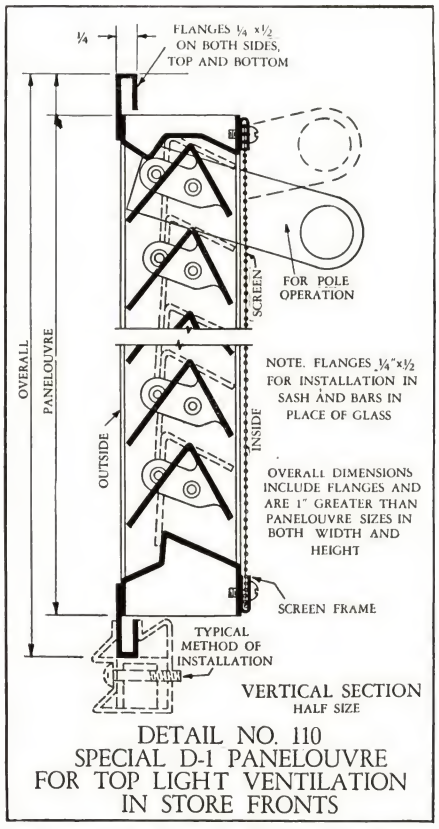
548 Riverside Drive, NEW YORK, N. Y.

For other Panelouvre Products, see File Index

## TOP LIGHT VENTILATION FOR STORE FRONTS




The Jewel Store—Rissman & Hirschfeld, Architects, Chicago




DETAIL NO. 110
SPECIAL D-1 PANELOUVRE
FOR TOP LIGHT VENTILATION
IN STORE FRONTS

In designing Store Fronts, architects have often found it desirable to provide a means of ventilating through the Top Lights. Available means of providing this have been found generally unsatisfactory. Hinged and pivoted ventilators are unsightly, afford poor protection against the weather and are difficult to close tightly.

The VENTILOUVRE COMPANY, INC., in response to a demand for an easily controlled Top Light Ventilator, has utilized their long experience with natural air ventilation. Result is, as shown on this page, their No. 110 Top Light Adjustable Panelouvre.

Architects and Store Front Designers will find in the use of No. 110 Top Light Panelouvre, their ventilating problems solved. While particularly desirable for use in Food stores, their use is by no means limited to that type of store.

### No. 110 Top Light Adjustable Panelouvre

They are, as are all Ventilouvre products, substantially die made, and easily operated. They allow generous ventilation when open, and close tightly, presenting an excellent weathering flat surface. Their appearance, open or closed, is in harmony with the present trend in Store Front design.

Their use in the top lights, combined with a grille in the bulk head connected by a duct to the floor, makes an excellent circulatory system for the avoidance of frost on windows in Winter.

These units usually replace glass top lights, one at each side of the store. They are also used to replace the transom over the door.

**Materials**—Steel, Bronze, and Aluminum.

**Sizes**—As required.

**Stock Sizes**—
18"x24" (Louvre Size).
18"x30" (Louvre Size).
*Note: Above sizes carried in stock in Bronze with Aluminum Finish.*




Atlantic & Pacific Tea Co. Store—William G. Carnegie, Architect, Chicago

MEMORANDA

# PARTITIONS AND WIRE WORK
## - SECTION - 20

Section Number 1 / 5 Catalog Number

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# ALL-METAL PARTITION CO., INC.

FACTORY AND OFFICE
148-150 West 18th Street, NEW YORK, N. Y.

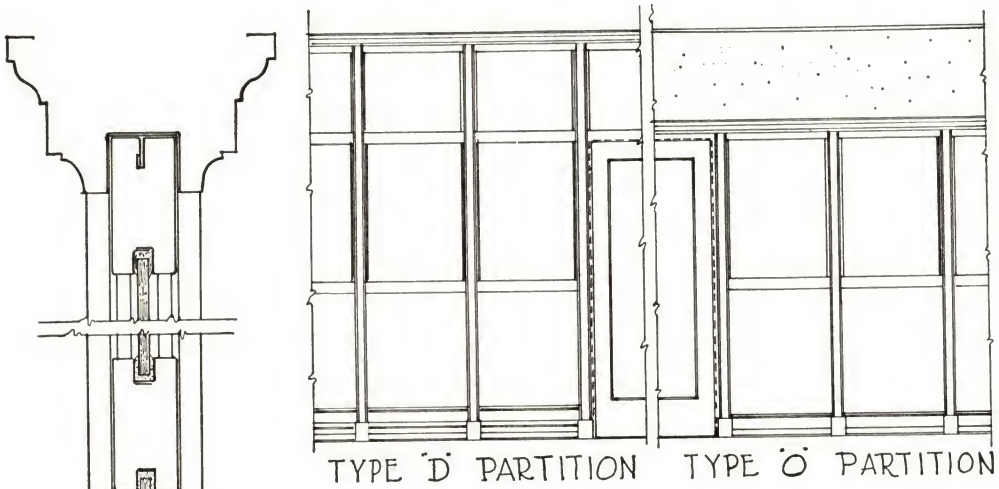
TELEPHONE
CHelsea 2-4020-1

SALES AGENTS

JERSEY CITY, N. J., Atlas Steel Products Co., 19-21 Tuers Avenue
PHILADELPHIA, PA., Kelly Building Products, 1418 Walnut Street
WASHINGTON, D. C., Capitol Products Co., 1222 Connecticut Avenue
BOSTON, MASS., J. G. Waxman, 72 Granite Street

For "All-Metal" Toilet Partitions, see File Index

## "ALL-METAL" OFFICE PARTITIONS



TYPE "D" PARTITION TYPE "O" PARTITION

The "All-Metal" line of partitions (two of which are illustrated herewith) combine compactness with unusual strength and rigidity. The full tubular stiles, the welding together of various members and the use of a heavy continuous channel under cornice all go toward this extra strength and ruggedness. They are economical in cost and are readily taken down and rearranged. They are simple and neat in design and attractive in appearance.

### Construction

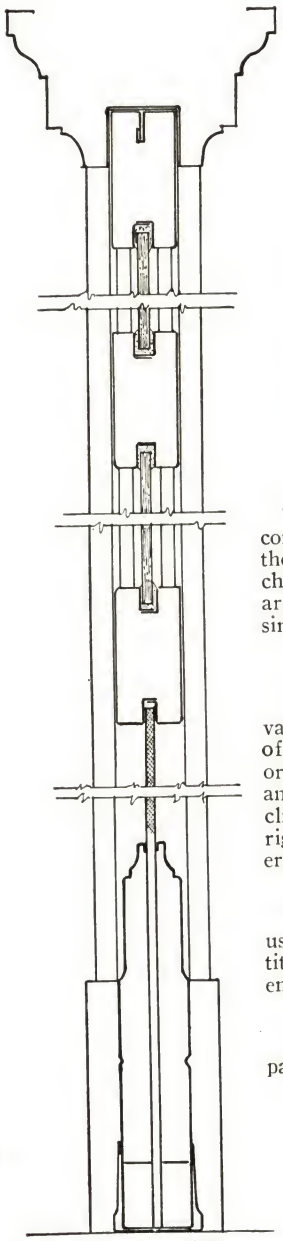
"All-Metal" Partitions are built of furniture steel in interchangeable units of various widths and heights. Door sections, also are interchangeable with sections of same size. Frames are of 1½-in. square tubular steel. Panels, either insulated or single, are set into the tubes for the entire depth of the tube. Base, chair rail, and top rail are securely welded in. Sections are securely held together by spacer clips which also act as a clamp for pilasters. Cornices are continuous and held rigidly in place by concealed fastenings. No exposed bolts or screws used in erection.

### Types and Finishes

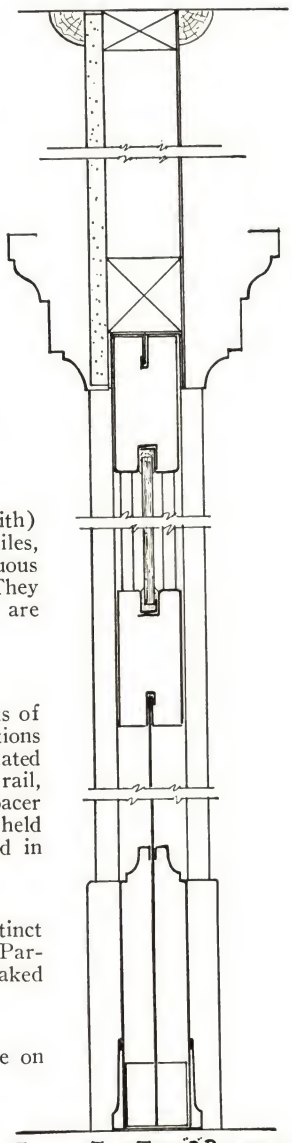
There are six different types of "All-Metal" Partitions, each with its distinct use and application. We will gladly submit details, prints, etc., upon request. Partitions can be had in any of the wood grain finishes, or standard colors in baked enamel or lacquer.

### Service

The "All-Metal" Service Department will always co-operate and advise on partition problems and gladly submit estimates. Catalogue sent on request.

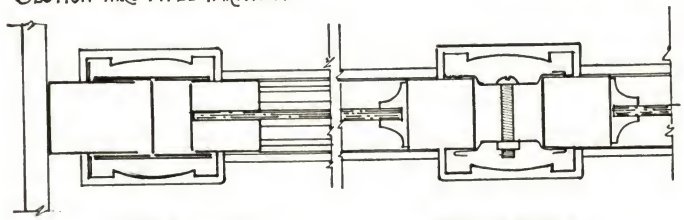


· SECTION THRU TYPE "D" PARTITION ·



· SECTION THRU TYPE "O" PARTITION ·

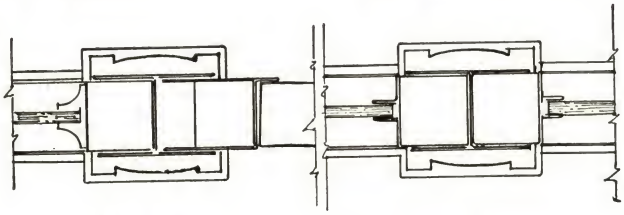
### Details of Type "D" Partition



Wall Connection

Pilaster Section

### Type "O" Partition



Door Section

Pilaster Section

# ART METAL CONSTRUCTION COMPANY

## Manufacturers of Art Metal Partitions

JAMESTOWN, NEW YORK

For Branch Offices, see Bank, Office and Library Equipment Section
For Metal Doors and Trim, Kitchen Cabinets, Bank, Office and Hospital Equipment, Museum Cases, see File Index

## FIVE TYPES OF ART METAL VERTICAL UNIT PARTITIONS

Art Metal Vertical Unit Partitions are manufactured in five types. Each is designed to meet office space-mobilizing problems.

Type "K" is a fully insulated, 3-in. thick partition with concealed posts. This is, we believe, the most adaptable partition ever designed.

Type "M" is a fully insulated, 3-in. thick partition with visible posts.

Type "D1½" is a fully insulated 1¾-in. partition with visible posts.

Type "D1" is an insulated panel partition, panels ⅜-in. in thickness. These panels have a recessed appearance.

Type "R" is an industrial partition with panels and fillers of single thickness steel.

These attractive, economical and adaptable units are scientifically designed and built to meet the problems which confront building and business executives—that of making the best possible use of floor space at all times.

## ADVANTAGES OF ART METAL PARTITIONS

Experience has proved the welded, floor-to-cornice-unit construction of Art Metal partitions to give the highest degree of durability and rigidity. Advantages in addition to all-welded construction:

(1) Frame erected on sectional 11-gauge steel floor channel.

(2) Rubber stripping under floor channel insures watertight base.

(3) 3-Way concealed wire raceways on both panel faces, provide separate compartments for telephone wires, high and low tension wires.

(4) 4-Way posts have floor leveling bolt and (with ceiling height) ceiling pressure bolt giving positive post adjustment.

(5) Quick, easy erection with minimum noise and no muss or waste.

(6) Interchangeability of panels simple.

(7) 100 per cent salvage.

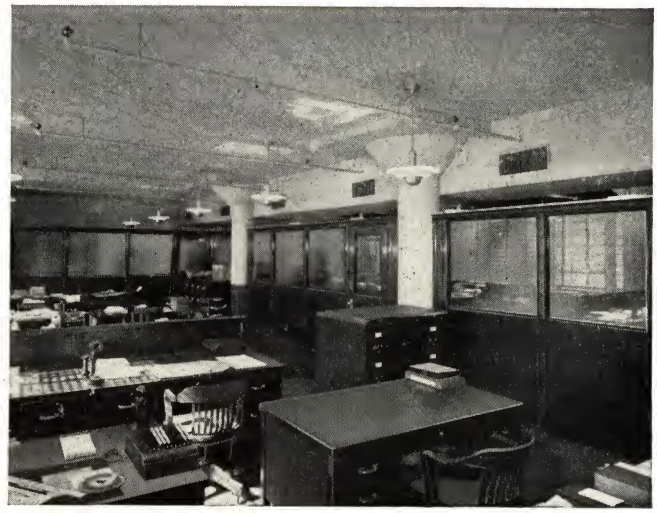
(8) Removable, clamp-on post cover panels conceal all post connections.

(9) Cornices, posts and other parts are drawn shapes presenting true profiles not found in pressed parts.

(10) Wall and ceiling fillers, facilitate 1-in. adjustment either way.

(11) High grade Art Metal finish.





# INSULATED 3-IN. THICK PANELS—FLUSH FROM CEILING TO FLOOR—TYPE "K"

## Hairline Joints—Concealed Posts

This partition offers unlimited possibilities for originality in treatment and use. Completely concealed posts with insulated 3-in. thick panels—highly satisfactory in meeting acoustical problems. Tests proved this partition more sound-resisting than 4-in. tile walls. Insulation used is 90% sound-absorbing. Should noise problem be unusual, additional sound insulation can be secured by enlarging the posts and increasing the panel thickness. Exclusive feature of this type is that each panel face is an individual unit, allowing removal of either side at will. Partition 100% re-usable.

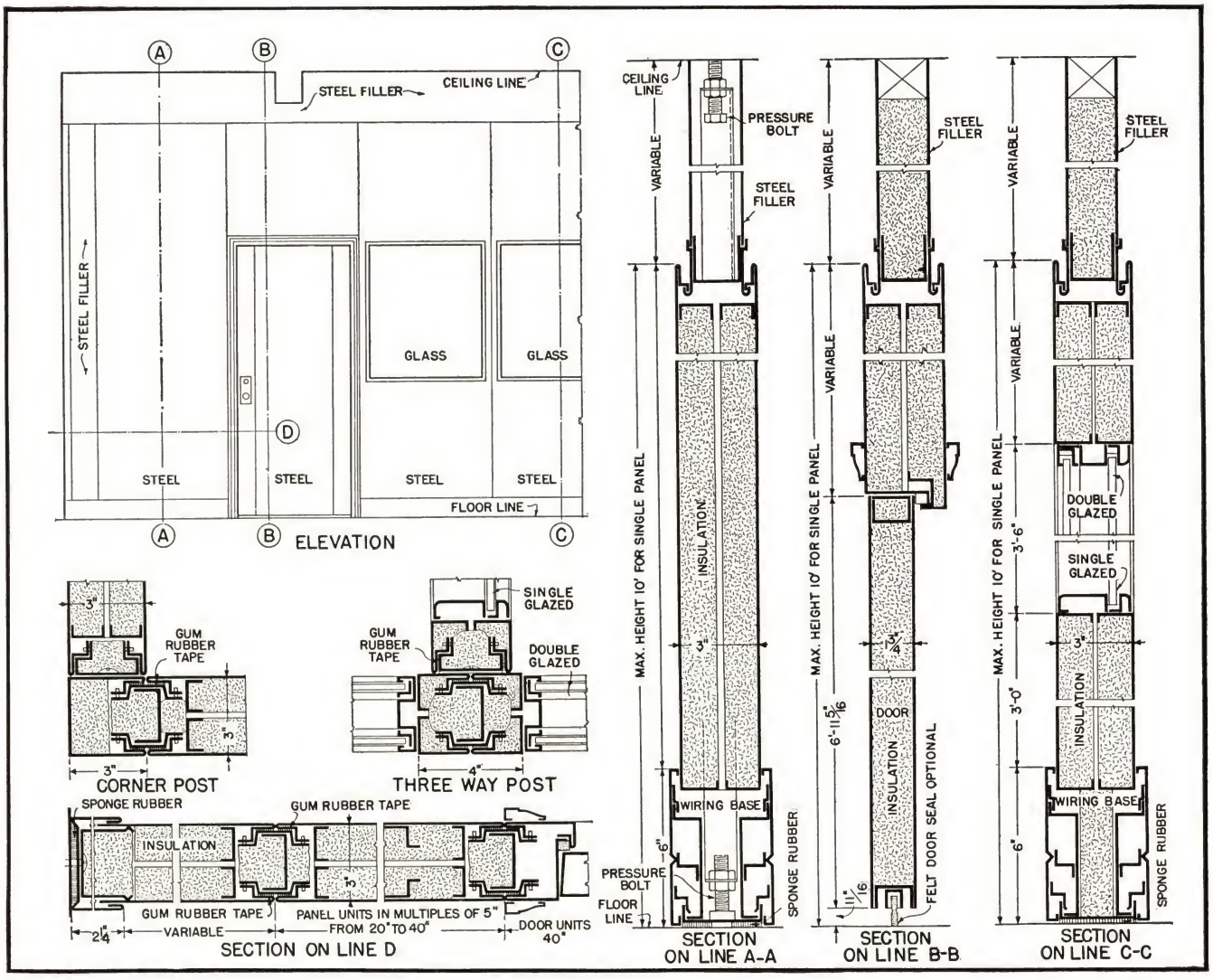
Panels attached to posts by means of concealed hooks and when hung in place, only a hairline is visible between panels. Wainscoting can be erected by using posts or channels on walls and applying single panels. Panels furnished with applied wood veneer on steel or panels can be constructed of either marble or plywood. Binding edges of stainless steel or bronze offer unusual opportunity for distinctive paneling design.

Posts have floor leveling bolts and ceiling pressure bolts giving positive post adjustment. Sectional floor channel of 11-gauge steel gives firm foundation.

Rubber stripping laid between the floor and channel makes base watertight. 3-way concealed wire raceway on both panel faces provides easily accessible, separate compartments for wiring. Doors regularly furnished to match partition and interchangeable with 40-in. panels. Transoms have concealed operating mechanism in adjacent post. Single or double glazing. Railings to match in two heights; high grade Art Metal finish applied. Exclusive feature of finish in Type "K" partition is dip coat of paint applied to all surfaces and guarding inside against corrosion.

Art Metal
Jamestown, New York
U.S.A.





ART METAL CONSTRUCTION COMPANY

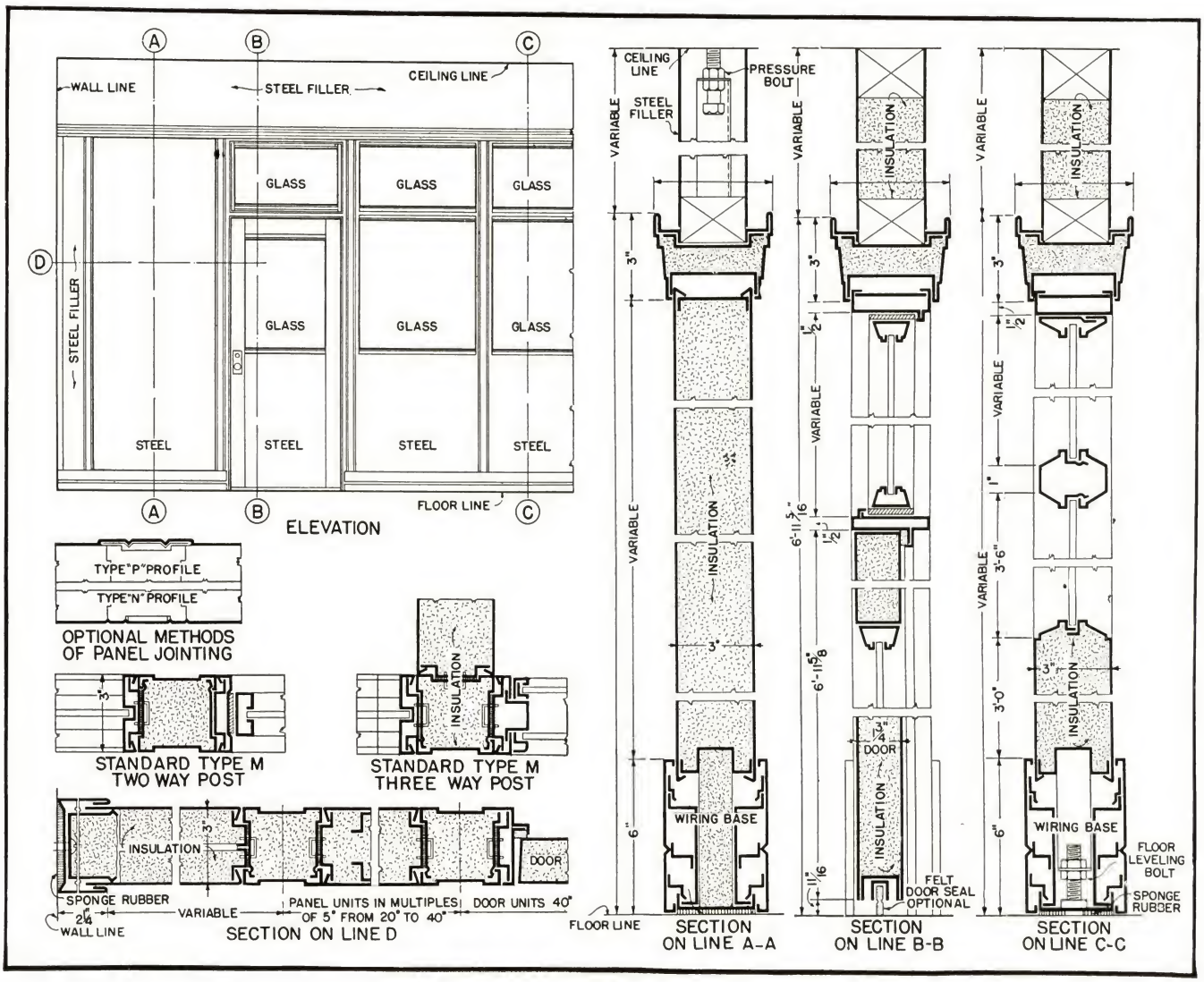
# INSULATED FLUSH 3-IN. THICK PANELS—VISIBLE POSTS—TYPE "M"
## Cornice and Ceiling Height

Fully insulated panels 3 in. thick, Type M partition identified by visible posts with three optional profiles. Partition has flush wall appearance. Readily interchangeable—100% re-usable. Insulating material 90% sound absorbing. Panels attached to posts by patented keying device which clamps panels firmly to posts. Posts 4-way type. Standard profile is wide groove in center of regular post. Profile "P" has two fine grooves obtained by adding an entirely new steel face. Profile "N" has four hairline face gained by inserting small steel channel into center groove of standard post. Post cover panels conceal all post connections. Posts have floor pressure bolt and ceiling pressure bolt.

Sectional steel floor channel makes foundation firm. Rubber stripping between floor and channel makes base watertight. 3-way concealed wire raceway provides easily accessible, separate compartments for wiring. Doors regularly furnished to match the partition and interchangeable with 40-in. panels. Transoms have concealed operating mechanism in adjacent posts. Cornices are continuous. Glazing either single or double. A snap-on type moulding may be specified—no screw heads visible when installed. Railings to match in two heights. Wall fillers of steel furnished. Ceiling fillers either steel or mineral board. High grade Art Metal finish applied.



Art Metal
Jamestown, New York
U.S.A.



# INSULATED FLUSH 1¾-IN. THICK PANELS—VISIBLE POSTS—TYPE "D 1½"

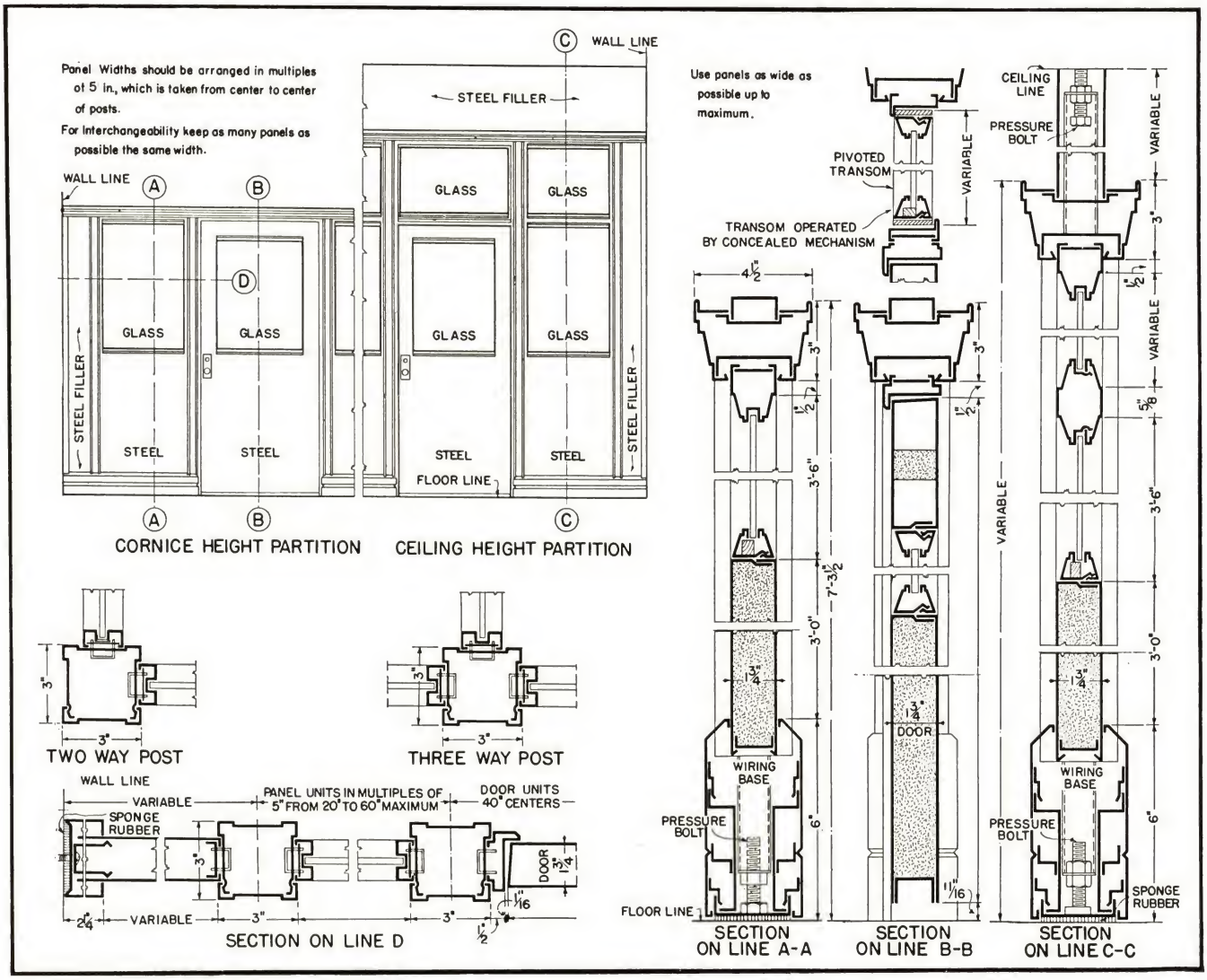
## Cornice and Ceiling Height



Completely insulated, flush panels, 1¾ in. thick. Partition 100% re-usable and easily interchangeable. Any one of seven mouldings (see drawings, next page) can be used. Mouldings Nos. 1-6 held in place by concealed keys and screws. No. 7 (Standard) Moulding is a snap-on type—has no screws. Panels attached to posts by patented keying device. Glass or steel optional in any panel. Posts 4-way type, either square or chamfered corners. Post cover panels clamp on concealing all post connections.

Each post has floor pressure bolt and ceiling pressure bolt. Sectional steel floor channel makes firm foundation. Rubber stripping between floor and channel makes base watertight. 3-way concealed wire raceway gives safe, easy wiring facilities. Doors regularly furnished to match and interchangeable with 40-in. panels. Transoms have concealed operating mechanism in adjacent post. Cornices continuous. Railings to match furnished in two heights. High grade Art Metal finishes applied.

Art Metal
Jamestown, New York
U.S.A.



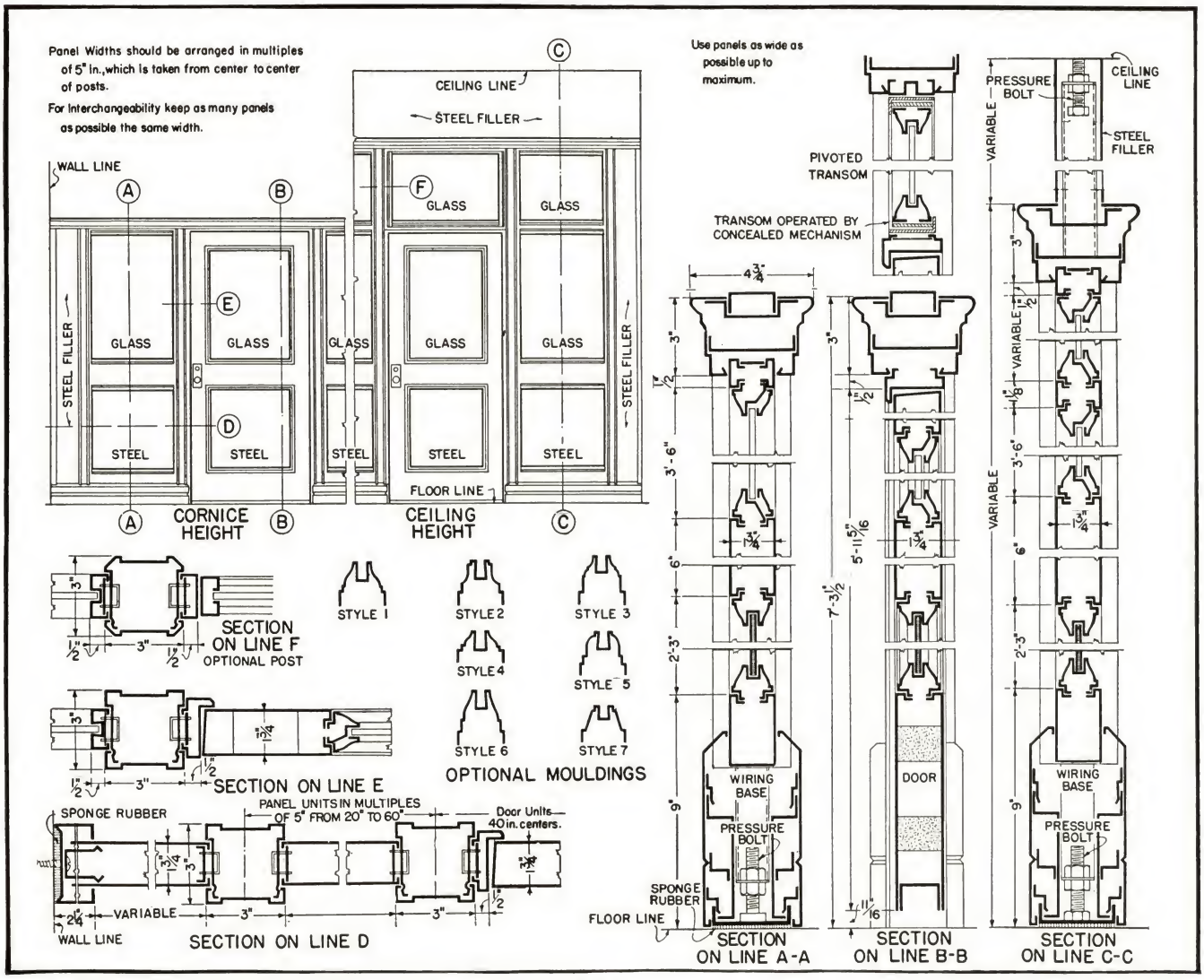
ART METAL CONSTRUCTION COMPANY

# INSULATED RECESSED 3/8-IN. THICK PANELS—VISIBLE POSTS—TYPE "D1"
## Cornice and Ceiling Height



Type "D1" has insulated recessed panels, ⅜ in. in thickness. Economical and 100% re-usable. Any one of seven mouldings shown can be used. Mouldings Nos. 1-6 are held in place by concealed keys and screws. (No. 1 is Standard.) No. 7 moulding is snap-on type applied without screws. Recessed type panels attached to posts by patented keying device. Glass or steel optional in any panel. Posts 4-way type with either square or chamfered corners. Post cover panels clamp on and conceal all post connections. Each post has a floor bolt and (with ceiling height) a ceiling pressure bolt. Sectional steel floor channel makes firm foundation. Rubber stripping between floor and channel makes base watertight. 3-way concealed wire raceway provides easily accessible wiring facilities. Doors regularly furnished to match and interchangeable with 40-in. panels. Transoms have concealed operating mechanism in adjacent post. Cornices continuous. Railings to match furnished in two heights. High grade Art Metal finish applied.

Art Metal
Jamestown, New York
U.S.A.



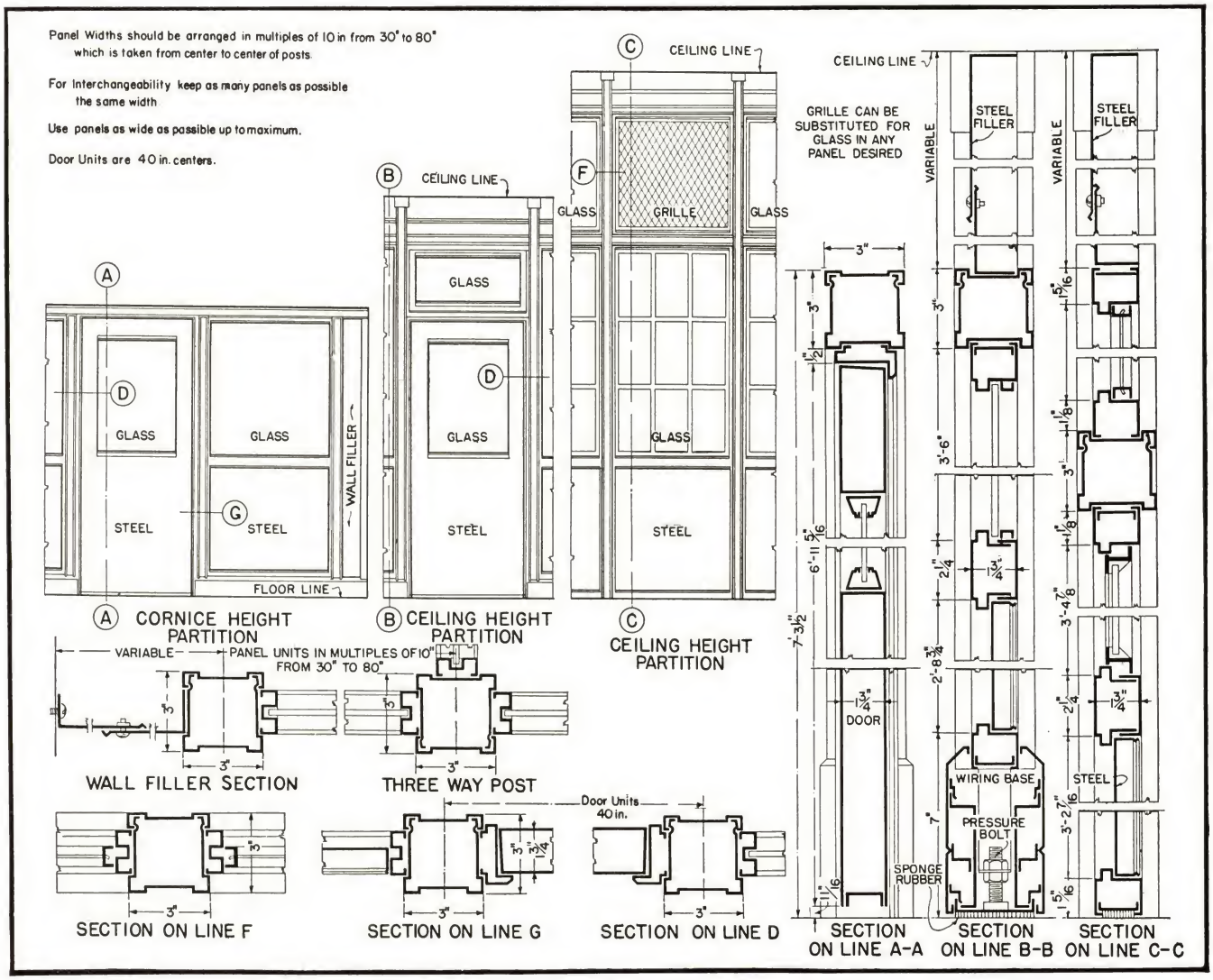
# INDUSTRIAL PARTITION—SINGLE THICKNESS STEEL PANELS AND FILLERS—TYPE "R"
## Cornice and Ceiling Height



This partition designed to meet any industrial need. Factory departments, locker rooms, wash rooms, shower rooms, or store rooms, can be made quickly and economically, using Type "R" partition. Light weight casements, wire mesh, perforated metal, glass or steel panels can be used in any opening. Type "R" furnished standard runs down to floor with small horizontal floor member. Regular 3-way concealed wire raceway can be provided. Cross members above and below panels welded to frame which is keyed to posts. The frame is floor-to-cornice welded unit. Panels fastened into frame by means of small screws on one side of panel. Type "R" partition is 100% re-usable. It is rigidly constructed and pleasing in appearance. In addition to innumerable factory uses, Type "R" can often be used in commercial buildings. Posts 4-way type have square corners. Doors can be furnished in any style. Doors interchangeable with 40-in. panels. Transoms have concealed operating mechanism in adjacent post. Wall fillers are single thickness steel. Ceiling fillers either single thickness steel or mineral board. Cornice furnished with all heights of Type "R".

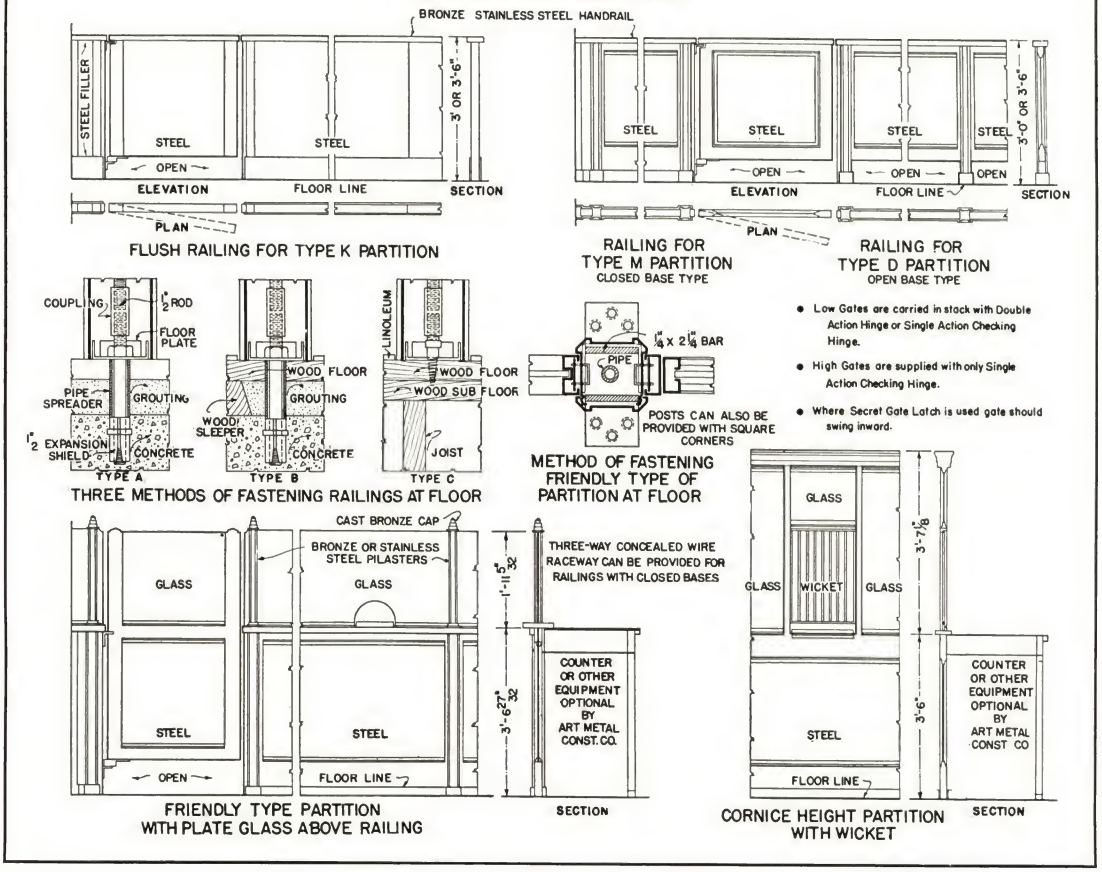
High grade Art Metal finish. Railing to match furnished in two heights.

Art Metal
Jamestown, New York
U.S.A.



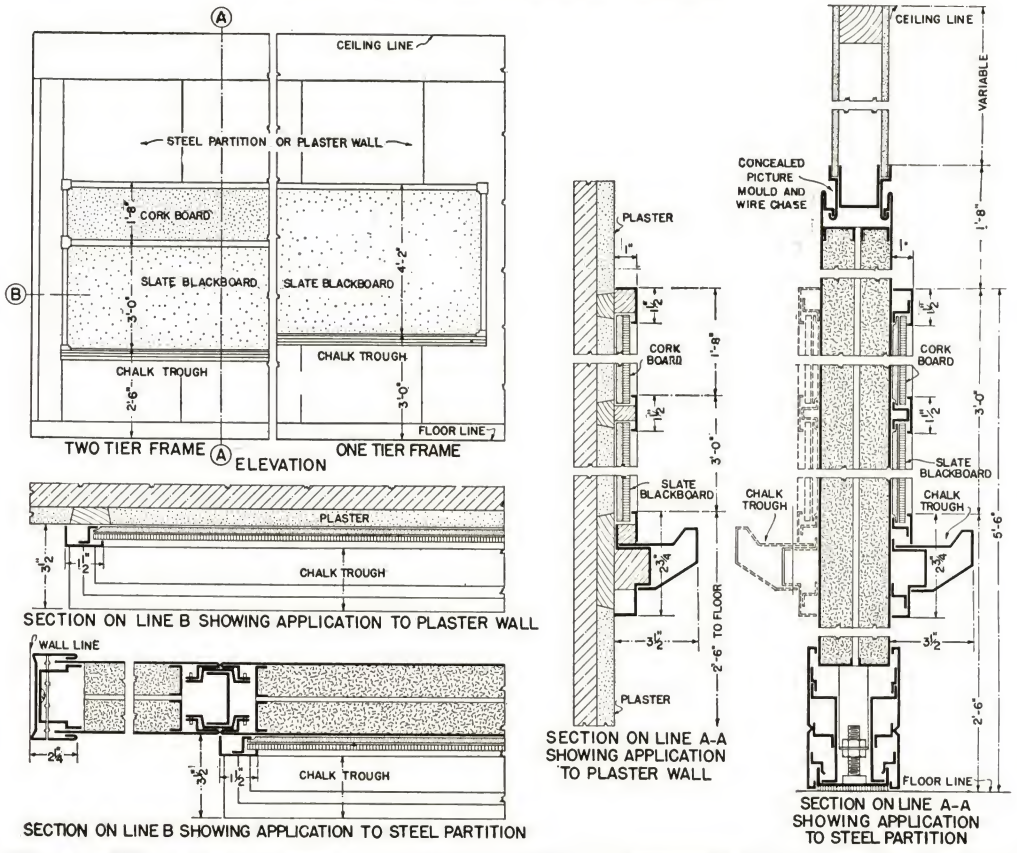
Art Metal
Jamestown, New York
U.S.A.

## ART METAL RAILINGS




Railings to match the partition types, embody the construction features of the respective partitions. Railings have closed or open bases in 36 or 42⅞-in. heights. A popular railing is the combination of the 42⅞-in. railing with a 23⅛-in. upper glazed section. This Friendly Type Railing is used in banks and insurance offices requiring a greater degree of privacy than that afforded by low railings.

## ART METAL BLACKBOARD FRAMES




Blackboard frames manufactured by Art Metal are of simple construction yet substantial when installed. Two typical blackboard installations are shown. Note the 1-tier, slate blackboard and the 2-tier, combination board with slate for writing purposes and corkboard for bulletin use. These blackboard frames can be used on plaster walls or Type "K" flush wall partition.

# SPECIFICATIONS

## ART METAL VERTICAL UNIT PARTITIONS

*Gauges Specified are U.S. Standard*

| Type | Used | Unit sizes | Panel thickness | Panel reinforcements | Posts | Door sizes | Door or gate panels | Door and transom frames | Base |
|---|---|---|---|---|---|---|---|---|---|
| "K" | Offices, Schools, Corridors, Lobbies, Stores, Wainscoting, Laboratories. | 20″, 25″, 30″, 35″, 40″ | 3″ Standard may be increased, reinforced and insulated. 18-gauge steel. | 18-gauge steel | 2⅜″ Standard 13-gauge steel. Adjustable in height, concealed. | 3′ x 7′ 1¾″ thick 18-gauge steel. Flush. | 1¾″ thick insulated 18-gauge steel. | 18-gauge cold rolled steel with felt strikes. | 6″ High 3-way lay-in-wire Adjustable 16-gauge steel. |
| "M" | Offices, Schools, Corridors, Lobbies, Stores, Wainscoting, Laboratories. | 20″, 25″, 30″, 35″, 40″ | 3″ Standard reinforced and insulated 20-gauge steel. | 20-gauge steel | 3″ Square 18-gauge steel. 3 optional profiles. | 3′ x 7′ 1¾″ thick 18-gauge steel. Flush or Paneled. | ⅜″ thick insulated 20-gauge steel. | 18-gauge cold rolled steel with felt strikes. | 6″ High 3-way lay-in-wire Adjustable 16-gauge steel. |
| "D-1½" | Offices, Schools, Corridors, Lobbies, Stores, Wainscoting, Laboratories. | 20″, 25″, 30″, 35″, 40″, 45″, 50″, 55″, 60″ | 1¾″ Standard reinforced and insulated. 20-gauge steel. | 22-gauge steel | 3″ Square or Chamfered Corner Design. 18-gauge steel. | 3′ x 7′ 1¾″ thick 18-gauge steel. Flush or Paneled. | ⅜″ thick insulated 20-gauge steel. | 18-gauge cold rolled drawn steel. | 6″ High 3-way lay in-wire Adjustable 18-gauge steel. |
| "D-1" | Offices, Schools, Corridors, Lobbies, Stores, Wainscoting, Laboratories. | 20″, 25″, 30″, 35″, 40″, 45″, 50″, 55″, 60″ | ⅜″ Packed steel panel. 20-gauge steel. | None | 3″ Square Panel Design, Standard 18-gauge steel. | 3′ x 7′ 1¾″ thick 18-gauge steel. Flush or Paneled. | ⅜″ thick insulated 20-gauge steel. | 18-gauge cold rolled drawn steel | 6″ High 3-way lay-in-wire Adjustable 18-gauge steel. |
| "R" | Industrial, General Purposes, Offices with Base Added. | 30″, 40″, 50″, 60″, 70″, 80″ | Single steel panel. 20-gauge. | None | 3″ Square Panel Design. 18-gauge steel. | 3′ x 7′ 1¾″ thick 18-gauge steel. Flush or Paneled. | ⅜″ thick insulated 20-gauge steel. | 18-gauge cold rolled drawn steel. | No base. Standard base optional. |

| Con't Type | Wall filler sizes | Ceiling fillers | Panel and door mouldings | Cornice moulding | Glazing | Blackboard frame and tray | Tray reinforcements | Blackboard reinforcements | Blackboard Corner caps |
|---|---|---|---|---|---|---|---|---|---|
| "K" | 5″ to 15″ 18-gauge steel. | Double steel. 18-gauge or Mineral board ¼″ thick. | 20-gauge cold rolled drawn steel. | 18-gauge cold rolled drawn steel | Double or single glass ⅛″ to ¼″ thick. | 18-gauge steel | 16-gauge steel | 18-gauge steel | 16-gauge steel |
| "M" | 5″, 6″, 7″, 8″, 9″, 10″ 20-gauge steel. | Double steel. 20-gauge or Mineral board ¼″ thick. | 20-gauge cold rolled drawn steel. | 18-gauge cold rolled drawn steel | Double or single glass ⅛″ to ¼″ thick. | 18-gauge steel | 16-gauge steel | 18-gauge steel | 16-gauge steel |
| "D-1½" | 5″, 6″, 7″, 8″, 9″, 10″ 20-gauge steel. | Double steel. 20-gauge or Mineral board ¼″ thick. | 20-gauge cold rolled drawn steel. | 18-gauge cold rolled drawn steel | Single glass ⅛″ to ¼″ thick. | Blackboard Frames may be applied to plastered walls with wood or metal grounds set in place before plastering. | | | |
| "D-1" | 5″, 6″, 7″, 8″, 9″, 10″ 20-gauge steel. | Double steel. 20-gauge or Mineral board ¼″ thick. | 20-gauge cold rolled drawn steel. | 18-gauge cold rolled drawn steel | Single glass ⅛″ to ¼″ thick. | Friendly Type railing is 66″ high, not including pilaster caps, with 42⅞″ counter height lower portion to match all types of partition. 23⅛″ high special pilaster construction above. Caps, bases and mouldings bronze or steel regular. Other white metals furnished when specified. Base plinths are .0625 gauge steel or bronze. | | | |
| "R" | 10″ to 15″ 20-gauge steel. | Single steel. 22-gauge. | 20-gauge cold rolled drawn steel. | 18-gauge cold rolled drawn steel | Single glass ⅛″ to ¼″ thick. | | | | |

Railings furnished to match each type of partition.

*Note:* Sliding doors 1¼″ thick with track and 2-point ball bearing roller hanger, concealed in 4¼″ thick Type "K" walls are furnished when specified. This type of door saves floor space required by swing of hinged doors. Sliding gates are also furnished for railings to match Type "K."

All swinging doors are furnished regular with 1 pair 4½″ ball bearing hinges and paracentric key lock.

Door checks or stops are furnished when specified.

Wire bases have slot holes for adjustment in height to meet slight variations in floor levels.

## FEATURES OF ART METAL PARTITION THAT HAVE WON APPROVAL OF THE ARCHITECTURAL PROFESSION

### Art Metal Features

(1) All-welded construction from floor-to-cornice—proved to give most durable and rigid installation.

(2) Salvageable 100%—partition is permanent asset, unlike plaster or tile walls.

(3) Easily erected. No dirt, no muss, minimum of noise during installation. Best use of floor space at all times is possible because of complete interchangeability.

(4) Sectional steel floor channel gives firm foundation. Rubber stripping laid between channel and floor makes base watertight.

(5) Insulation and quality finish. Tests have proved insulation of Types "K" and "M" partition more effective in soundproofing than a 4-in. tile wall. Famous Art Metal finishes applied.

# ATLANTIS STEEL PRODUCTS CORP.

Manufacturers of Steel Office Partitions

MAIN OFFICE
453 Broome Street
NEW YORK, N. Y.

NEW JERSEY BRANCH
535 High Street
NEWARK, N. J.

For page on Toilet and Shower Stall Partitions, see File Index

ASPO

## ELEVATION

| STOCK SIZES | |
|---|---|
| DOOR WIDTH | PANEL HEIGHT |
| 24" | 7'-2" |
| 30" | 8'-8" |
| 36" | 9'-2" |
| 42" | 10'-2" |

DOUBLE MINERAL BOARD FILLER

MINERAL BOARD FILLER TO CEILING

CEILING HIGH PARTITION

TRANSOM

GLAZED

FLUSH SURFACE PANEL

FLUSH DOOR

FLUSH PANEL

RAILING AND GATE

STANDARD PANELS IN MULTIPLES OF 6" UP TO 60" WIDE.

OFFICE RAILING FROM 37" TO COUNTER HEIGHT WITH GATE FURNISHED IN STANDARD PANEL WIDTHS TO MATCH

1 SECTION THRU CORNICE

DOUBLE GLAZED FOR SOUND PROOFING

2 SECTION THRU TRANSOM RAIL

3 SECTION THRU CHAIR RAIL

THREADED TIE STUDS WELDED TO ALL HORIZONTAL MEMBERS

4 ADJUSTABLE BASE TO FIT FLOOR

ELECTRIC WIRE ACCESSIBLE THRU ENTIRE BASE

SECTION THRU DOUBLE GLAZED PANEL

VERTICAL MEMBER

WIRE PASSAGE

CUT-OUT IN VERTICALS TO RECEIVE FLOOR SHOE

FLOOR SHOE

PLAN AT VERTICALS SHOWING FLOOR SHOE ARRANGEMENT

HORIZONTAL SECTION AT THE DOUBLE GLAZED PARTITION VERTICAL

INSULATION

REINFORCEMENT

PILASTER

VERTICAL MEMBER

FLUSH SURFACE PANEL

PARTITION CLIPS

WIRE PASSAGE

FELT CUSHIONED DOOR STRIKE

HARDWARE REINFORCEMENT

5 SINGLE GLAZED PANEL AT VERTICAL

6 FLUSH SURFACE PANEL AT THE VERTICAL MEMBER

DOUBLE MINERAL BOARD FILLER

1 SECTION THRU CORNICE

SINGLE GLAZED PANEL

2 SECTION THRU TRANSOM RAIL

3 SECTION THRU CHAIR RAIL

THREADED TIE STUDS WELDED TO ALL HORIZONTAL MEMBERS

4 ADJUSTABLE BASE TO FIT FLOOR

AIR SPACE

6" BASE

ELECTRIC WIRE ACCESSIBLE THRU ENTIRE BASE

SECTION THRU SINGLE GLAZED PANEL

*Note: These partitions are built to meet all Government and Architectural Specifications*

# DRIWOOD CORPORATION

ASSOCIATED COMPANY

IMPROVED OFFICE PARTITION CO., INCORPORATED

TELEPHONES
CHickering 4-0041-0042

280 Ninth Avenue, NEW YORK, N. Y.

Representatives in Principal Cities

For Driwood Period Mouldings, see File Index

## PRESENTING A TRIO OF UNIT TYPE MOVABLE AND INTERCHANGEABLE PARTITIONS TO FIT THE NEED OF EVERY REQUIREMENT AND PURSE

Driwood partitions have a background of more than 20 years in satisfying the partition requirements of the architect, building owner, manager and the tenant.

The criticisms and suggestions of such users helped in the development of our products to the point where today they are recognized to be leaders in their field.

Our partitions, in beautiful woods, are carried in stock, thus enabling us to render the prompt service for which we are noted.



*Interior architectural woodwork of all descriptions, de-luxe wainscoting, bank and stock brokerage office equipment*

The Driwood organization represents individuals who have made office partitions and interior architectural woodwork their life study.

Driwood Partitions have been designed to permit simplified rearrangement of office layout at a minimum of cost and full salvage value. They are beautiful, modern, economical and time tested. Standardized parts that will always fit are carried in stock for such rearrangements and changes.

We are also the only manufacturers and distributors of Genuine Telesco Partition. Our partitions have been used by the country's leading business organizations.

HENRY KLEIN CREATIONS TRADE MARK REG.

## A FEW PROMINENT USERS OF DRIWOOD PRODUCTS

Aluminum Co. of America
Allied Chemical & Dye Corp.
American News Co.
American Telephone & Telegraph Co.
American Tobacco Co.
Associated Gas Co.
Barrett Co., New York
Beechnut Packing Co.
Board of Education of New York City
Bank of Nova Scotia
Walter Ballard Co., Washington, D. C.
Bank of the Manhattan Co.
Boy Scouts of America
Bank of China
L. Bamberger & Co., Newark, N. J.
Burroughs Adding Machine Co.
Chamber of Commerce, Washington, D. C.
Consolidated Gas Electric Light & Power Co.
City Bank Farmers Trust Co.
Cohn Hall Marx Co.
Celanese Corp. of America
Dell Publishing Co.
E. I. duPont de Nemours & Co., Inc.
First Central Trust Building, Ohio
Goodbody & Co.
General Electric Co., Bridgeport, Conn.
Guardian Life Insurance Co.
General Chemical Co.
Horn & Hardart Co.
Irving Trust Co.
International Telephone Building Corp.
Industrial Office Building Corp., Newark, N. J.
Lord & Taylor
R. H. Macy & Co.
New York Curb Exchange
Charles F. Noyes Co.
New York Life Insurance Building
National City Realty Corp.
National Savings Bank, Albany, N. Y.
Porto Rico Steamship Line
Reconstruction Finance Corp.
Radio Quality Group Service
Rochester, N. Y., Savings Bank
Southeastern Cottons, Inc.
Semet Solvay Engineering Co.
U. S. Rubber Co.
Union Central Life Insurance Co.
United Factors
Western Electric Co.

*We Specialize in Wood Products Research*

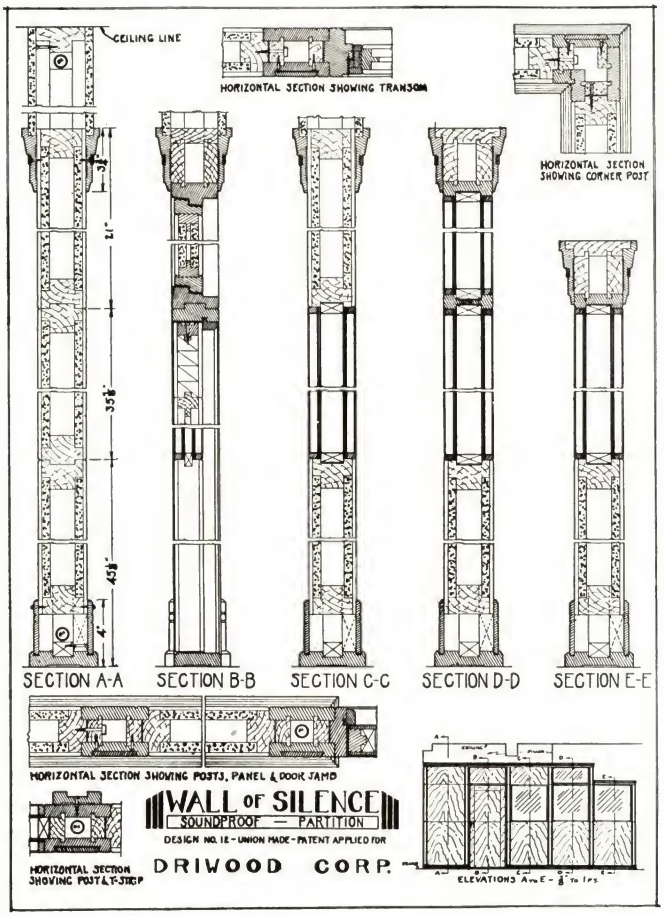
# WALL OF SILENCE

SOUND PROOF PARTITION

## 2⅞ IN. DESIGN 12—FLUSH—MODERN SOUND DEADENED

*(Patent being applied for)*






**Material**—Furnished in opaque color finishes, also Genuine Black American Walnut, African Mahogany or Oak. All of selected beautiful rich grained veneers. All lumber of prime stock, seasoned and kiln-dried.

**Finish**—Partition is finished in a special processed durable lacquer to any desired color or shade.

**Height**—Partition is furnished in two heights: low 7 ft. ¾ in. and for full height 8 ft. 6 in. high with acoustic fillers above same to take care of varying ceiling heights.

**Panels**—Partition is made up of three units: the lower unit from the floor to the 45⅛ in. line, which unit is usually paneled, the center unit from the 45⅛ in. line to the 6 ft. 9 in. height which is furnished either paneled or double glazed sash (in 7 ft. partition only single glazed sash), the top unit from the 6 ft. 9 in. height to the upper cornice. This unit is either supplied paneled or in double glazed sash. All units are made in standard widths of 36 in. Panels are 2⅞ in. thick built on frames with two ½ in. layers of acoustic material on the inside of two 3-ply layers of plywood, one on each outside face.

**Doors**—Soundproof doors 34½ in. wide by 6 ft. 8¼ in. high by 1¾ in. thick. Doors are interchangeable for panel or glass above 45⅛ in. line.

**Ventilating Transoms**—Soundproof transoms double glazed or paneled are furnished 16⅛ in. high by 34½ in. wide by 1¾ in. thick, and are removably interchangeable with fixed sash.

**Base**—Waterproof, mop-proof, finished in slate black color. Special lacquer or other color to order. Height 4 in. from floor.

**Hardware**—For doors, Yale & Towne bit key mortise locks, satin black Bower-Barff finish to match base, made to our order. One pair 4½ in. butts to match locks. Wooden rubber tipped bumper supplied for each door. For transoms mortise type friction pivots on sides are supplied with ring for window pole operation. Special hardware on order.

**Assembly**—Partition is most advanced sectional unit type. Entirely assembled with screws. Partition is rapidly and simply installed. Changes can be accomplished quickly, without damage, noise, or any expense except labor.

**Standardization**—"Wall of Silence" is completely standardized. Parts that will always fit and match are carried in stock for prompt delivery to customers for additions and changes.

**Salvage Value**—Partition has 100% salvage value for reinstallation and changes.

**Convertibility**—Partition is so designed that pilasters are removable permitting doors to be interchanged with sectional units and vice versa, also glass sash units with paneled units and vice versa without dismantling partition.

**Rigidity**—Partition has exceptional rigidity and strength comparable only with masonry walls. This is accomplished through the use of full length posts of special construction.

**Design**—Design is of flush-modern type easy to keep clean and with great beauty in its simplicity. Properly designed and approved by leading architects.

**Soundproof Value**—Partition is guaranteed to meet necessary soundproof qualifications.

**Insulation Value**—Ceiling height partition is an excellent insulator against the transmission of heat and cold and does not sweat. Hence it has great value in conjunction with air conditioning installations.

**Wiring Facilities**—Ample provisions are made for the carrying of wires and BX cable through the post units behind the upper cornice and behind the base. Easy access to the wires is accomplished through the removability of the pilasters.

**Labor**—Partition is union made and bears a union label. Where our installation is required, only union labor is employed.

**Railing**—Sanitary panel type, and is made to match partition. Supplied in standard 36 in. and 42 in. heights or special heights to order. Railing is held rigidly in place by rods completely hidden and secured to the floor. No outside braces whatever are used. Double or single acting gates are supplied with hardware to match partition.

*"Driwood Partitions Are Best"*

# TELESCO PARTITION

IT TELESCOPES

REG. U. S. PAT. OFF.

## DESIGN 6

*A Partition that permits installation to varying ceiling heights without super-structure changes.*

**Material**—Furnished in Genuine Black American Walnut, African Mahogany or Oak. All of selected beautiful rich grained veneers. All lumber of prime stock seasoned and kiln dried. Special woods to order.

**Finish**—Partition is finished in a special processed durable lacquer to any desired color or shade.

**Height**—Partition is 7 ft. 1½ in. high. The telescoping post makes the sash adjustable to varying ceiling heights.

**Panels**—Paneling up to 42 in. or to full height. Made in seven different width units from 1 ft. 6 in. to 4 ft. 6 in. Panels are built up and veneered five or seven-ply $\frac{13}{16}$ in. thick.

**Doors**—33⅞ in. wide by 6 ft. 7½ in. high by 1⅜ in. thick. Single full light type or half panel type.

**Ventilating Transoms**—Three standard heights, 15 in., 19 in., 25 in. or full height. Friction pivots on top and bottom supplied over each door and also sectional units if desired.

**Base**—Waterproof, mop-proof finished in slate black color special lacquer or other color to order. Height 8⅛ in. from floor.

**Hardware**—For doors, Yale & Towne bit key locks, satin black Bower Barff finish to match base, made to our order. One pair 3½ in. butts to match locks. Wooden rubber tipped bumper supplied for each door. For transoms our special design friction pivots. Special hardware on order.

**Assembly**—Partition is sectional unit type entirely assembled with screws. Is simply installed. Changes can be accomplished quickly without damage, noise or any expense except labor.

**Standardization**—Telesco Design 6 is completely standardized. Parts that will always fit and match are carried in stock for prompt delivery to customers for additions and changes.

**Salvage Value**—Partition has 100% salvage value for reinstallation and changes.

**Rigidity**—Partition has great strength accomplished through the use of hollow post construction and box cornice.

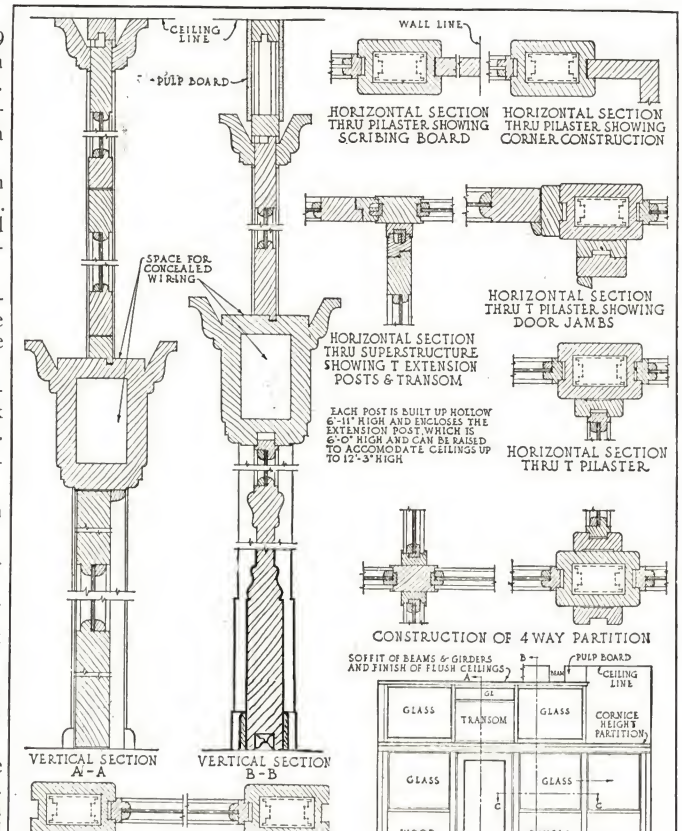
**Design**—Properly designed and approved by leading architects.

**Wiring Facilities**—Provisions are made for carrying of wires and BX cable through the post units and in the box cornice at the 7 ft. line.

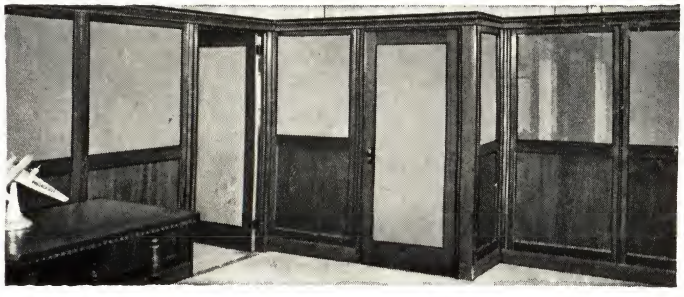
**Labor**—Partition is union made and bears a union label. Where our installation is required only union labor is employed.

**Railing**—Sanitary panel type with 4¼ in. wide top. Is made to match partition. Is supplied in standard 36 in. and 42 in. heights or special heights to order. Railing is held rigidly in place by rods completely hidden and secured to the floor and by deep iron floor sockets, into which posts are set. No outside braces whatever are used. Double or single acting gates are supplied with hardware to match partition.






## DESIGN 5



An inexpensive, movable partition furnished in Poplar with Phillipine Mahogany panels, or other woods to order.

Durably constructed, easily installed—sectional unit type of construction. Standard units, 7 ft. or to ceiling height, paneled to 42 in. height, panels or glass supplied above the 42 in. line. Panels are built up and veneered ¼ in. thick, 3-ply. Doors are standard 34 in. by 6 ft. 8 in., 1⅜ in. thick; single full light or one light and one panel type. Pilasters and posts are completely eliminated due to the overlapping and interlocking type of assembly.

All standard quality hardware is included. Units supplied finished in walnut or mahogany color with a special processed lacquer.

# DAHLSTROM METALLIC DOOR COMPANY

## Insulated Metal Walls and Partitions

EXECUTIVE OFFICES AND FACTORIES

JAMESTOWN, N. Y.

NEW YORK OFFICE 475 Fifth Avenue

REPRESENTATIVES IN PRINCIPAL CITIES

For Dahlstrom Metal Doors and Conduo Base, see File Index

### Types

**Type "W"** — Paneled Type Partition can be furnished in varied panel treatments by using insulated solid or glazed panels where desired. See page 2.

**Type "DD"**—Flush Metal Partition with "pilaster inserts" adding contrast and beauty. It has nominal soundproofing features; designed for solid flush wall or with glass lights. See page 3.

**Type "MM"**—Flush Metal Wall without "pilaster inserts" producing a flush wall surface reproduction of a plaster wall when painted to match. It has maximum soundproofing and insulating features. See page 4.

**Type "MG"**—Flush Wall Type similar to Type "MM" design, except for glass lights and nominal soundproofing features. See page 4.

### Features

**Design**—Well balanced, attractive, rich in dignity and character, Dahlstrom Metal Walls and Partitions fit graciously into the varied requirements of modern new buildings or remodeled structures, lending "custom built atmosphere".

**Construction**—Rigidity, strength and sound-resisting qualities together with their simplified erection features were factors receiving considerable time and study in their development. Wall units are factory assembled—double thickness.

**Insulation** — Metal panels of all doors and wall units are insulated against metallic sound—reduce to a minimum undesirable noises. "MM" wall units and top fillers have insulation full thickness and are soundproof.

**Flexibility** — The requisite for speed and low cost in the rearrangement of walls and partitions to suit new tenant layouts have been fulfilled and made possible by the unique construction features employed, making it possible to interchange panel units with door units of similar width and height and to remove or replace any unit without disturbing adjoining units or top filler.

**Erection**—Dahlstrom Metal Walls and Partitions are economical and simple to erect, dismantle or re-erect, because of the improved and simplified clip-on and drive-wedge methods employed at field connections.

**Savings**—No maintenance expenditures for repairs and upkeep because of Dahlstrom's recognized workmanship and superb finishes. No loss in salvage values in the dismantling or reinstalling of metal walls or partitions to suit tenant changes. Reduced labor costs and time when tenant changes are made, due to the improved and simplified construction methods employed at all take-down fastenings.

### General Short Term Specification

Furnish and erect all metal partitions as indicated on floor plans. The metal partitions shall be what is known to the trade as "Paneled" or "Flush Wall Type" and shall equal the qualifications specified for Type "W" or Types "DD", "MM" or "MG" partitions (specify type required) as manufactured by the DAHLSTROM METALLIC DOOR COMPANY, Jamestown, New York.

Partitions shall be constructed so as to make it possible to interchange wall units with door units of similar width and to remove or replace any unit, without disturbing adjoining units or top filler. All wall and door units, except Type "MM" shall have nominal soundproofing features.

(*Note:* Type "MM" partitions shall have maximum soundproofing features in wall units, doors and between ceiling fillers.)

Provisions shall be made for flexible connections of all units at pilasters, pilaster inserts or vertical joints (to suit varied partition types) to form One-way—Two-way—Three-way or Four-way intersections without the use of special fillers. All loose base, pilasters, cornice and glazing members, (except top glazing member) shall be secured by means of concealed fastenings.

The space between the top horizontal support member and ceiling shall be filled in with double sheets of "Compo" board or similar material not less than ¼ in. thick. These fillers shall be set true with joints reinforced at back and filled with approved cement filler and made smooth and invisible prior to painting. (Fillers to be painted to match painted plaster walls. Painting not included in Metal Partition Contract.)

(*Note:* Space between ceiling fillers of Type "MM" Metal Walls to be filled with an approved insulating material.)



**Dahlstrom Type "W" Paneled Partition**
**Offices of S. M. Flickinger Co., Buffalo, N. Y.**

Provisions shall be made to take up variation in the floor so that each wall or door unit can be set level and plumb. All connections and fastenings shall be concealed.

**Doors**—shall be 1¾ in. thick. All door unit assemblies shall be interchangeable with wall units of similar width.

**Type "W" Partitions**—Doors shall be one-panel, metal or glass. Two-panel metal or upper panel glass and lower panel metal. (Specify arrangement required.)

**Types "DD"—"MM"—"MG"**—Doors shall be—One-panel glass—flush full height or glass upper part 42 in. from floor and flush lower part. (Specify arrangement required.)

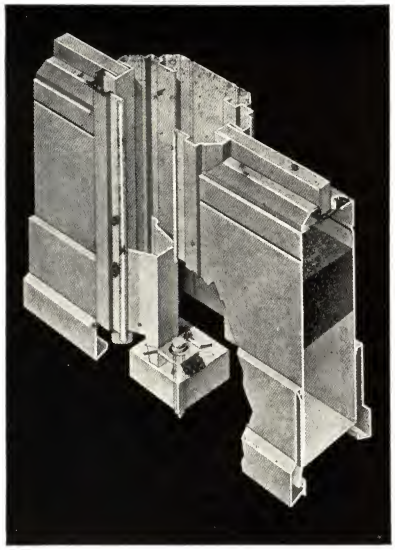
Glass shall be furnished and set by the Metal Partition Contractor. (Specify kind of glass required.)

**Hardware** — To be furnished by the Metal Partition Contractor, includes bitted key locks and one pair of 5 in. x 4 in. butts. Any other hardware, including cylinder locks, door checks, door holders, etc. can be supplied at extra cost. Locks can be masterkeyed. (Specify.)

**Finish**—Shall be equal to DAHLSTROM METALLIC DOOR COMPANY Standard, Plain Enamel or Grained Finishes. (Specify kind of finish required.)

(*Note:* For maximum interchangeability of wall units, especially when partitions occur on more than one floor, a uniform height of partition (from floor to top of upper supporting member) is recommended and should be selected to clear the lowest beam or give the most satisfactory transom height.)

# TYPE "W" DAHLSTROM PANELED METAL PARTITION

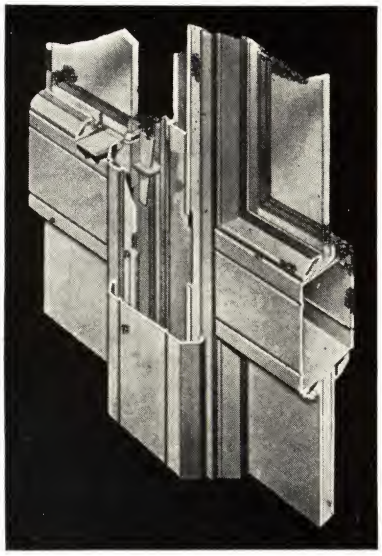


Floor Fastening and Contacts

**Exclusive Post-To-Floor Anchor (Patented)** — Consisting of a die casting secured to floor.

A channel shaped member telescoping into post and wedging into casting. A leveling bolt for adjusting horizontal lines. A single blow with a hammer, after bolt adjustment has been made, securely fastens each post to the casting. This anchorage is extraordinarily rigid, yet in disengaging the post or in adjusting leveling bolt, it is easily loosened with a screwdriver. So practical and simple is this anchor that its use is especially recommended in buildings where alterations and changes in partition layouts are constantly made.

(*Note:* Partitions thrown out of alignment due to sagging floors can readily be leveled with only a few turns of the leveling bolts. Floor shims and wedges are omitted.)

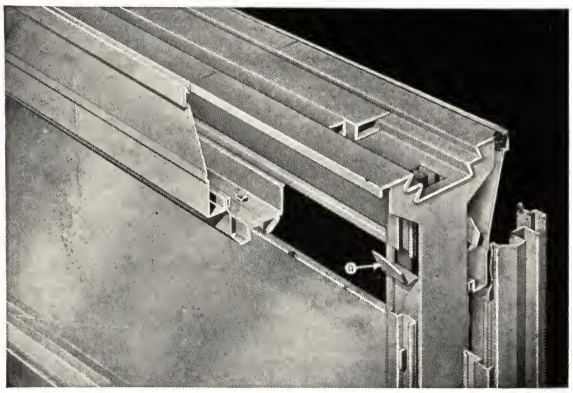


Post-Panel Construction

**Post-To-Panel Fastening**—By a positive and rigid key construction each horizontal rail is securely fastened to the vertical posts. The rail ends are coped and overlap the posts, thus providing a tight, neat and rigid connection when made fast by the keying arrangement. This results in a substantial panel unit assembly with no broken joints to mar its appearance after the final finish has been applied. The plain moulded edges of the horizontal rails and vertical posts give symmetry of appearance with architectural attractiveness, and also produce smooth surfaces for sanitary purposes.

(*Note:* Removing the key wedges makes possible the dis-assembly in the field for the replacement of damaged members or in altering panel widths.)

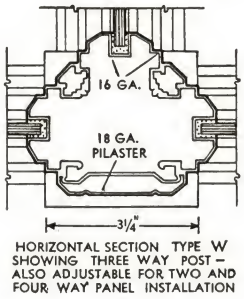
**Multiple Cornice Section (Patented)**—The construction embodied in the Multiple Cornice adds the required strength essential to all well constructed partitions. It also provides for the installation of electric wires and cables, concentrating all wiring (telephone and electrical) in one location and off the floor for convenient handling, also eliminating door thresholds where Lay-in-Wiring is desired. The snap-on design of cornice mouldings provides ready access for wiring installations. Wire holders are provided at each vertical post.



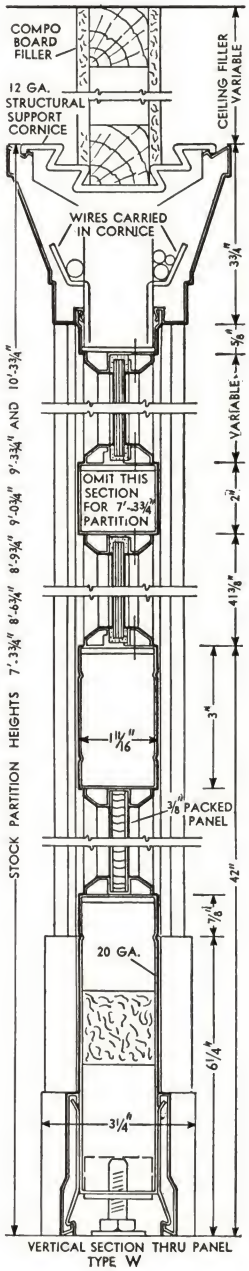
Multiple Cornice Section

(*Note:* The result of a weak cornice member is a poorly constructed partition and a dissatisfied customer.)

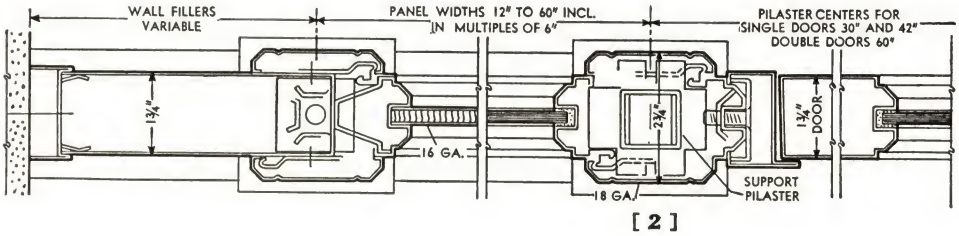
**Assembly** — The design and construction of the Type "W" partition permits the entire assembly and installation to be made without the use of screws and bolts, except for one glazing moulding at top of each glass panel. Unlike old methods, all field connections at time of installation are of the clip-on or drive-wedge methods and need no special tools.




HORIZONTAL SECTION TYPE W SHOWING THREE WAY POST — ALSO ADJUSTABLE FOR TWO AND FOUR WAY PANEL INSTALLATION




VERTICAL SECTION THRU PANEL TYPE W




HORIZONTAL SECTION THRU WALL FILLER, PANEL AND DOOR TYPE W

# TYPE "DD" DAHLSTROM FLUSH METAL PARTITION

**Modern in Design**—The decorative pilaster inserts at varied intervals add modernistic appeal and attractiveness by eliminating the barren and monotonous plaster wall appearance. Supplied in varied designs (with or without glass), and with its nominal soundproofing features, together with its attractiveness, it fulfills the requirements for executive as well as general office areas. "Compo" board or similar material not less than ¼-in. thick is employed for fillers at the ceiling.

**Insulation**—Both sides of all 2¾-in. wall units are insulated with ½-in. low density insulation board and when glued to the metal panels produce smooth outer wall surfaces. The inside surfaces of all pilaster inserts are also insulated. This construction provides nominal soundproofing.

**Interchangeability with Type "W"**—All flexible and movable features of Dahlstrom's Type "W" moulded partition are incorporated in Type "DD" and parts are interchangeable, resulting in reduced building stock inventories.

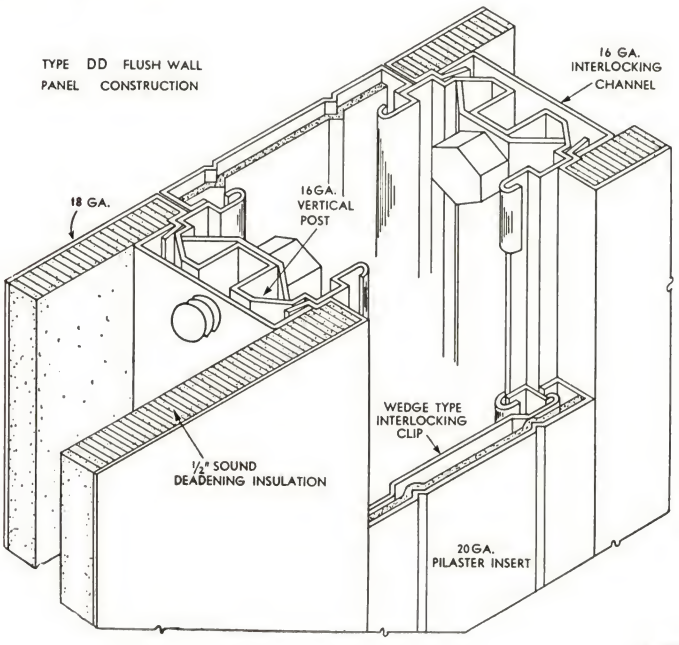
**Flexibility**—Wall units are interchangeable with door units of similar size and intersecting walls can be started from any post at any time without damaging or disturbing adjoining wall units or top filler.

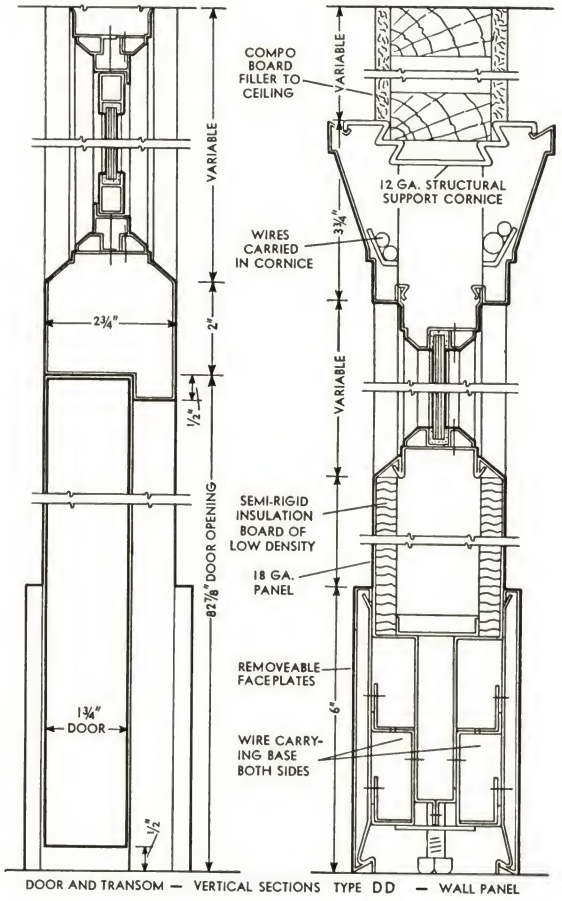
(*Note:* The removal of pilaster insert (snap-on type) functions to meet these problems.)

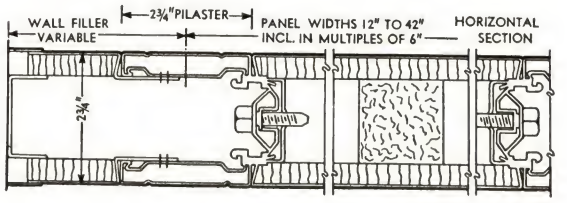
**Electric Wiring Features** — Lay-in wire raceways in base for distribution of light, telephone and signal wires. Each side of wall units is independent of the opposite side for quick and ready access for wiring. Electrical base outlets and switches are applied to the pilaster inserts. Post ends and top fillers are hollow for concealing electric wiring. Multiple cornice for lay-in wiring.

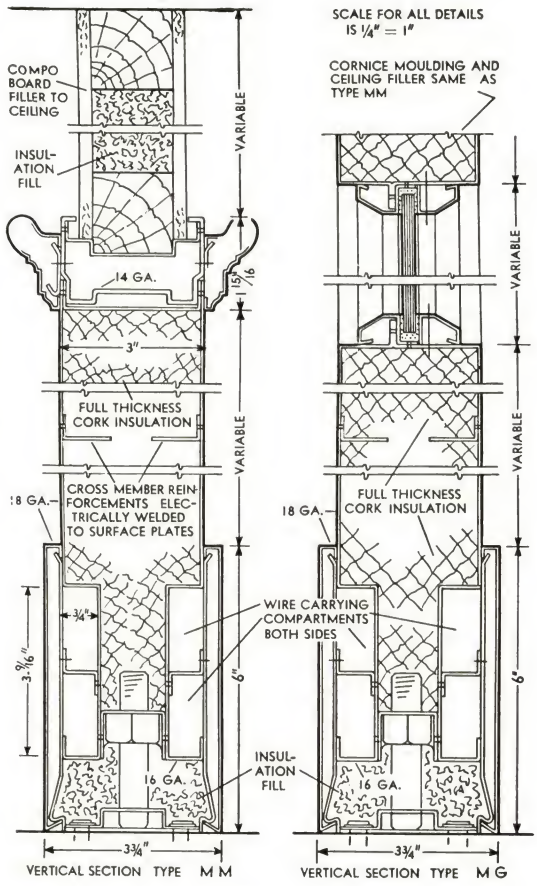


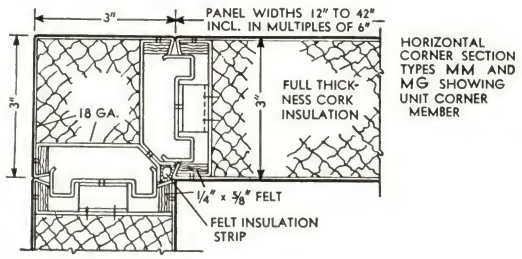
**Dahlstrom Type "DD" Flush Wall, Penn Mutual Life Insurance Co., Philadelphia, Pa.**





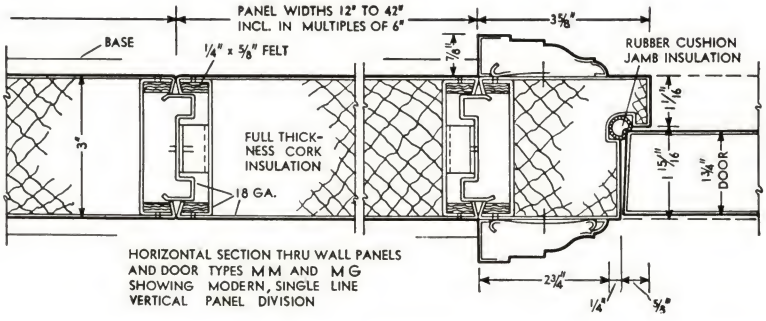

## TYPE "MM" DAHLSTROM INSULATED METAL WALLS

**Design**—Type "MM" Insulated Metal Walls 3-in. thick with only single vertical lines at the wall unit joints present a uniform and flush wall appearance, unlimited to wall finish treatments or otherwise match adjacent plaster walls. "Compo" board or similar material, not less than ¼-in. thick is employed for fillers at ceiling. Wall units can be interchanged with door units of similar size without damaging or disturbing adjoining units, also interchangeable with type "MG" wall units.

(*Note*: Double glazed panels are recommended where soundproof construction is required along with light and vision. Use Type "MG" Metal Walls and single glazed panels when only nominal soundproofing is required.)

**Insulation**—Space between panel plates and between ceiling fillers is filled with approved insulating material, providing maximum soundproofing, heating and cooling features.

**Wire Carrying Base**—Lay-in wire raceways in base for distribution of light, telephone and signal wires. No lay-in wire cornice is furnished with Type "MM" or "MG" metal walls.




## TYPE "MG" DAHLSTROM INSULATED METAL WALLS

**Design**—Type "MG" Insulated Metal Walls have the same characteristic principles as Type "MM," except type "MG" Metal Walls are furnished with single or double glazed panels instead of a continuous flush metal wall.

**Insulation**—Type "MG" is designed for use where light and vision are required and at the same time maintaining the sound proof features embodied in Type "MM", when double glazing is specified. Where full sound proofing is not necessary, single glazing can be used.

**Interchangeability**—Type "MG" wall units are interchangeable with Type "MM".



**Type "MM" Dahlstrom Insulated Metal Wall**

MEMORANDA

1938

OUR 26th YEAR

FIREPROOF

SOUNDPROOF

PREFABRICATED



# MASTERWALLS

*movable partitions*

# BY HAUSERMAN

# THE E. F. HAUSERMAN COMPANY

6994 GRANT AVE. CLEVELAND, OHIO

## MAKE THIS YOUR PARTITION HANDBOOK

**IN THIS CATALOGUE** you will find descriptions, illustrations and engineering data covering the complete line of Masterwalls by Hauserman. Masterwall quality speed and service are all possible because over 90% of all Masterwall items described and illustrated in this catalogue are carried in Hauserman stock. (See index inside back cover.) No attempt has been made to substitute this catalogue for the services of our Masterwall Engineers as in most cases the buyer will find consultations with our men long trained in this business both helpful and profitable. Each type of Masterwall and accessories fits a particular service and need and is the result of twenty-five years of experience, research and development. Our Office Planning Book, sent on request, offers many practical suggestions for layout.

## SPECIFY HAUSERMAN

**BECAUSE** it is a complete line. We publish this catalogue so that yau may know the whole story and select the partition that best suits your purposes and specify it.

**BECAUSE** Masterwalls are the STANDARD OF QUALITY, STANDARD OF PERFORMANCE AND STANDARD OF VALUE.

**BECAUSE** of our factory trained erection crews, field supervisors and factory branch offices makes possible intimate study and smart performance on each individual installation.

**BECAUSE** of our perfected exclusive photographic wood grained finishes and impervious lacquer finishes.

**BECAUSE** of exclusive features such as—our de luxe construction (steel reinforced, flat steel panels solid packed)—floating doors—telescopic glazing—felted door strikes, acoustic service and others, as you will see in the 68 pages of this catalogue.

**BECAUSE** of your insurance against orphanage—parts and service for all types always available.

**BECAUSE** of stock accessories well studied for all needs.

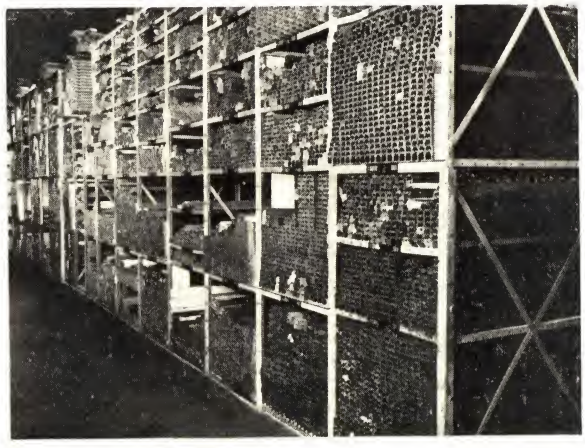
**BECAUSE** our outstanding leadership and facilities are the greatest guarantee of value and acceptance.

## HAUSERMAN STOCK

**meets every requirement accurately**



30,000 DIFFERENT STOCK ITEMS



10 MILES OF PARTITION STOCK

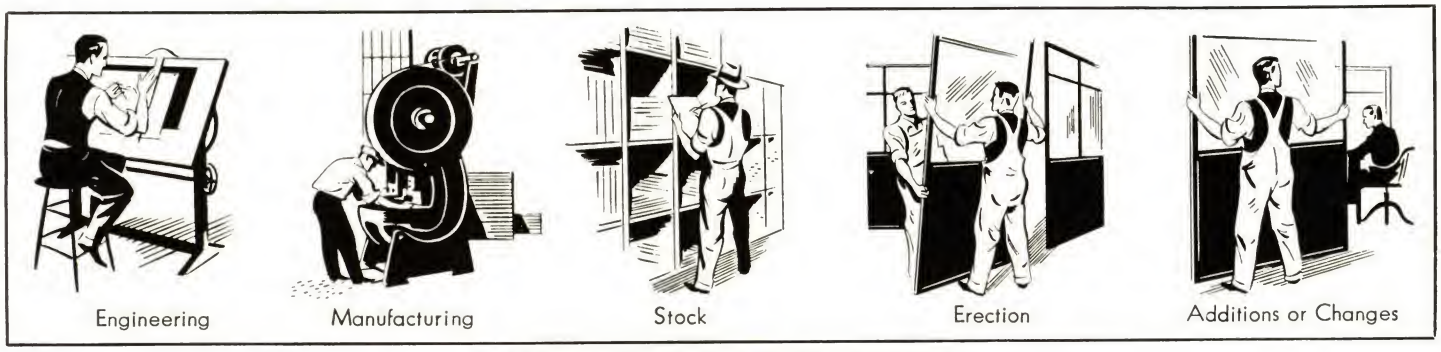
**HAUSERMAN STOCK PARTITIONS** parts are ready for finishing, assembly and quick shipment for original or future installations, rearrangements or additions at any time. Adequate stock is an indispensable factor in saving of time and cost throughout the 25 to 50 year life of your partitions.

**HAUSERMAN STOCK HARDWARE** built to our specifications to correct deficiencies revealed by twenty years of extensive hardware use. Thumb turn, bitt key and cylinder locks are interchangeable in the same mortise. Masterkeyed to all standard manufacturers.

**THIS CATALOGUE — OVER 90% STOCK**

# WHY HAUSERMAN

## • experience is the answer




HAUSERMAN COMPLETE SERVICE

**A GOOD WORKING SPACE IS A GOOD INVESTMENT.** A fine office environment contributes to the exercise of good judgment. Hauserman Masterwalls provide any degree of decorative treatment, soundproofness or flexibility. They are distinctive and have true economy. The Masterwall line includes a fine partition for every sub-dividing or decorative purpose and is produced by the outstanding leader of the partition industry. Masterwall smartness of design and built-in facilities for up-to-the-minute service makes them pay constant dividends indefinitely.

**MASTERWALLS ALWAYS COST LESS IN THE END.** Although they may cost more in the beginning, Masterwalls are always a sound investment through making possible at low cost those unpredictable changes which every business that lives and grows must eventually make. There is an even greater saving in the elimination of loss of time and of the annoyance incident to dust, water, muss, etc., all unavoidable with partitions that cannot be easily salvaged. The unseen costs are also substantial. These are the costs of "NOT MAKING CHANGES" when new conditions demand such changes. Such changes are usually NOT MADE because most partitions DO NOT PERMIT THEM TO BE MADE in a comfortable and practicable way.

**WHILE WE MAY CAPITALIZE OUR EXPERIENCE** we know it is difficult to predict the future. We must be prepared for change. We know new conditions create new possibilities and new problems, many of which, strangely, come to light only after partitions are in use. This holds regardless of careful planning and study. Such changes can be met quickly and inexpensively. Hauserman Masterwalls can be moved frequently and quickly (often outside of working hours) and still be like new, as the lacquer finish is almost indestructible. Hauserman De luxe constructed walls will never warp, swell, buckle, crack or shrink. They have an appearance of permanence, yet are easily moved and do not wear out.

**THE ONLY VALID REASON** for not using Masterwalls might be the lack of capital to finance any additional initial cost. But the high ultimate cost of tile and plaster, because of it high maintenance and moving cost soon converts any hoped for saving into a liability. The outstanding businesses of the country have found through experience that practically all partitions are ultimately moved for one reason or another, many from building-to-building and some from city-to-city.

**THERE ARE ORPHAN PARTITIONS** as well as orphan cars. During the past 30 years over fifty companies have advertised and later abandoned the manufacture of steel partitions. Some of these companies are still in business but their partitions are orphans nevertheless. Remember that the life of a steel partition is from 25 to 50 years. Can you afford to take chances with a product, the life and ultimate value of which largely depends upon continuous service involving inevitable additions and changes?

**HAUSERMAN SERVICE IS COMPLETE.** This means many direct factory branches with sales, engineering and erection service. All are owned and operated by The E. F. Hauserman Company. Masterwall Service means all the facilities to deliver a complete job of best quality on time.

FORESIGHTED USERS CHOOSE MASTERWALLS AND FIND THAT THEY COST LESS IN THE END.

---

**FOR ARCHITECTS:** Complete engineering and specification information quickly available. Experienced counsel is always on call.

**FOR BUILDING MANAGERS:** Save time and money with better tenant service assured — more profit and less grief.

**FOR CONTRACTORS:** Prefabricated Masterwalls cut overhead at end of the job, through speed, flexibility and coordinated service.

**FOR INDUSTRIAL AND OFFICE MANAGERS:** Departmental divisions and rearrangements, soundproof and sound absorbing offices, test rooms and laboratories, draft and temperature control, quickly planned and erected in old or new buildings any place. QUIET assured for workrooms located in noisy departments.

Rearrangements required for expansion quickly completed. We assume full responsibility for a finished result.

## THERE IS NO SUBSTITUTE FOR MASTERWALL QUALITY

# MASONRY VS MASTERWALLS

## • facts and figures prove Masterwall advantages



### BUSINESS AT A STANDSTILL

This Dirt, Muss and Fuss is entirely eliminated by the use of Masterwalls. Compare this picture with "Business as Usual" on the opposite page. Compare the tearing down and carting out of 300 lbs. of debris per lineal foot of masonry with the simple shifting of panel units. Masterwalls eliminate time loss, dust, grit, damage to typewriters, other mechanical equipment and furniture, and cleaning of drapes and carpets all incident to the putting up or moving of masonry walls.

### MASTERWALLS PROVE A SOUND INVESTMENT

The attractive and permanent appearance of Masterwalls has created an erroneous impression of high cost. Value considered, first costs are surprisingly low. Ultimate costs are lower than any other partition.

The initial cost of Masterwalls may exceed masonry but any differential is returned many times, in longer life, greater usefulness and better service. The following facts and the charts below, only cover a ten year period, while, actually, the life of a Masterwall is at least 25 to 50 years.

(1) Masterwalls cost the same as masonry walls at the end of a ten year maintenance period because masonry walls require repainting, plaster patching and general up-keep. Masterwalls require none.

(2) Masterwalls cost only 55% as much as masonry walls with 2 changes in a ten year period. There is only about 2% to 3% salvage value to tile and plaster walls outside of doors and frames, all of which salvage is far offset by cost of debris.

(3) Masterwalls cost only 46% as much as masonry walls with 4 changes in a ten year period.

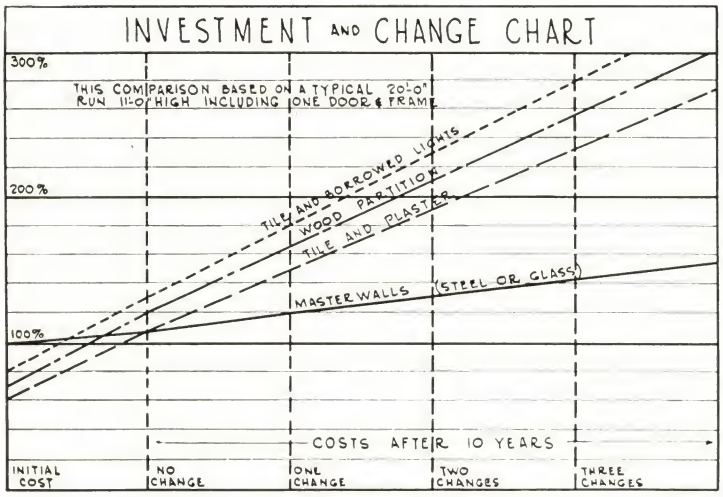
(4) Masterwalls will save over 15 days' use of space on any new installation or subsequent change.

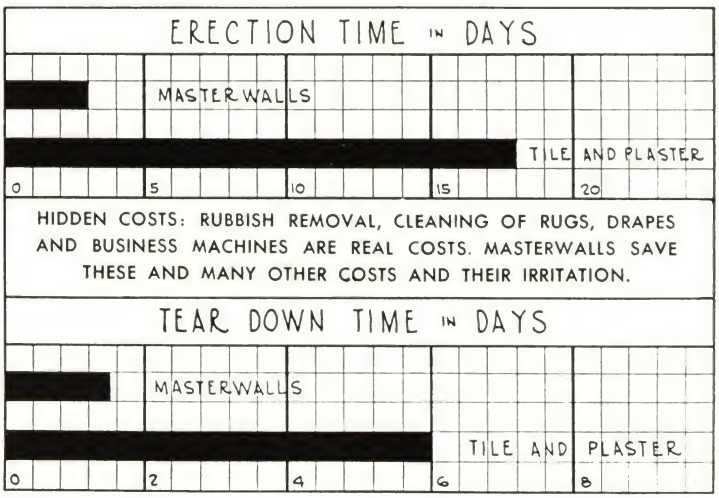
(5) Masterwall comparative costs show to a still greater advantage when compared with tile and framed glass lights.

(6) A 4½" tile and plaster wall weighs 30 lbs. per sq. ft. wall area compared to 8 lbs. for a 3" Masterwall. The tile and plaster partition load for an average floor is 46 lbs. per sq. ft. floor area. Compare this to Masterwalls of only 13 lbs. per sq. ft. floor area. This means saving thousands of lbs. of floor load on the average office floor and real economy in design of any new building.

This data has been compiled from a survey of experience in the Chrysler Building, checked and verified by 13 other users keeping cost and experience records.

COMPARE THIS YEAR'S MASTERWALL COST WITH FUTURE YEARS MASONRY COST.



# CHANGES ARE INEVITABLE

## • movability, a sound investment

### EXAMPLES PROVE THAT MOVABILITY PAYS

Office facilities must not only keep step with present business expansion but must be prepared to meet any future depression. This means frequent change in layout, location, and use of office and manufacturing space. Whatever the cause may be . . . general expansion, consolidations or reorganizations, new departments, new personnel, new methods or new tenants . . . alterations and extensions of partitions must be handled efficiently and with the least possible interference with business.

Here are a few instances where Masterwalls have been used to great advantage.

A large corporation using over 1,000,000 sq. ft. of Masterwalls, in over a hundred different cities . . . with installations running from a few feet to tens of thousands . . . has expanded, rearranged and added to them, moved them from building to building and from city to city. They expanded up to 1929. Then contracted their space and layouts up to 1932, putting surplus partitions in stock. Then expansion began. Stocks were used again, moving some from as many as three cities to one location for additions. Over 300,000 sq. ft. has since been purchased for new buildings, for additions and changes to meet a national program of rearrangement.

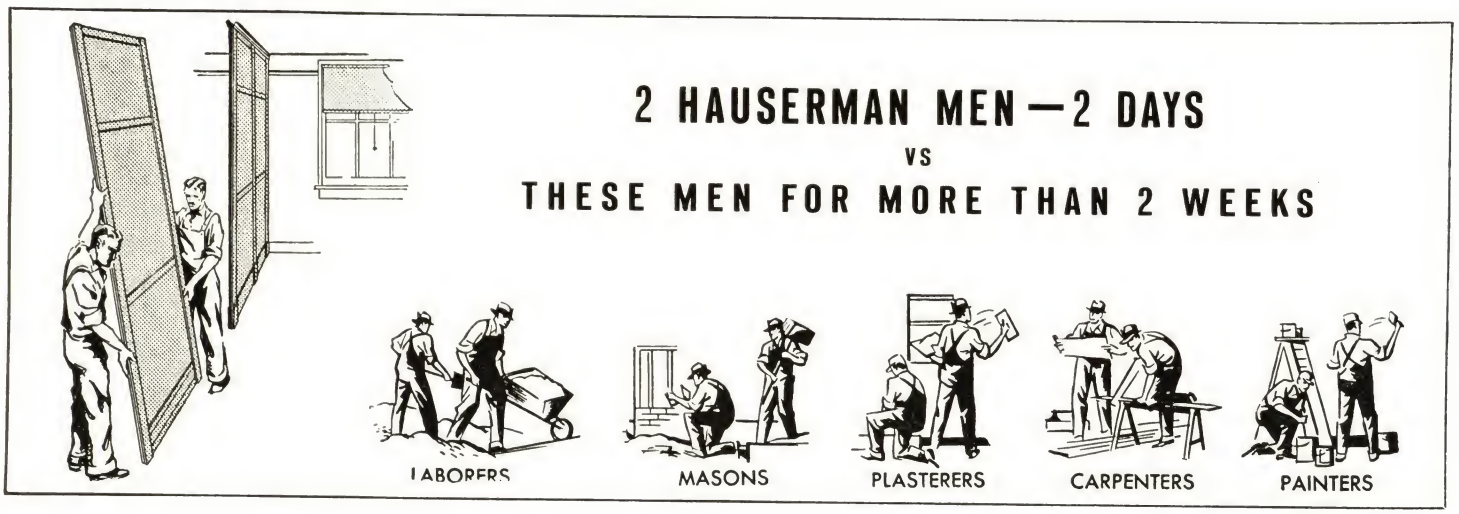
In another instance a user made 1,200 alterations on an installation of 225,000 sq. ft. during its first three years because of unpredictable changes. These changes have already absorbed the difference in cost between plaster and tile partitions and Masterwalls, plus an additional $25,000.00 savings, and these Masterwalls still have at least "25 years to go."

Experience has shown that all partitions must be moved sooner or later. It is the unavoidably high cost and inconvenience of moving plaster and tile as well as inadequate and combustible wood partitions that have started a definite trend toward modern types of movable steel partitions . . . toward Masterwalls.



### BUSINESS AS USUAL

Masterwall alterations are made expeditiously quietly and quickly. Many progressive owners of Masterwalls keep up-to-date by improving their office layouts frequently with little interference with business routine (*as illustrated above*), in comparison with tile and plaster changes on the opposite page. Economies are effected not only by increased efficiency, but also through reduced maintenance costs and a better use of office space.



# MODERNIZATION PAYS DIVIDENDS

## • reclaim "forgotten" spaces with Masterwalls



BEFORE

One entire floor of the Real Estate Trust Building, Philadelphia, Pa., was recently modernized for the General Refractories Company. Before and after illustrations show the elevator lobby with new walls of Flush Steel "AA" Masterwalls in flat grey finish with stainless steel trim, and elevator doors finished blue. The balance of General Refractories' Offices are completely modernized in Semi-Flush Steel, Soundproof "CC" Masterwalls. This type of modernization can be done in your building at a comparatively small cost.

AFTER



**UNSIGHTLY SPACES** in old office buildings, in factory buildings, in warehouses and in stores, have been most economically turned into modern offices by the use of Hauserman Masterwalls. In the same way, many other attractive and useful rooms have been built into spaces that were formerly not used, or brought low rental returns.

In every instance the change has been phenomenal. The attractiveness, the appearance of permanency and the convenience of these new rooms have been almost unbelievable . . . when compared with the old spaces before the modernization work had been started. And besides the business advantages gained, these improvements often save the cost of new buildings or additions.

It is no longer necessary to give up desirable locations and move out of old unsightly interiors when these spaces can be so easily and quickly modernized with Masterwalls.

Building managers are holding old tenants and gaining new ones by providing new, efficient and fine appearing offices with Masterwalls.

Below are shown, "before and after" modernizing illustrations of one entire wing of the General Electric Company's offices at Schenectady, N. Y. This rearrangement plan furnished each of 22 patent attorneys with private offices. Well-lighted stenographic space was also furnished outside of each office. These changes and alterations were handled with minimum interruption to business. After the installation was completed it

BEFORE



# MASTERWALLS FOR LONG SERVICE

## • durability that resists all the elements

**THE LIFE AND DURABILITY** that have always been built into these better steel partitions have long ago proved the soundness of a Masterwall investment. "Still going strong" is what hundreds of users are saying, after having made many alterations, every one of which brought worth-while savings, along with practical advantages.

The basic reason is: "THEY'RE BUILT OF STEEL," and steel gives them the sturdiness, the appearance of permanency, the ability to withstand the wear and tear of everyday use as well as the repeated moving to meet changing conditions. It is "Steel" as well as the way "Steel" is designed and built into Masterwalls that assures permanent appearance and long life.

Old style partitions are fuel for fires. Not so with Masterwalls. Steel resists fire. In one instance a Masterwall installation withstood a fire caused by several thousand gallons of paint which burned intensely for over two hours within a few feet. These Masterwalls were red hot but needed only repainting and are still in use, 10 years later.



BEFORE

These before and after illustrations show how effectively space in an industrial building can be modernized into fine executive offices adjacent to plant with Soundproof Type "CC" Masterwalls. All radiators and piping were nicely enclosed by Masterwall wainscoting and window embrasures. The inside or corridor wall separating private offices from general offices has double glazing (*see page 28*) which facilitates soundproofing and provides light in the interior general offices. Masterwalls answer all modernization needs.

AFTER



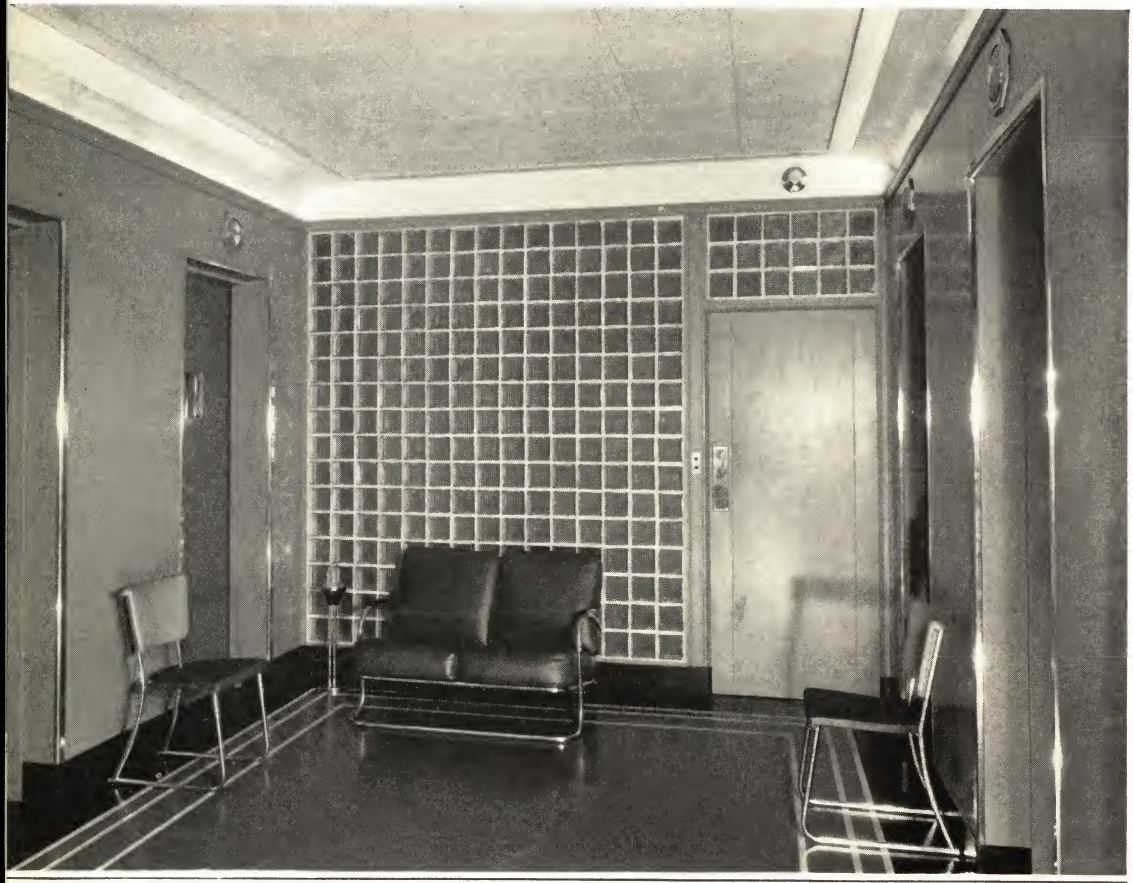
was found necessary to move a few of the doors. This change, which shows the flexibility of Masterwalls, was easily made overnight. Besides the advantage of attractive and modern offices, better light and a general clean-cut feeling was obtained through the use of light finished Masterwalls. More people and more production at comparatively little cost. Masterwall Type "CC" was used throughout these new offices.

AFTER



# DELUXE MASTERWALLS

## • soundproof — fireproof



### TYPE AA 3" FLUSH STEEL

Absolutely flush, permanently flat, single hair line joint.
More soundproof than a tile and plaster wall.
De luxe construction, steel reinforced flat steel panels solid packed. Reinforcements approx. 12" apart electrically welded on 3" centers.
Layin wiring facilities.
Panel units in 3" multiples from 9" to 48" wide 6 heights. (s)
Interchangeable door and panel units.
Floating door frame, felted strike.
Concealed adjustable posts.
Flush steel top, matching panels, or double mineral board top, either with cornice or picture mould.
Concealed transom operator.
Shop assembly of panel units.
Single glazed (s) Double glazed 42" chair rail to transom rail only. (s)
Details, pages No. 22, 23.
Type AA 8' 8½" side walls with stainless steel trim. Wall in background type CC 8' 8½" elevation with built in glass block.

***Real Estate Trust Bldg., General Refractories Lobby, Philadelphia, Pa.***
***John Lane Evans, Architect***

*Opposite end of lobby, page 6.*



### TYPE BB 3" STEEL AND GLASS

Type BB differs from AA in that it has double hair line joint, rigid clip assembly of panel units, snap-on post caps, universal post. Absolutely flush, permanently flat.
More soundproof than tile and plaster wall.
De luxe construction, (see description pages 24, 25).
Layin wiring facilities.
Panel units in 3" multiples from 12" to 60" wide, 6 heights, 42" or 54" chair rail. (s)
Interchangeable door and panel units.
Floating door frame, felted strike.
Flush steel top, or double mineral board top, either with cornice or picture mould.
Concealed transom operator.
Shop assembly of panel units.
Flush steel (s) double glazed 42" chair rail to transom rail only.(s)
Details, pages 24, 25.
Type BB 9' 3" steel glass steel elevation single glazed with flush steel top filler. Gray stipple finish. Closet enclosed by type AA 9' 3" flush steel.

***Dept. of Interior, Washington, D. C.***

# A QUALITY LINE

## • meets all partition needs

### TYPE DD 3-4½" FLUSH STEEL

All DD types differ from AA in that the panels are field assembled from prefabricated parts.
More soundproof than a tile and plaster wall.
Absolutely flush, permanently flat, single hair line joint.
De luxe construction, steel reinforced flat steel panels solid packed. Reinforcements approx. 12″ apart electrically welded on 3″ centers. Horizontal or vertical hook-on panel assembly.
Layin wiring facilities.
Panel units in 3″ multiples 9″ to 48″ wide, 6 heights. (s)
Interchangeable door and panel units.
Floating door frame felted strike.
Flush steel top, matching panels, or double mineral board top, either with cornice or picture mould.
Concealed transom operator.
Available in steel (s), wood, asbestos or marble (ns), on either or both sides.
Type DD 8′ 9″ elevation, horizontal hook-on panels. Oriental walnut grain finish with horizontal stainless steel inserts flush with panel surface.



### TYPE DD 3-4½" FLUSH WOOD

All DD types are field assembled from prefabricated parts. More soundproof than tile and plaster wall when packed, De luxe construction, custom built (ns), (details on request.)
Flush $\frac{11}{16}$″ veneered ply wood panels with beads or V, hook-on horizontally or vertically (with or without packing).
Maximum wiring facilities.
Interchangeable door and panel units.
Floating door frame, felted strike.
Concealed adjustable steel posts.
No top filler ordinarily (steel or mineral board top available).
Concealed transom operator.
Available in flush steel (s), wood (ns), asbestos (ns) or marble (ns) on either or both sides.
Other photos, page No. 31.
Type DD 9′ 0″ elevation, horizontal hook-on Japanese plywood panels with Japanese Ash moulds and trim.



*Reception Room*
*U. S. Tobacco Co.,*
*Rockefeller Center, N. Y. C.*
*Reinhard & Hofmeister,*
*Architects*

# MOST COMPLETE STOCK

## • includes partitions and accessories



### TYPE CC 3" SEMI-FLUSH STEEL

Type CC differs from BB in that it has semi-flush pilasters (projecting 1/8") instead of flush, a cornice instead of a picture mould.

More soundproof than a tile and plaster wall.

Semi-flush, 2¾" solid packed panels, universal post, snap-on post caps. De luxe construction, (see description pages 26, 27).

Panel units 6" multiples, 12" to 48" wide 6 heights, 42" or 54" chair rail. Tie rod assembly for field cut down.

Layin wiring, base and cornice.

Interchangeable door and panel units. Floating door frame with felted or steel strike.

Double mineral board or double steel top. Packing optional.

Concealed transom operator or friction device.

Single glazed (s) double glazed 42" chair rail to transom rail only. (s)

Details, pages 26, 27, 28.

Type CC 8' 8½" semi-flush steel walls, wainscoting, window enclosures. Grained walnut finish.

***Republic Steel Co.,***
***Republic Bldg.,***
***Cleveland, Ohio***



### TYPE CC 3" STEEL AND GLASS

Type CC differs from Type BB in that it has semi-flush pilasters (projecting 1/8") instead of flush and a cornice instead of a picture mould.

Semi-flush universal post, single glazed, snap-on post caps.

De luxe construction, (see description pages 26, 27).

Panel units in 6" multiples, 12" to 60" wide 6 heights, 42" or 54" chair rail. Tie rod assembly for field cut down.

Layin wiring base and cornice.

Interchangeable door and panel units. Telescoping glazing.

Floating door frame with felted or steel strike. Double mineral board or steel top filler. Concealed transom operator or friction device.

Semi-flush steel (s),double glazed 42" chair rail to transom rail only. (s)

Details, pages 26, 27, 28.

Type CC 7' 2½" single glazed 54" chair with 15" super structure. Low wainscoting and radiator enclosures. Grained walnut finish.

***Chrysler Corporation***
***Detroit, Mich.,***
***Albert Kahn Inc., Architects***

# ENGINEERING EXPERIENCE

## • assures customer satisfaction

### TYPE FF 2" SEMI-FLUSH STEEL

Type FF has same characteristics as Type CC, differing only in thickness of panel.
Maximum soundproofness for 1¾" solid packed panel.
Semi-flush permanently flat panels, universal post, snap-on post caps. Deluxe construction. (see description pages 34, 35).
Panel units, 6" multiples 12" to 48" wide, 6 heights, 42" or 54" chair rail. Tie rod assembly for field cut down.
Layin wiring, base and cornice.
Interchangeable door and panel units. Floating door frame with felted or steel strike.
Double mineral board, or double steel top (packing optional).
Concealed transom operator or friction device.
Single glazing (s) glass interchangeable with a ⅜" packed steel panel.
Details, pages 34, 35.

Type FF semi-flush steel and single glazed 9′ 2½" elevation. Grained walnut finish with 6" high black base.

***Morraine Products Co., Dayton, Ohio, Albert Kahn, Inc., Architects***

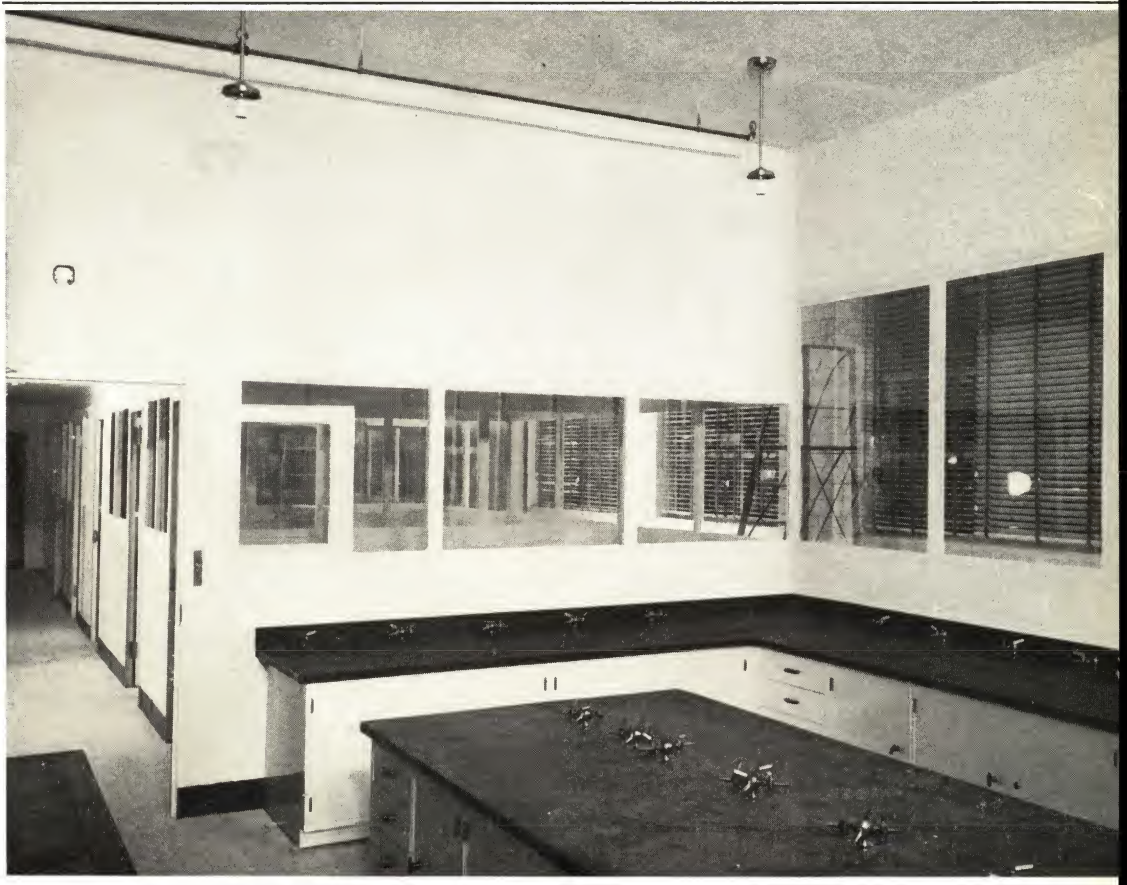


### TYPE FF 2" STEEL AND GLASS

Type FF steel and glass has same characteristics as Type CC, differs in over-all thickness only.
Essentially a steel and glass partition of the finest type, neat, modern lines, 2" thick with minimum glass reveals.
Semi-flush, universal post, snap-on post caps. De luxe construction, (see description pages 34, 35).
Panel units, 6" multiples, 12" to 60" wide, 6 heights, 42" or 54" chair rail. Tie rod assembly for field cut down.
Layin wiring, base and cornice.
Interchangeable door and panel units. Telescopic glazing.
Floating door frame with felted or steel strike. Double mineral board or steel top filler. Concealed transom operator of friction device.
Semi-flush steel (s) glass interchangeable with a ⅜" packed steel panel.
Details, pages 34, 35.

Type FF 7′ 2½" single glazed 48" chair rail on left, 9′ 2½" no transom rail on right. Tan finish with black base.

***Upjohn Co., Laboratories, Kalamazoo, Mich., Albert Kahn, Inc., Architects***



# OVER 20 MILLION SQUARE FEET

## • installed by Hauserman



### TYPE WW 1½" STEEL AND GLASS

Type WW differs from Type FF in that it has moulded design, panel to chair rail 1½" thick.
De luxe construction, steel reinforced flat steel panels solid packed to chair rail. Reinforcements approx. 12" apart electrically welded on 3" centers.
Moulded design, universal post, snap-on post caps.
Steel panels 1½" solid packed to chair rail, glass or steel glazing interchangeable above. (s)
Panel units, 5" multiples 10" to 60" wide, 6 heights, 42" chair rail only. Tie rod assembly for field cut down.
Layin wiring base.
Interchangeable door and panel units. Telescopic glazing detail.
Floating door frame, steel strike.
Double mineral or steel top.
Concealed transom operator or friction device.
All steel 1½" panels. (s)
Details on request.

Type WW 8' 2½" single glazed and 36" railing to match with stainless steel hand rail and post capitals. Gray finish with black base.

***Arthur Kudner, Inc.***
***Rockefeller Center,***
***New York, N. Y.***



### TYPE W STEEL AND GLASS

Type W differs from Type WW in that it has ⅜" packed panels instead of 1½" solid packed panels.
Moulded design, universal post, snap-on post caps.
Steel panels ⅜" solid packed with mineral board, to chair rail, glass or steel interchangeable glazing above. (s)
Panel units, 5" multiples 10" to 60" wide, 6 heights, 42" and 54" chair rail. Tie rod assembly for field cut down.
Layin wiring base.
Interchangeable door and panel units.
Telescopic glazing detail.
Floating door frame, steel strike.
Double mineral or steel top filler.
Concealed transom operator or friction device.
All steel ⅜" packed panels. (s)
Details, page 37.

Type W single glazed 8' 5½" elevation. Walnut grain finish with 2" high block mop strip.

***E. I. Dupont de Nemours Co.***
***Empire State Bldg.,***
***New York, N. Y.***

# A 10 MILE STOCK

## • of Masterwalls in semi-finished form

### TYPE R STEEL AND GLASS

Type R differs from Type W in that it has a fish wire base and different moulded post cap.

Moulded design, universal post, snap-on post caps.

Steel panels 3/8" solid packed with mineral board, to chair rail, glass or steel interchangeable glazing above.

Panel units, 5" multiples 10" to 60" wide, 6 heights, 42", 48" and 54" chair rail. Tie rod assembly for field cut down.

Fish wire base.

Interchangeable door and panel units.

Telescopic glazing detail.

Floating door frame, steel strike.

Double mineral or steel top.

Concealed transom operator or friction device.

All steel 3/8" packed panels (s).

Details, pages 38, 39.

Type R 10′ 2½" single glazed with horizontal pivoted vents in panel and door units. 7′ 2½" elevation in background. Tan buff finish.

***Heinz Motor Co.,***
***Cincinnati, Ohio***
***Jos. G. Steinkamp & Bros.,***
***Architects***



### TYPE HK STEEL AND GLASS

Type HK differs from Type R in that it has single No. 18 gauge steel panels instead of packed panels. Vertical and horizontal field assembly of panels.

Vertical assembly permits accumulating panels one on top of another for very high elevations with large independent posts which may be reinforced for special conditions.

Glass, steel or wire mesh panels. Adaptable to high ceilings, trusses and conveyors, piping and other irregularities.

Separate universal post, anchored floor and ceiling.

Wiring in posts. Interchangeable door and panel units.

Single steel adjustable top filler, or wire mesh.

Available in any combinations of steel, glass or wire mesh panels (s).

Details, page 40.

Type HK 7′ 2½" elevation in foreground. 18′ 0" elevation in background with glass to 14′ 0" and steel top filler to varying ceiling height.

***Chrysler Motor Corp.,***
***Detroit, Michigan***



# A BROAD SERVICE

## • no job too large or too small



### TYPE DD 3-4½" FLUSH ASBESTOS

All DD types are field assembled from prefabricated parts.
More soundproof than tile and plaster wall when packed solid.
Custom-built, details on request.
Flush $\frac{7}{16}$" asbestos panels with V joints, or special beading in wood or metal, vertical or horizontal hook-on panels, (with or without packing).
Maximum layin wiring facilities.
Interchangeable door and panel units.
Steel trim, with floating steel door and frame with felted strike. (s)
Concealed transom operator.
Available in flush steel (s), wood (ns), asbestos (ns) or marble (ns), on either or both sides.
Other photos, page 30.

Type DD 3" thick flush asbestos 9' 0" elevation. Lacewood, base, chair rail, beads and cornice. Walls and wainscoting light tan finish.

***U. S. Tobacco Co.,***
***Rockefeller Center, N. Y. C.***
***Reinhard & Hofmeister,***
***Architects***



### TYPE CC SEMI-FLUSH RAILING

Type CC (s) semi-flush railing used with types CC-FF. Absolutely flush type BB (s) railing with double hair line joint used for types AA, BB, DD. Moulded design (s) to harmonize with types R, W, WW and HK.
Stainless steel handrails, post capitals, and gate crown (s). (Bronze or painted steel optional, but not recommended.)
Universal post.
Layin wiring base.
Double acting self-centering hinges or single acting checking hinges.
Movable, 36", 42", 54", elevations.
Details, page 42. Other photographs pages 9, 12, 15, 26, 32 and 37.

Type CC 36" high railing, with solid and perforated base, stainless steel handrail. 7' 2½" cornice high and ceiling high type CC offices in background. Walnut grained with 6" black base.

***Purchasing Department***
***Chrysler Corp.,***
***Detroit, Mich.***
***Albert Kahn, Inc., Architects***

# 35 THOUSAND ORDERS

## • handled by the Hauserman organization

### TYPE CC GLAZED RAILING

Type CC (s) semi-flush glazed railing used with types CC, FF. Absolutely flush type BB (s) glazed railing with double hair line joints used with types AA, BB, DD. Moulded design (s) to harmonize with types R, W, WW. Panels for types BB and CC match corresponding panel units. 42″ and 54″ glazed railing with 24″ glass posts above (s) 12″ and 18″ glass posts are cut down stock.
Slender moulded steel posts.
Polished plate, etched or sand blasted straight or curved top glass available.
Continuous handrail (painted recommended) bronze or stainless steel.
Finials bronze or chromium finish (see page 42).
Universal post.
High and low gates.
Single acting checking hinge, only on high gates with felted stop.
Details, page 42.

Type CC semi-flush glazed railing, 42″ chair rail with 24″ polished plate glass above. Bronze finials.

***Pangborn Corp.,***
***Hagerstown, Md.***



### TYPE CC WITH COUNTERS TO MATCH

Movable counters built-in as a part of all partition types. (cs)
Sections with continuous linoleum covered tops with bronze binding.
Storage space below, with or without shelving.
Hinged steel, sliding glass or sliding steel doors.
Cash drawers with sliding coin tray and paracentric lock or plain storage drawers available.
Also available with display cases below with glass or steel shelves and concealed lighting.
Details, page 43.

Inset shows 24″ Polished Plate Glass Screen over counter, with bronze grilles and finials. Cash drawers and hinged doors with enclosed shelving below.

Type CC 7′ 2½″ elevation with built-in illuminated display cases and counters.

***Inset,***
***Fruit Growers Express,***
***Washington, D. C.***

***Illustration,***
***Singer Sewing Machine Co.,***
***Philadelphia, Penna.***





## ENGINEERS AND ERECTORS AVAILABLE EVERYWHERE

# NOISE EFFECTIVELY ELIMINATED

## • it pays to buy quiet

**QUIET** — Few investments made by management will pay greater dividends than that for noise elimination. It pays to buy QUIET. In one example where complete records were kept, the results were as follows:

Office efficiency increased 8.8%. Typists' errors were reduced 29%. Business machine operators' errors were reduced 52%. Labor turnover was reduced 47% and absences decreased 37.5%.

There are many other examples where Masterwall offices have been erected in the middle of noisy factory departments with remarkable results. Cases such as these prove the value of sound-proof Masterwalls.

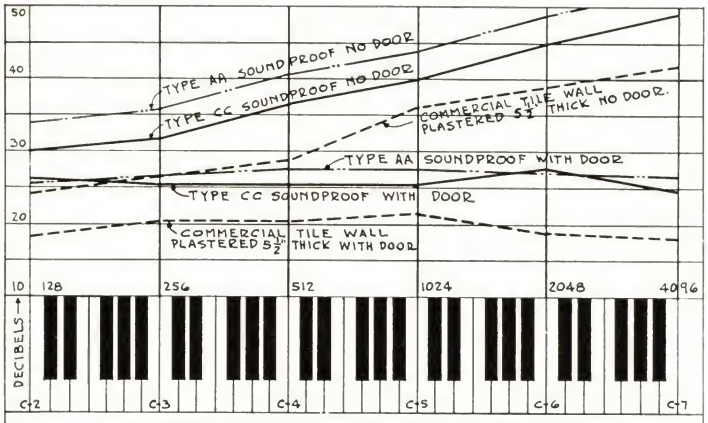
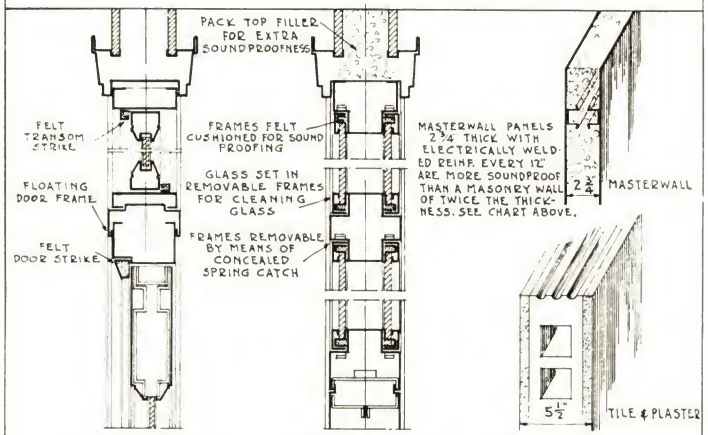
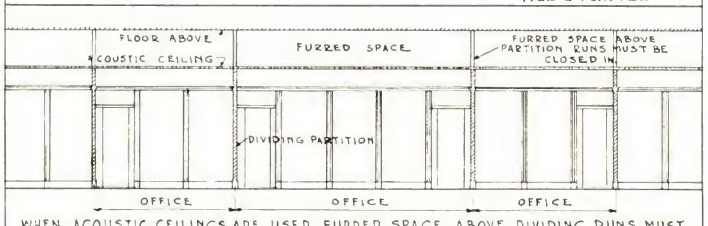



CHART SHOWING SOUNDPROOFING (VALUE IN DECIBELS) OF HAUSERMAN MASTERWALLS TYPE AA & CC WITH & WITHOUT DOORS COMPARED TO PLASTER WALLS OF TWICE THE THICKNESS.




WHEN ACOUSTIC CEILINGS ARE USED, FURRED SPACE ABOVE DIVIDING RUNS MUST BE CLOSED IN TO STOP INTER-OFFICE SOUND TRAVEL

**METHODS OF CORRECTION** — To eliminate the distraction of excessive office noise two methods must be followed — (1) isolate excessively noisy departments and provide adequate soundproofing between offices to prevent transmission through walls — (2) lower the loudness level of noise within the office by the use of sound absorbing materials. In small rooms the walls must be used as the ceilings do not provide sufficient surface for sound absorption treatment.

**MASTERWALL ACOUSTIC CEILINGS** — Sound absorbing ceilings are furnished for the finest offices, laboratories or test rooms from Hauserman complete stock, see details, page 49 for various types. High sound absorption is obtained by use of perforated steel panels (licensed by Burgess) and a sound absorbing core of mineral wool.

Adjacent chart shows the decibel loudness reduction (soundproofing value in decibels) of Hauserman Type CC and AA De luxe Masterwalls with and without doors compared to tile and plaster walls of more than twice the thickness. The effect of inserting a door in a partition is readily seen. The decibel reduction is shown for the standard test frequencies. This demonstrates that Masterwall types CC, AA, BB and DD are all more soundproof than a tile and plaster wall of greater thickness.

**MASTERWALL DOORS** — Hauserman flush steel doors are much more soundproof than the average paneled door in wood or steel. The over-all soundproofness of a De luxe Masterwall with a door in it is much greater than a tile and plaster wall with the ordinary wood or steel doors. Hauserman doors with felt strikes and floor seals substantially increase this soundproofness. (Details page 28.)

**MASTERWALL TRANSOMS** — It must be recognized that open transoms, offset the soundproof values of partition walls and are not recommended. However a felt sealed transom provides some sound reduction. Ventilation if possible should be provided through a sound absorbing air duct, built into panel units on thick types.

**DOUBLE GLAZING** — Where soundproofness is desired and either vision or light are necessary, either double glazing or extra thick glass must be used. See page 28 for Hauserman Double Glazing Construction.

**SOUND TRAVEL** — Where a series of soundproof offices are planned under a suspended ceiling, caution should be exercised to run dividing walls completely to underside of slab or close off space between ceiling and underside of slab with packed top fillers, directly over each dividing wall. This prevents sound travel from one room to another in space above suspended ceilings. See detail at left.

# ACOUSTIC MASTERWALLS

## • for quiet rooms, test rooms and offices

**ACOUSTIWALLS** — The Hauserman answer to this growing problem of office and industrial noises is complete — worked out by extensive research and proven under exacting conditions of actual usage. The Hauserman Acoustiwall is a soundproof movable steel partition with absorbing surfaces either or both for reduction of noise levels to any desired degree.

Acoustiwall Units are intended for use wherever acoustic treatment is needed for reducing noise levels. They are needed in stenographic rooms, and in all offices where noisy business machines are used. Special rooms for industrial testing and quiet conditions despite surrounding noise can be made with Masterwalls. They are extremely important in executive offices where quiet is valuable. The movability feature permits location or relocation of acoustic treatment as an integral part of the wall in any quantity desired. Acoustiwall units make possible adequate quieting of small offices due to the large area of wall surface available — which is unobtainable with ceiling treatment only. A complete description of these Hauserman types will be found on this page and pages 28 and 29.

The keynote of today's business tempo demands efficiency. Everyone is becoming sound conscious. Efficiency means quiet whether in the office, school or workroom. Isolated quiet rooms in noisy factories increase production. Test rooms (see details page 29) of various types may easily be installed or moved in your factory.

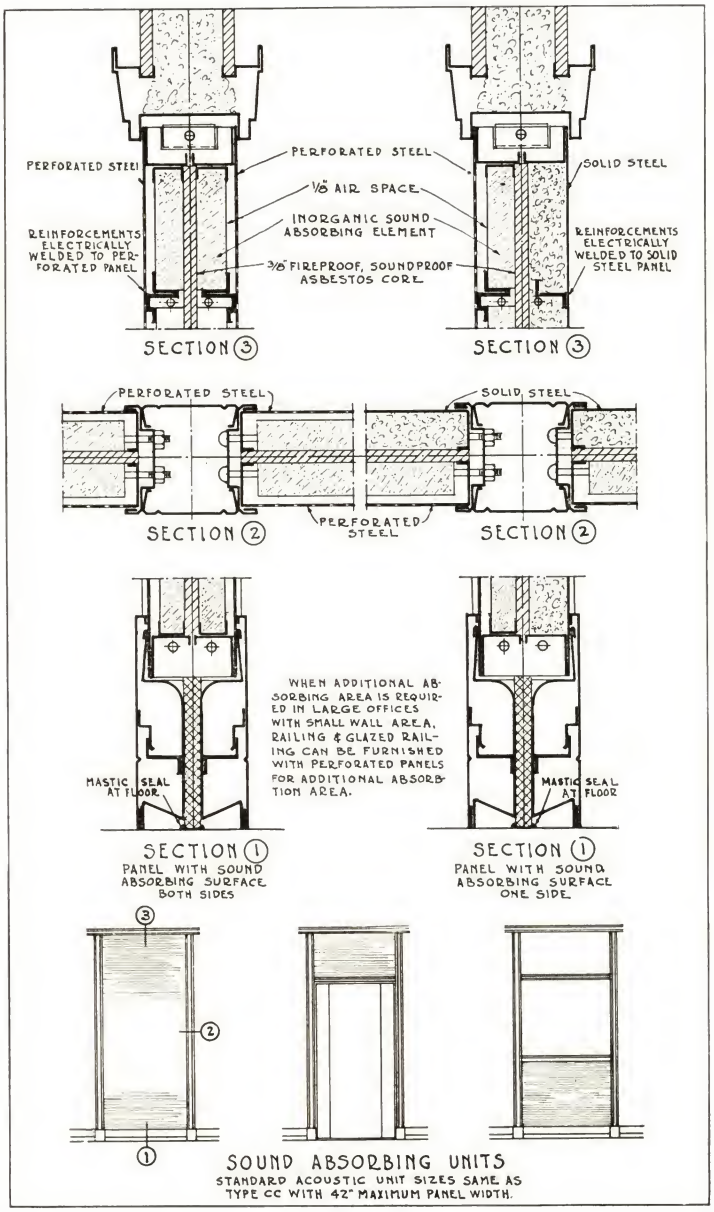
**HAUSERMAN ACOUSTIC SERVICE** — Competent, experienced acoustic engineers with latest electrical noise level and sound transmission recording apparatus are available. Accurate field data permits definitely determining the means necessary for securing a desired result. This insures your investment in soundproofing or sound absorbing facilities actually delivering the quiet you pay for.

**ACOUSTIWALL FEATURES** — (Type CC illustrated). This Acoustiwall treatment applies to types AA and BB as well as to type CC (s) illustrated and preserves all of the features and characteristics of each type permitting the mingling of Acoustiwall and solid steel panels in the same wall interchangeably. Acoustiwalls apply to acoustic treatment the same advantages of re-use, movability, flexibility and salvage value, which have made Masterwalls the most economical form of partitioning.

**CONSTRUCTION** — This type of partition consists of a fireproof soundproof core, with a layer of sound absorbing mineral wool, covered by a perforated steel panel (licensed by Burgess).

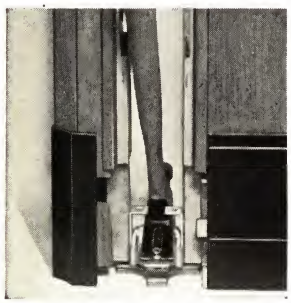
It is furnished with either one or both sides sound absorbing. Where only one side is desired with sound absorbing properties, the opposite face is solid. Exterior appearance aside from the perforated steel panel faces is identical with its corresponding type.

**HEAT INSULATION** — The same inorganic packing that is used for sound reduction in panel units, will insulate walls for air conditioning. Heat conductivity of packed panel units is 0.10 B.t.u. per hour per sq. ft. per degree Fahrenheit. Air conditioning manufacturers state that these walls save as much as 20% in cost of air conditioning. This means real economy in heating or cooling costs when separating air-conditioned offices or when used as vestibules. These facts are applicable to types AA, BB, CC and DD.



# MASTERWALL EXCLUSIVE FEATURES

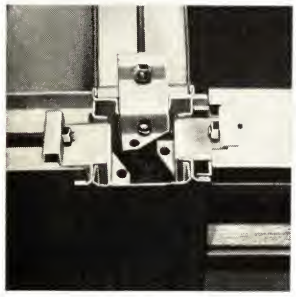
## • insure built-in value



**FLOOR CONNECTIONS (Patented)**— Floor stampings are held in place with a removable double-headed drive nail or lag screw. Any panel removed or replaced without disturbing adjoining units. Weight of panels rests directly on floor through one or more patented interlocking shims. Provides a solid foundation despite usual variance of floor level.

**RIGID CLIP ASSEMBLY (Patented)** — Panel units, door units, and ends are assembled with Patented Interlocking clips. No exposed screws. Concealed clips 18" to 24" on each side lock units rigidly together. Post caps are snapped over clips like the back of a watch. Used in types BB, CC, FF, R, W, WW.





**UNIVERSAL POST (Patented)** — Partitions may be run in any one, or all, four directions from a single point at any time. There is no necessity of disturbing original installations for making additions or changes. No adapters or special connections are required. All methods of assembly and access are concealed with snap-on post caps. Above applies to all types, except AA, DD and TE.

**TIE ROD ASSEMBLY (Patented)**—No welding. Permits entire assembly of the panel unit. Provides for field cut down of one panel to make one or more smaller or special panels without refinishing. Permits repairing or replacing a single damaged part. Adapts material on hand to new layouts. Eliminates all waste. Used in types CC, FF, WW, R, W.

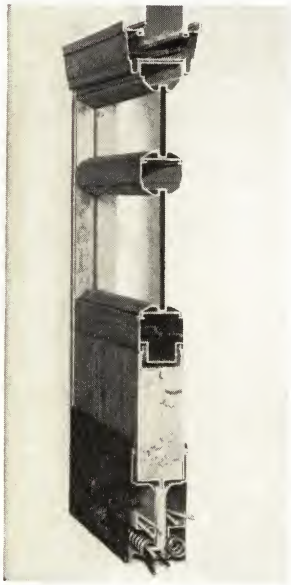




**INTERCHANGEABLE HARDWARE** Doors are mortised to accommodate any type of Hauserman lockset with complete interchangeability. A complete quality line of hardware is stocked. All made to fit the same mortise. Bitt key, latches and cylinder locks are stocked in Brushed Bronze (U. S.-10) or genuine Bauer Barff (U. S.-18) Finish. See pages 52, 53, 54.

**LAYIN WIRING DOOR FRAME** — Layin wiring raceway for high and low tension wiring is provided around door in types AA, BB and DD, and is covered by removable snap-on trim. Wiring is entirely layin and does not require fish wiring across door head. Switches can easily be installed in door trim when desired. (See fittings page 55).





**WIRING FACILITIES — CORNICE** — Buzzer or telephone wires may be laid in the outer edge of the cornice and effectively concealed, in types AA, BB, CC and FF. Removable layin picture mould is available with steel tops both sides of partition on types AA, BB, DD.

**LAYIN WIRING BASE (Patented)** — The hook on base is easily removable for convenient access to the two layin wire chases on each side. Available in types AA, BB, CC, DD, FF, W, WW.

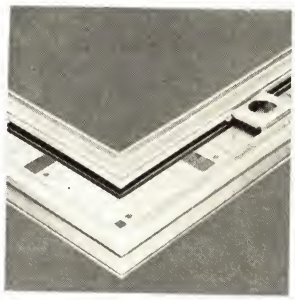
**POSTS** — Posts provide for wiring between base and any of the upper rails or cornice, except past transom operator in type FF. (use adjacent post, see details page 56) Electrical fittings are readily installed on any post or base and are carried in stock. See pages 55, 56, 57.

**REMOVABLE LAYIN WIRING END FILLER** — Types AA, BB, DD are provided with a removable layin wiring end filler. Each side is removed independently and provides easy interconnections between base and picture mould. All wiring in types AA, BB and DD is completely layin on each side of partition. Base, end fillers, door trim and picture mould are all removable, enabling whole face of one side of partition to be wired easily and without use of fish wiring at any place. Sufficient space is provided in base, door frame and end fillers for carrying suction and/or drain lines for air-conditioning units. It is very easy to run these pipes concealed. For further electrical and air - conditioning details, see pages 56, 57.



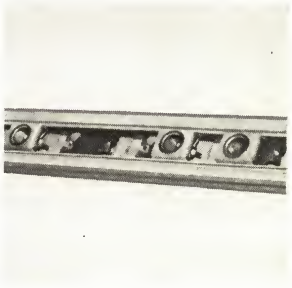
# MASTERWALL EXCLUSIVE FEATURES

## • add many practical advantages



**CORNICE DETAILS (Patented)** — Cornice can be rearranged in any combination of corners and intersections. Two-way corners are mitered, welded and fully finished at the factory. Cross runs added at any point. Wiring and post connection holes on 5″ or 6″ O. C. Welded tie bars make cornice a rigid tubular member. All types except when removable picture mould is furnished on types AA, BB and DD.

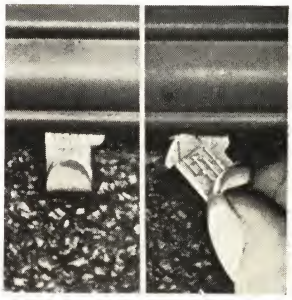
**CORNICE SPLICE (Patented)** — The Hauserman cornice splice expands the adjoining ends to exactly the same size and draws them together with the diagonal bolts. Cornice is manufactured in a number of standard lengths punched in multiples of 5″ and 6″ according to type to meet the requirements of any partition layout or rearrangement.

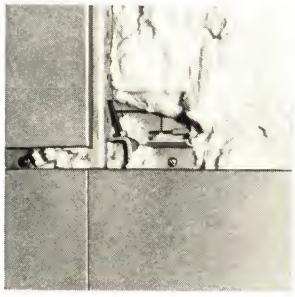




**ADJUSTABLE BASE & PLINTH (Patented)** — The outer bases and plinths are adjustable to the floor level independently of the panel unit and each other. Provides contact with the floor despite irregularities on either side. Floor coverings inserted without disturbing the partition when necessary. On types AA, BB, CC, DD, FF, WW and W. Each side is adjustable separately permitting different thickness of floor covering.

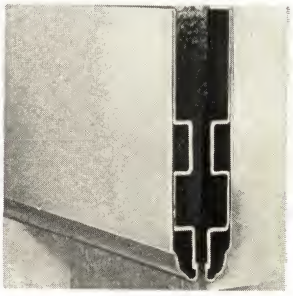
**PICTURE HOOK SLOTS (Patented)** — Picture hooks for hanging pictures, charts, racks and maps on any panel are inserted in inconspicuous slots under transom rail. All types except AA, BB and DD steel, which have continuous picture slot in removable picture mould. (See sections, pages 22, 23, 24 and 25).





**ADJUSTABLE STEEL TOP FILLERS** — Flush steel, single line or double line joint top fillers to match panel widths are provided for types AA, BB, DD and are easily erected and removed. They are salvable and have the same life and re-use as panel units. Steel top fillers are also available for types CC, FF, WW, R and W. (See details page 49).

**DOOR GLAZING (Patented)** — Glass for all doors is inserted through slot in top rail. It is taken out by removing and inserting door and jarring on wood blocks. This eliminates all loose moulding, stripped or exposed screws. Doors may be steel glazed in a like manner. For Door Types see page 47.





**ADJUSTABLE DOORS (Patented)** — Floating door frame permits adjusting door clearance to accommodate changes in floor levels or different floor coverings. Adjusted by loosening three bolts each side of door frame. Doors with hardware applied are assembled in their frames at the factory insuring accurate fit. All doors are reinforced for door checks.

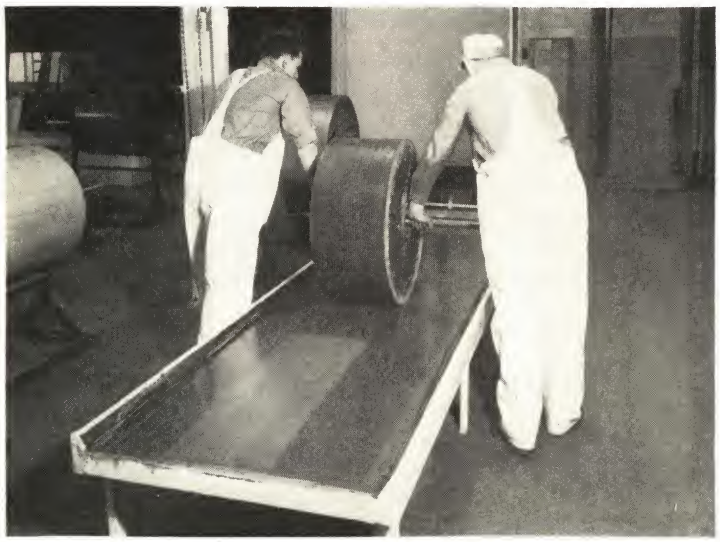
**CONCEALED TRANSOM OPERATORS**—The exclusive design concealed operator is substantially and compactly built, assuring free and easy operation and long life. It can be installed at any time and concealed within the post or door trim. A small crank handle operates a worm gear which opens the transom to a full 90 degrees, and locks it in any position. Fits all types but HK, K and H.

**TELESCOPIC GLAZING (Patented)** — The expense and irritations incident to cracked glass caused by compression, warping or binding, are eliminated by use of the Hauserman telescopic method of glazing. To set a lite of glass the grooves are bed puttied. Stop in upper rail is slid up within the rail to admit glass. Glass is inserted to full depth in one vertical groove, then swung into plane and dropped into the bottom groove and centered. Movable stop is lowered by means of a hook inserted in the picture hook slots. Glass is removed by reversing the glazing operations. If putty is hard, drive up telescopic stop, remove nuts from tie-rods, and spread verticals to free glass. Used with all types, except H, HK and K.



# ATTRACTIVE FINISHES

## • meet each customer's preference

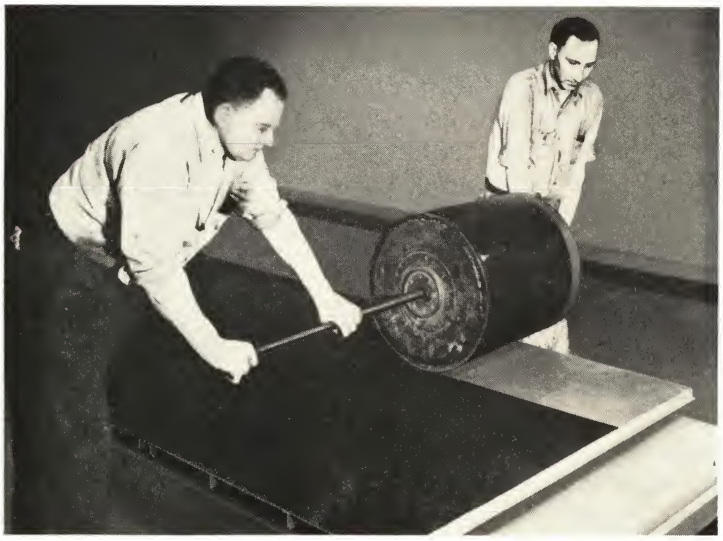


**GRAINING METHOD**—Rich natural reproductions of fine wood grains are made under license by the exclusive Oxford Varnish Company patented process, in a wide choice of different woods and finishes. The comparatively small extra cost of graining produces a great return in the way of refinement, comfort and permanent satisfaction. These finishes are always admired, the easiest to live with and have the lowest maintenance.

The upper illustration shows graining being transferred from a copper electroplate to a flexible composition roll. The plates are made from carefully selected woods by photograph and are similar to halftone or rotogravure plates. These plates are expensive (costing upwards of $1,000.00 each) but are faithful to the finest detail and we maintain many different plates with different types and character of grains.

The lower illustration shows the graining being transferred from the roll to a panel plate which has been previously ground coated with enamel and sanded. Even when grained from the same plate, no two panels will be alike as different parts of the copper plate will be reproduced on different parts of each panel.

The process provides as much variation of character as actual wood veneering and yet permits of future additions in perfect harmony with the original installation.



**MATERIALS** — Specifications are given under item 17, page 59. Ground coats are synthetic enamels baked on which make a paint film having many times the toughness, resistance to abrasion, adherence, fastness of color and general wearing qualities of the older types oil baking enamels. Top coatings are pyroxylin lacquer of the highest grade and these finishes last indefinitely with no maintenance other than periodic cleaning. Our laboratory gives them rigid water, bending, dingeing and abrasion tests.

**COLORS** — See the Hauserman color book showing actual colors on metal plates. Hundreds of standard colors carefully chosen as background colors, or harmonizing accent colors provide suggestions for any decorating scheme.

**GLOSS**—Standard finishes are all furnished in an egg shell or satin finish gloss which provides a restful atmosphere without disturbing or distracting high lights and reflections. We discourage the polishing of wall surfaces.

**TEXTURES AND SPECIAL FINISHES** — Stippled finishes varying from a fine sand effect to a course spatter effect furnished at additional cost. Texture finishes are effective on flush walls. They are easily kept clean and are free from glare.

Special grease and soil proof finishes that stay clean and are easily maintained have been developed. Acid, alkali and moisture resisting finishes in a limited range of colors, also metallic or iridescent finishes in any degree of color be furnished at additional cost. Call the Masterwall Engineer.

**TWO COLORS** — Black mop strip 2" high or black base 6" high is recommended for any light color job and frequently used with all colors. We discourage bronze mop strip due to unsightly discoloration and maintenance expense. We advocate black mop strip instead whose improved finishes withstand present-day cleaning materials. Grained or dark color doors are recommended with all light colors. (Specify if door only or door and frame). Different color rails and panels are available but not generally used.

**FIELD PAINT** — Masterwalls can be furnished in prime coat for field paint but we do not advocate it as the field finish is more expensive, less uniform and shorter lived. Prime coats are not uniform and will have variation in color and coverage.

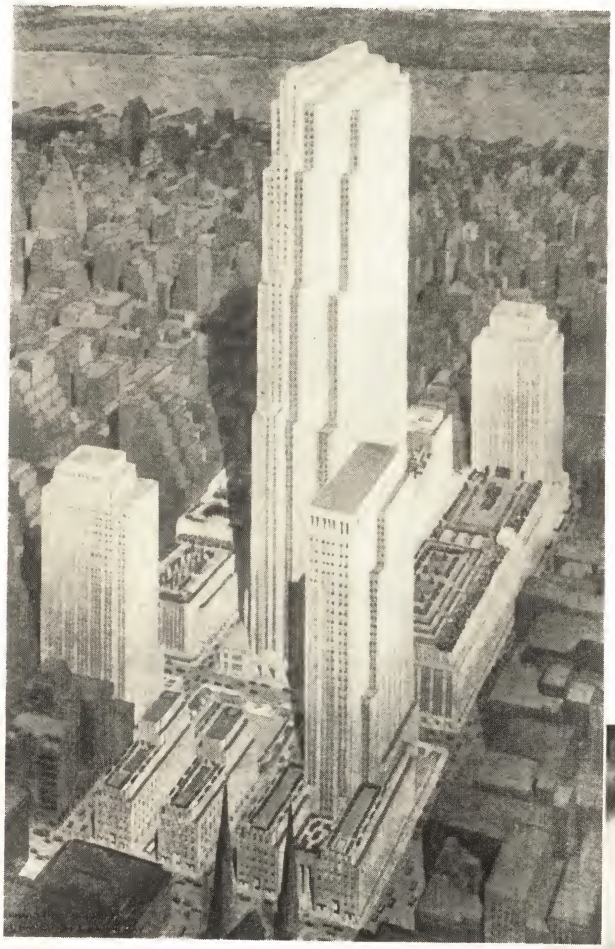
**WHITE FINISH** — There is no pure white finish and all whites deteriorate and turn yellowish. Always specify off white shades — the further off the better.

**CLEANING** — A careful washing with Ivory or Lux soap and water well rinsed with clear water is recommended. It is important not to rub severely. If a cleaning fluid is preferred we recommend "Masterwall Cleaner" specially prepared to preserve the satin finish, follow directions on can specifically. Any cleaner should merely remove the dirt without leaving a film or polish or shine the surface.

**HARDWARE** is stocked in cast or extra heavy wrought bronze in U. S. 10 lacquered brushed bronze finish. Butts are planished steel ball bearing plated to match. Black finish U. S. 18 (Genuine Bauer-Barff) is furnished on cast iron or wrought steel lock trim. Knob shanks and thimbles are cast with machined bearings. All escutcheons are reinforced at the knobs with a special steel collar. Bronze finish is protected with persperation resistant lacquer, a unique and valuable improvement. Accessories are stocked finished to match hardware. (*See illustration pages 52 to 55.*)

# EVIDENCE OF LEADERSHIP

## • Masterwalls in the country's greatest skyscrapers



### EMPIRE STATE BUILDING

Shreve, Lamb & Harmon
Architects

Type W is being used as building standard in 8′ 5½″ elevation finished 4194 walnut grain.



### CHRYSLER BUILDING

William Van Alen
Architect

Type R is being used as building standard in 8′ 8½″ elevation finished 4094 walnut grain.



### ROCKEFELLER CENTER

Reinhard & Hofmeister
Corbett, Harrison & MacMurray
Hood & Fouilhoux
Architects

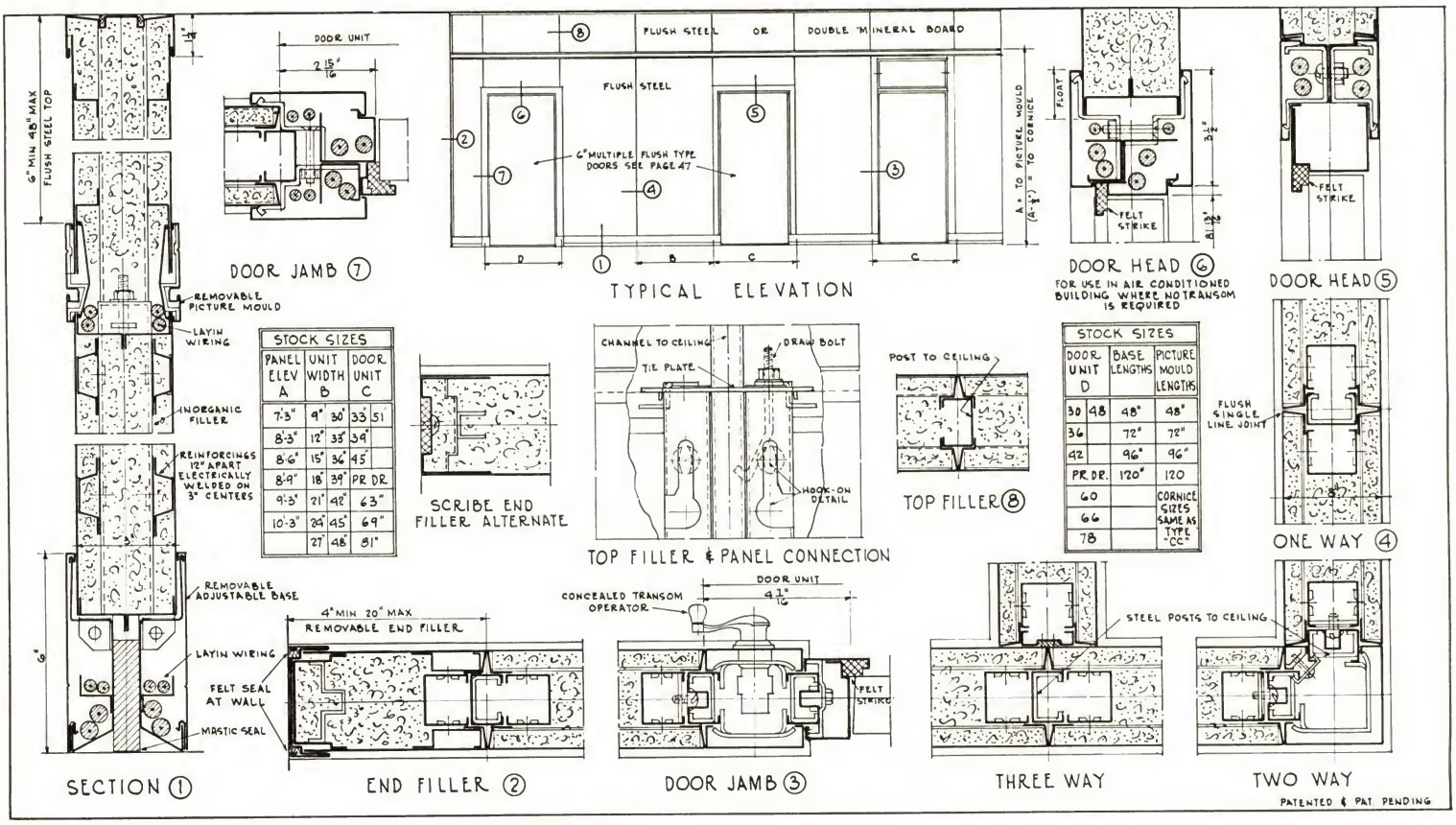
Type WW is being used as building standard in 8′ 2½″ elevation finished 4946 Brown.

New installations, arrangements and tenant changes in the above buildings, as well as in over 100 office buildings in the U. S. A. and in Canada are made from Masterwall stocks with speed and no fuss, muss or dirt.

## A MASTERWALL FOR EVERY PLACE AND PURPOSE

# TYPE AA FLUSH STEEL

## • 3" thick, De luxe construction, single line joint






Type AA Flush Steel and Steel and Glass De Luxe Masterwalls are 3" thick solid packed and have shop assembled panel units. Type AA flush steel is more soundproof than tile and plaster. These walls are absolutely flush permanently flat steel walls with a straight single hair line joint between all panels and ends. Type AA glass has absolutely flush steel panels with straight single hair line joint below the chair rail with glass above.

Flush steel panel units are shop assembled and are stocked in 3" multiples 12" to 48" in 6 elevations. Steel and glass panel units are stocked in 3" multiples 12" to 60" in 6 elevations with 42" and 54" chair rail and have patented telescopic glazing throughout. Flush steel panels, both in the all steel and steel to chair rail are 3" solid packed with inorganic sound-deadening filler. De luxe construction, steel reinforced flat steel panels solid packed. Reinforcings spaced 12" apart electrically welded on 3" centers. Panels have deadening coat of mastic on inside. A concealed telescopic steel post at each panel joint anchored floor to ceiling is furnished with steel top filler. Packed double flush steel top filler

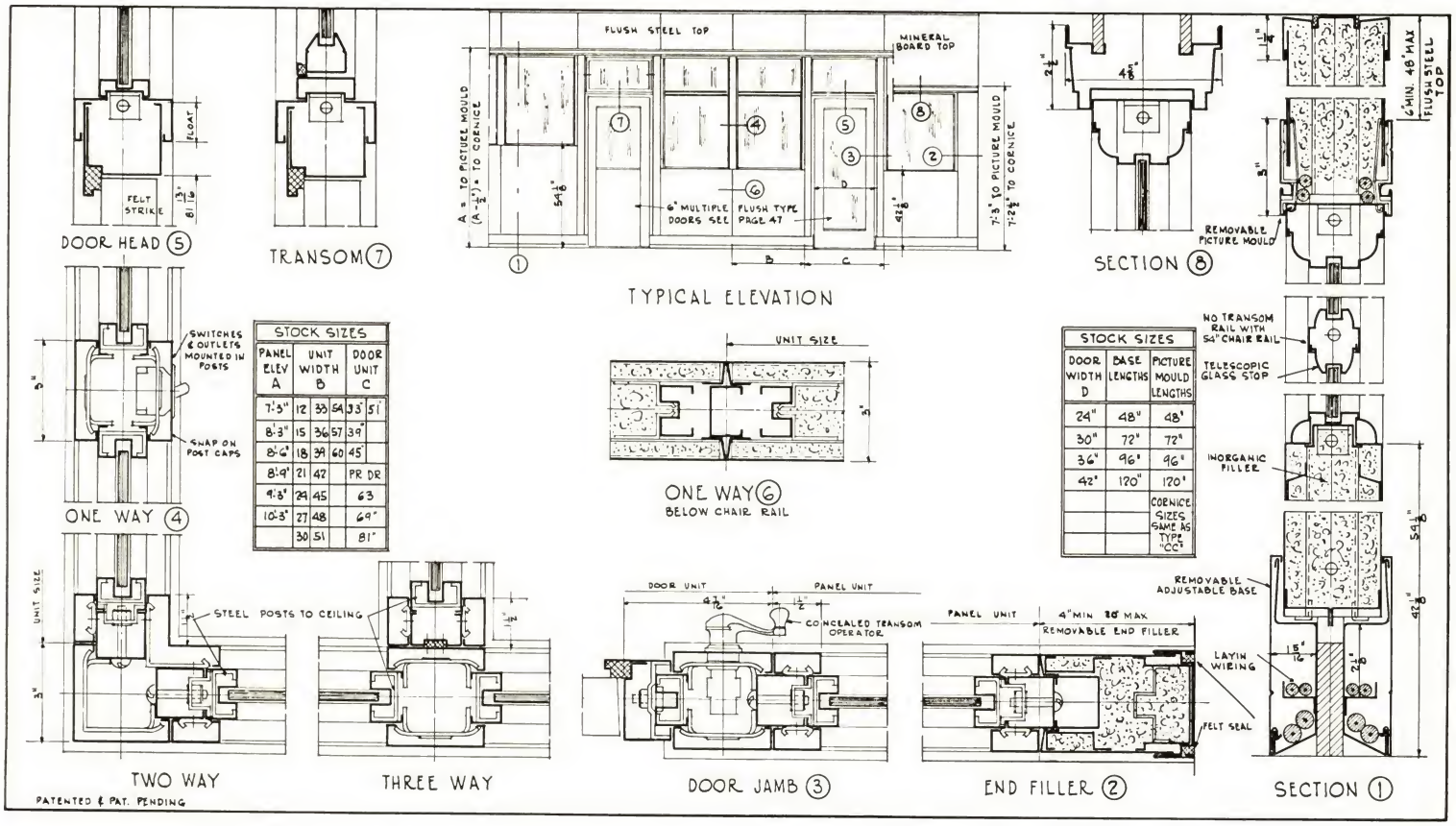
***Department of the Interior, Washington, D. C.***

31,000 lineal feet of walls and closets in this installation.

**THE E. F. HAUSERMAN CO., CLEVELAND, OHIO**

# TYPE AA STEEL & GLASS

## • 3" glazed, De luxe construction, single line joint




matches the panels and is stock. A double mineral board top with either picture mould or cornice is available. The door and panel units are interchangeable. End fillers have a flat mould at the wall or are strictly flush (at additional cost). The end filler wall channels have a felt seal which takes up all wall irregularities. A felt seal is also available for the bottom of doors, an important item for sound reduction. (See details page 28).

There are lay-in wiring facilities, i. e., in the base, through the end fillers, around the door frames and also through the picture mould. These lay-in facilities are also used for concealing air-conditioning lines and other piping, if desired.

The door trim is absolutely flush. Door frames are full floating type with a felted strike. Transoms with concealed operators, fixed glass panels, or flush steel panels may be used over doors. A projecting trim door frame is also available for all steel elevations in air-conditioned buildings where no transoms are required.

Double glazing 42" chair rail to transom rail only is carried in stock.

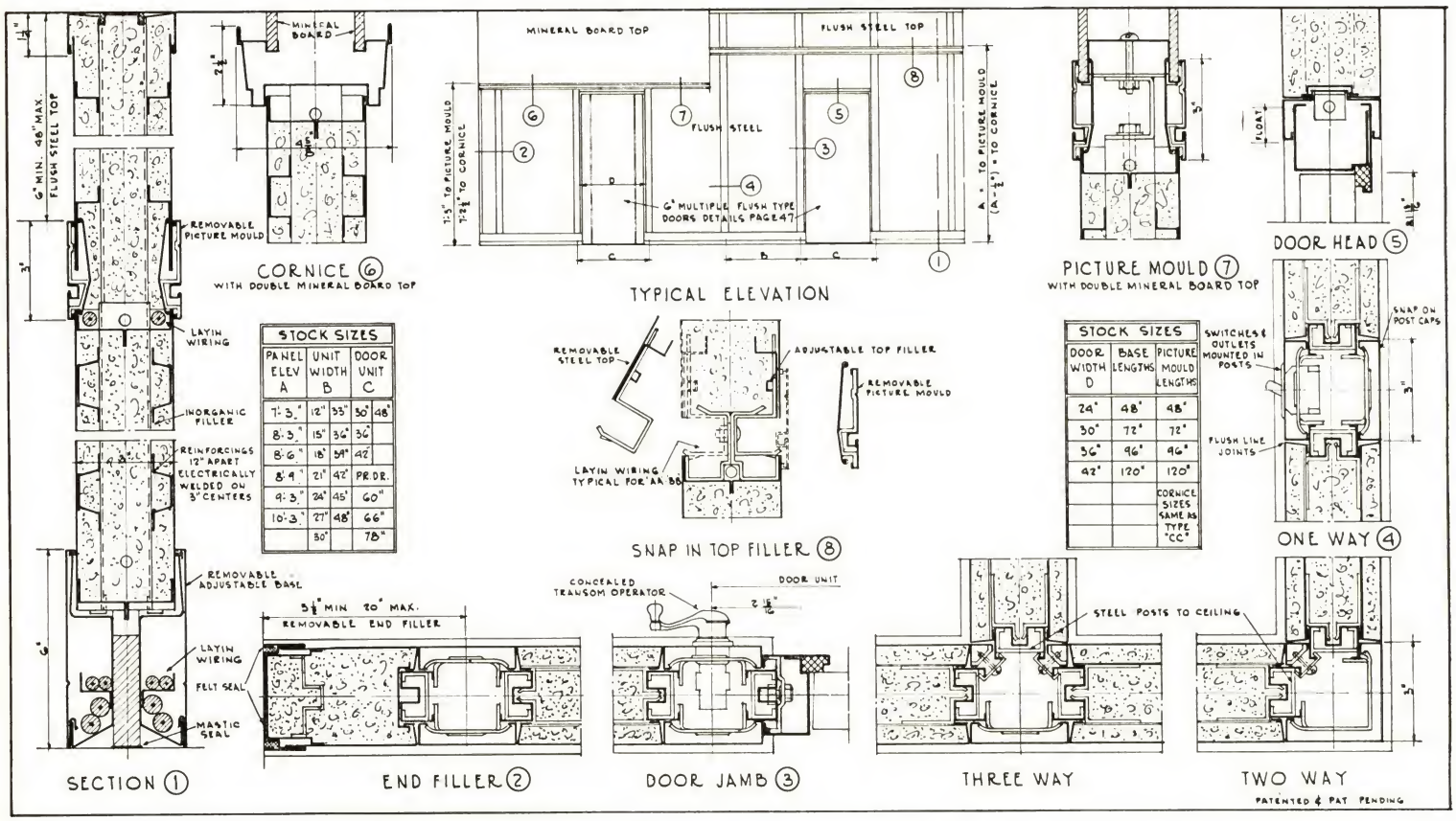
***American Can Co.,***
***New York Central Bldg.,***
***New York, N. Y.***
***Carl G. Pries, Architect***

Partition at closet expanded to 12" to enclose piping.



# TYPE BB FLUSH STEEL

## • 3" De luxe Construction, double line joint, universal post






Type BB Steel and Steel and Glass differ from type AA principally in that they have a two-line joint, a four-way post assembly and snap on post caps full hight of partition. Type BB Steel is an absolutely flush permanently flat steel wall more soundproof than a tile and plaster wall. Type BB steel and glass has absolutely flush steel panels to chair rail with glass above.

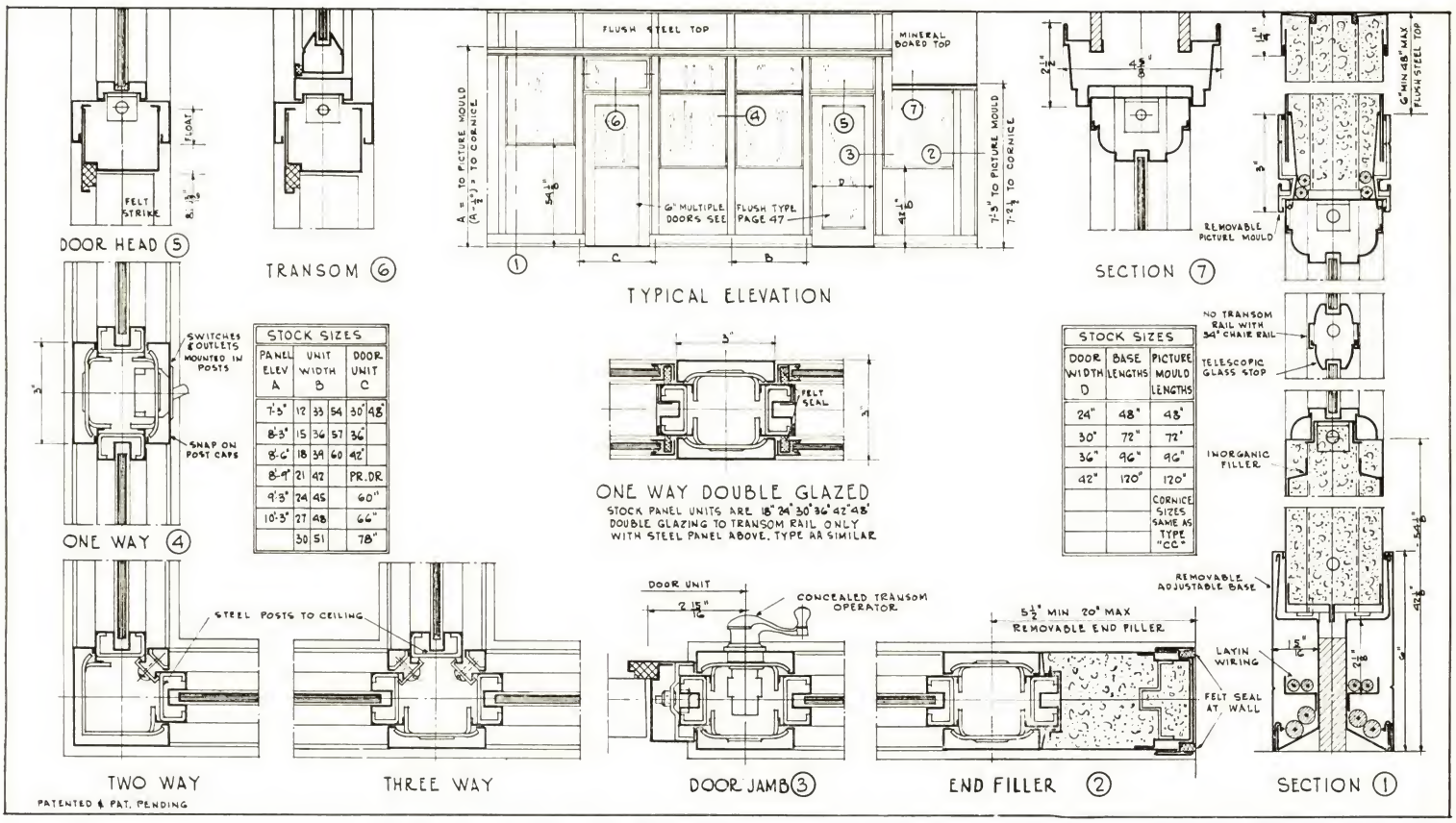
All steel panel units are shop assembled and are stocked in 3" multiples 12" to 48" in 6 elevations. Glass panel units are stocked in 3" multiples 12" to 60" in 6 elevations with 42" and 54" high chair rails and have patented telescopic glazing throughout. Flush steel panels both in the all steel and steel to chair rail are 3" solid packed with inorganic sound deadening filler. De luxe construction, steel reinforced flat steel panels solid packed. Reinforcings spaced 12" apart, electrically welded on 3" centers. Panels have deadening coat of mastic on inside. A universal post provides four-way assembly of

***Warren Telechron Co., Ashland, Mass.***
***Fay, Spofford & Thorndyke, Architects***

Type BB 7'-2½" elevation with and without top filler. Ivory finish with black base.

# TYPE BB GLASS & STEEL

## • 3" glazed, De luxe construction, double line joint, universal post




| STOCK SIZES | | | | | |
|---|---|---|---|---|---|
| PANEL ELEV A | UNIT WIDTH B | | | DOOR UNIT C | |
| 7'-5" | 12 | 33 | 54 | 30" | 48" |
| 8'-3" | 15 | 36 | 57 | 36" | |
| 8'-6" | 18 | 39 | 60 | 42" | |
| 8'-9" | 21 | 42 | | PR. DR. | |
| 9'-3" | 24 | 45 | | 60" | |
| 10'-3" | 27 | 48 | | 66" | |
| | 30 | 51 | | 78" | |

| STOCK SIZES | | |
|---|---|---|
| DOOR WIDTH D | BASE LENGTHS | PICTURE MOULD LENGTHS |
| 24" | 48" | 48" |
| 30" | 72" | 72" |
| 36" | 96" | 96" |
| 42" | 120" | 120" |
| | | CORNICE SIZES SAME AS TYPE "CC" |

panel units. The door and panel units are interchangeable. All units are joined by rigid clip assembly which is concealed by snap-on post caps. The flush double steel top filler matches the panels and is stock. A double mineral board top filler either with cornice or picture mould is available. End fillers have a flat mould at the wall or are strictly flush (at additional cost). The end filler wall channel has a felt seal. A felt seal is also available for bottom of doors, an important detail for maximum soundproofness. (Details page 28.)

Type BB is provided with layin wiring facilities in base, through the ends, around the door frames and also through the picture mould. These layin facilities are also used for concealing air-conditioning and plumbing lines, if desired. The door trim is flush. Door frames are full floating type with a felted strike. Transoms with concealed operator are available. Flush steel or fixed glass panels may also be used above doors. Double glazing 42" chair rail to transom only is carried in stock. See pages 42 and 43 for railings and counters.

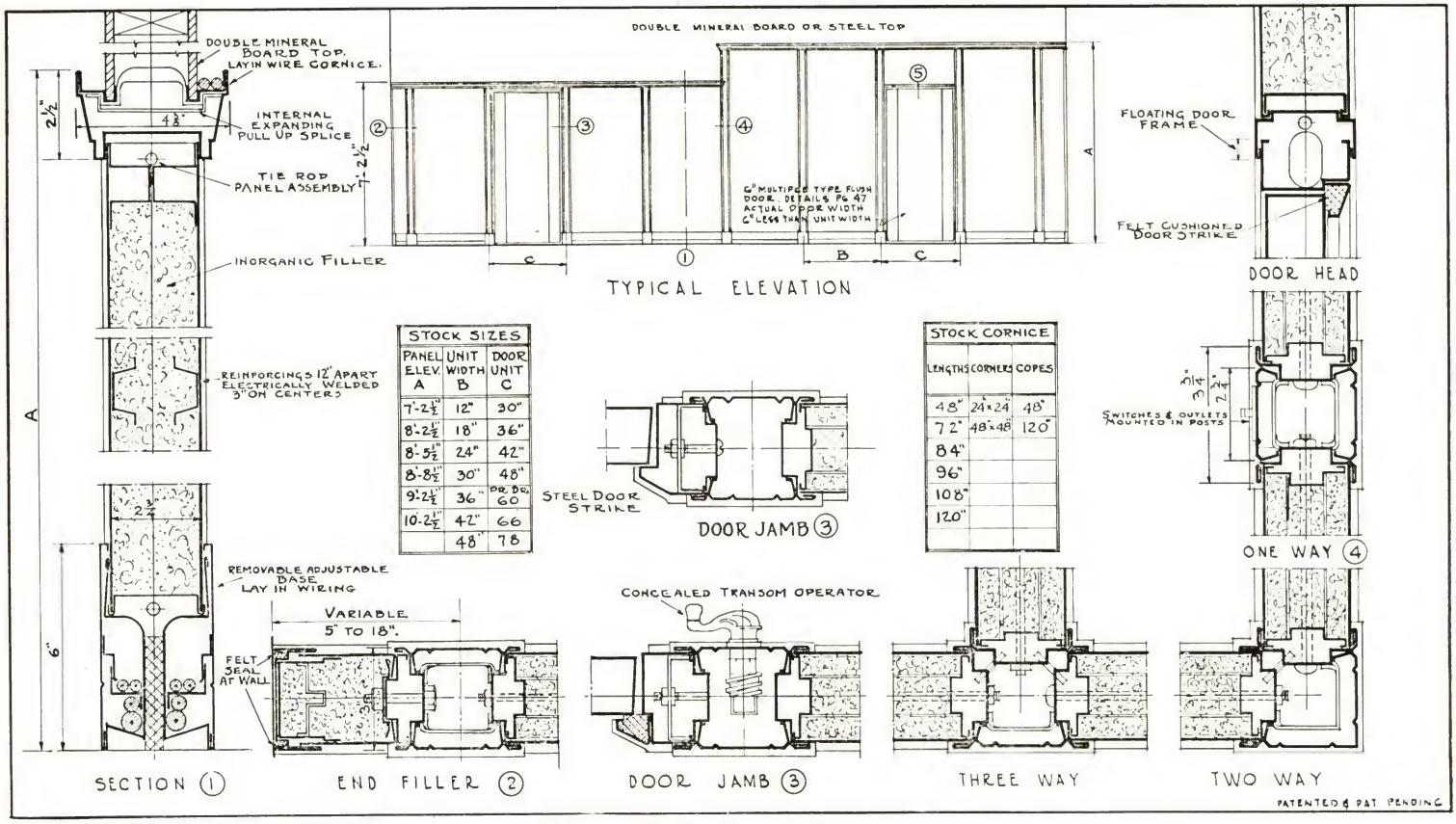
***Warren Telechron Co., Ashland, Mass.***
***Fay, Spofford & Thorndyke, Architects***

Type BB 7'-2½" corridor wall with and without top filler. Ivory finish with black base.



# TYPE CC SEMI-FLUSH STEEL

## • 2¾" De luxe construction, universal post






Type CC differs from BB primarily in that it has semi-flush pilasters instead of flush, a cornice instead of an applied picture mould, with concealed extention post to ceiling, and a 2¾" thick panel instead of a 3" panel. The CC semi-flush steel is a permanently flat Masterwall of de luxe construction, for all office uses. It is more soundproof than tile and plaster. The semi-flush steel and glass is ideal for all general office purposes where visibility or light is desired. Tie rod shop assembled panel units permit field cut down feature.

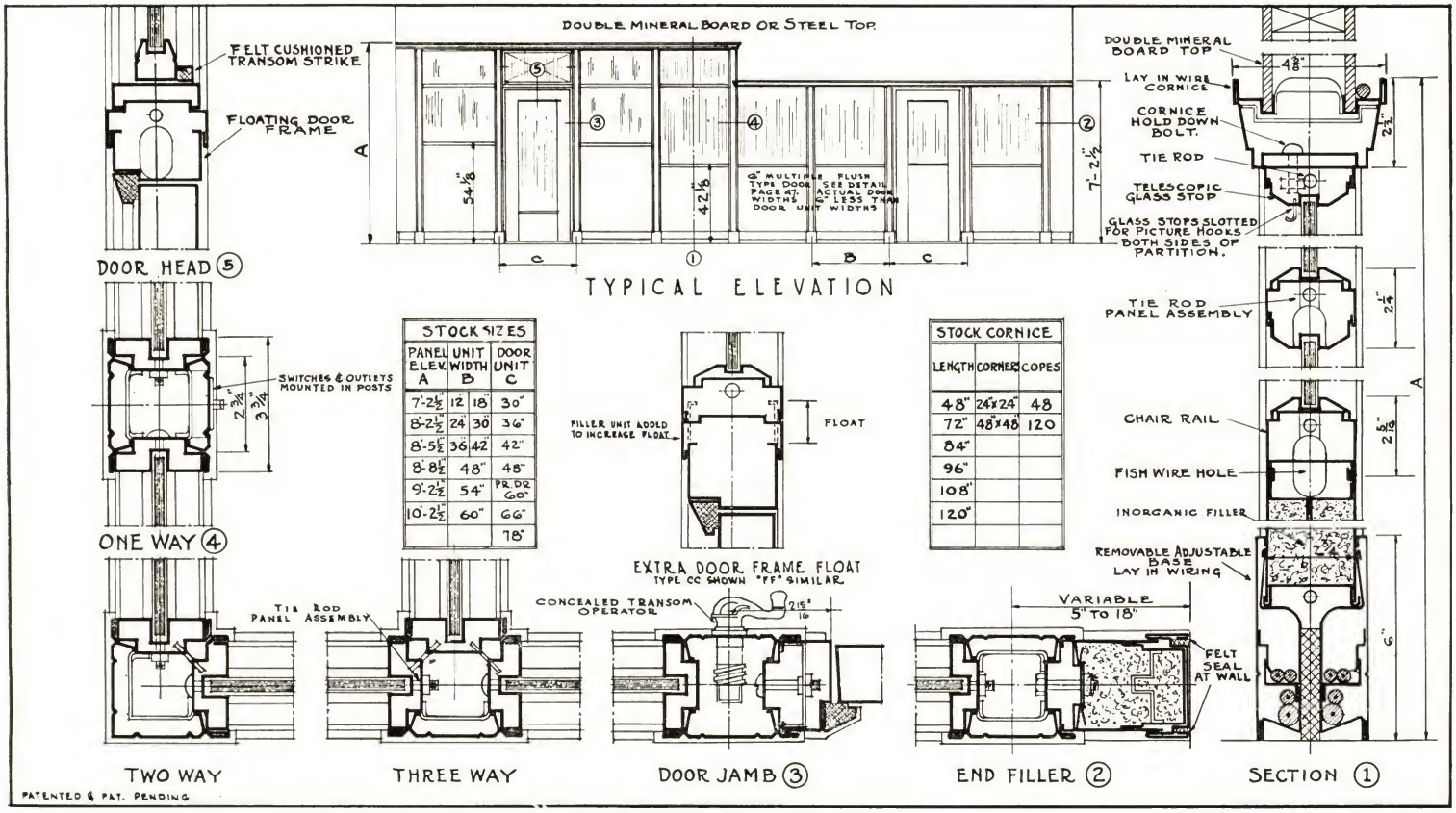
The semi-flush steel panel units are stocked in 6" multiples from 12" to 48" wide and 6 heights. The steel and glass units are in 6" multiples 12" to 60" wide, 6 elevations with 42" or 54" chair rail heights and have patented telescopic glazing throughout. All semi-flush steel panels both in the all steel and steel to chair rail are 2¾" solid packed with inorganic sound-deadening filler. De luxe construction, steel reinforced flat steel

***Intertype Corp.,***
***Los Angeles, Calif.***

Type CC 8'-8½" semi-flush steel elevation. Railing 42" high with stainless steel handrail. Grained walnut finish.

# TYPE CC-GLASS

## • 2¾" glazed, De luxe construction, universal post




STOCK SIZES

| PANEL ELEV. A | UNIT WIDTH B | | DOOR UNIT C |
|---|---|---|---|
| 7'-2½" | 12" | 18" | 30" |
| 8'-2½" | 24" | 30" | 36" |
| 8'-5½" | 36" | 42" | 42" |
| 8'-8½" | 48" | | 48" |
| 9'-2½" | 54" | | PR. DR 60" |
| 10'-2½" | 60" | | 66" |
| | | | 78" |

STOCK CORNICE

| LENGTH | CORNERS | COPES |
|---|---|---|
| 48" | 24"x24" | 48 |
| 72" | 48"x48" | 120 |
| 84" | | |
| 96" | | |
| 108" | | |
| 120" | | |

panels solid packed. Reinforcings 12" apart, electrically welded 3" on centers. Panels have deadening coat of mastic on inside. Type CC has a universal post permitting four way assembly of panel units. The rigid clip assembly of panel units is concealed by snap-on post caps. A double mineral board or double flush steel top filler is optional. Packing is recommended in top filler for soundproofness.

The door and panel units are interchangeable without disturbing cornice, top filler or adjoining units. Layin facilities are provided for wiring or air conditioning lines in base and cornice. The full floating door frame is available in either felted or steel strike. The doors may be provided with felt seal at bottom for maximum sound reduction. (See details page 28). Transoms equipped with concealed operator or friction device are available. Semi-flush steel panels or fixed glass may also be used over doors. Double glazing 42" chair rail to transom rail only is stocked. See pages 42 and 43 for railings and counters to match.

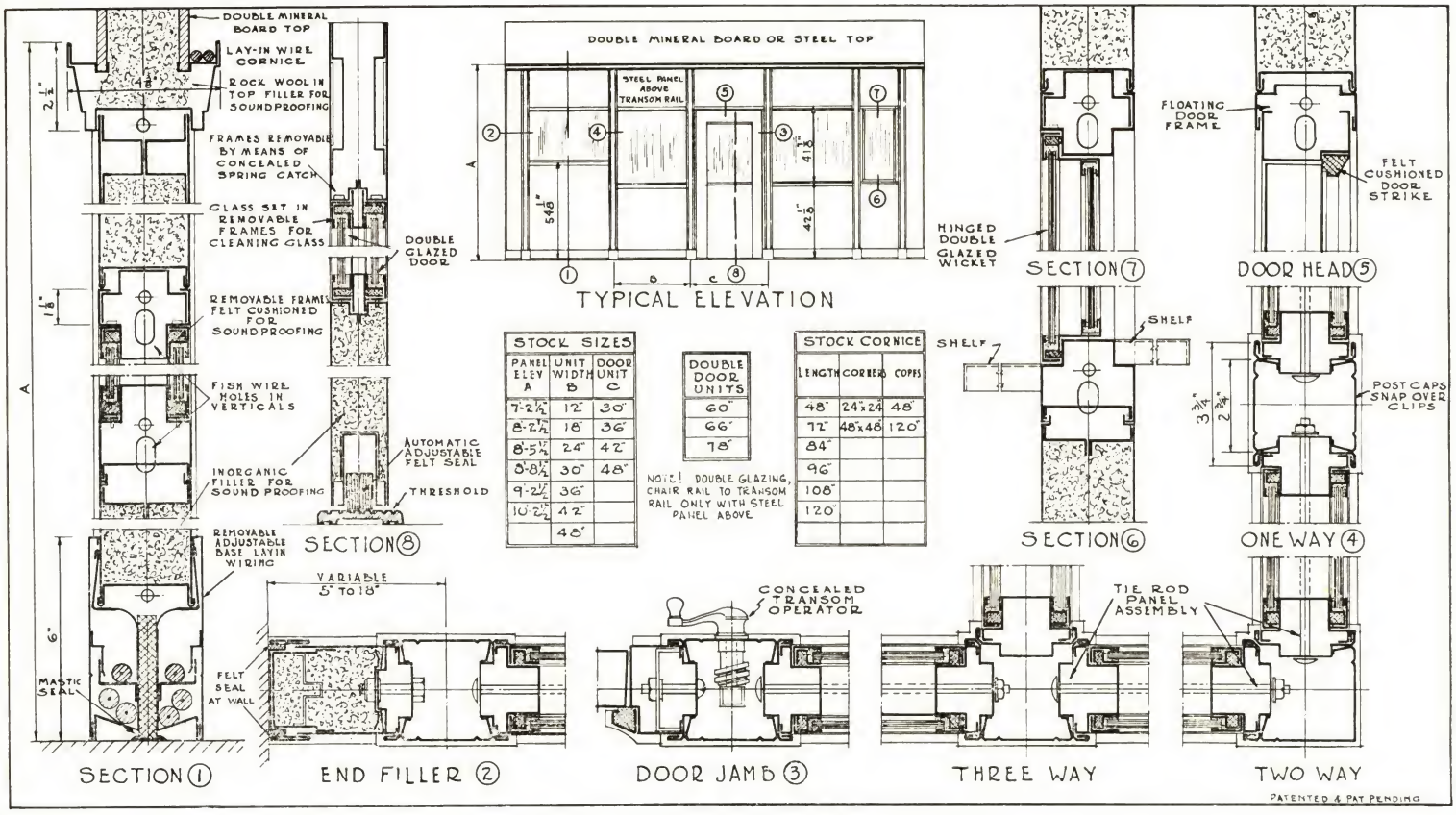
***Carnegie Illinois Steel Co., Pittsburgh, Pa.***



Type CC 9'-2½" without top filler in light buff finish with mahogany grained doors and base.

# TYPE CC-DOUBLE GLAZED

## • 3" glass, De luxe construction, soundproof, universal post




| STOCK SIZES | | |
|---|---|---|
| PANEL ELEV A | UNIT WIDTH B | DOOR UNIT C |
| 7-2½ | 12" | 30" |
| 8-2½ | 18" | 36" |
| 8-5½ | 24" | 42" |
| 8-8½ | 30" | 48" |
| 9-2½ | 36" | |
| 10-2½ | 42" | |
| | 48" | |

| DOUBLE DOOR UNITS |
|---|
| 60" |
| 66" |
| 78" |

NOTE! DOUBLE GLAZING, CHAIR RAIL TO TRANSOM RAIL ONLY WITH STEEL PANEL ABOVE

| STOCK CORNICE | | |
|---|---|---|
| LENGTH | CORNER | COPES |
| 48" | 24"x24" | 48" |
| 72" | 48"x48" | 120" |
| 84" | | |
| 96" | | |
| 108" | | |
| 120" | | |



TYPE CC DOUBLE GLAZED MASTERWALLS have double felt sealed glass frames removable for cleaning the inside of both lights of glass. Double glazing is used for all purposes where light or visibility is essential and where soundproofness is also desired. Similar details are used for double glazing types AA and BB. Panel units are stocked in 6" multiples 12" to 48" wide, 6 heights in steel, glass, steel, elevation only. There is mastic seal at the floor, packing in snap-on post caps, end fillers, cornice and plinths for soundproofness. Packed double mineral board or packed double flush steel top is optional. Tops must be packed if sound insulation equal to double glazing is maintained.

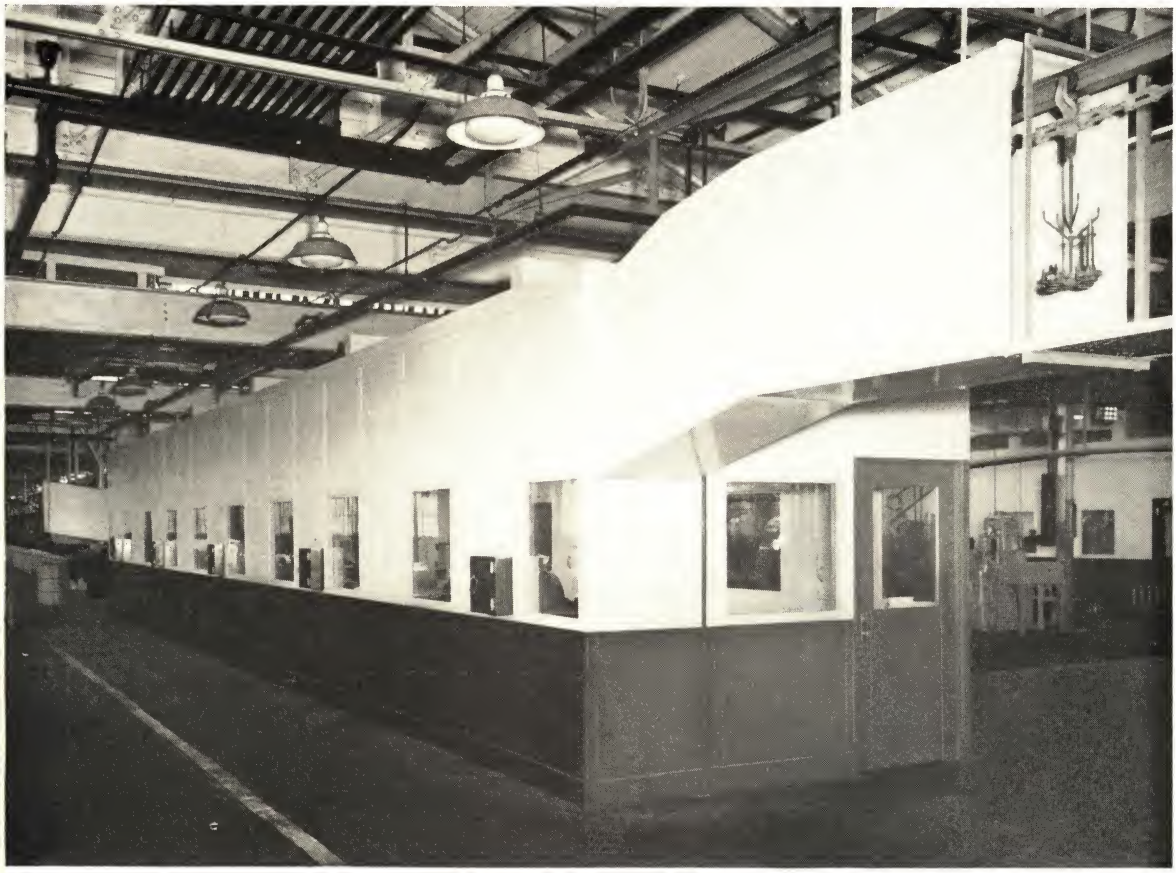
Doors should be provided with felted strike and felt seal at bottom. See details above. Fixed double glazing is used over doors, as transoms are not recommended. Single glazed transoms may be furnished with felt strikes where ventilation is imperative and decreased soundproofness recognized. We make a soundproof ventilator which is effective but more expensive.

***This is general office side of modernization installation shown on page 7.***

9'-2½" steel, glass steel double glazed. Grained walnut finish.

# TYPE CC-ACOUSTIWALL

## • De luxe construction, soundproof and sound absorbing



Exterior Sound Proof Test Room 10′—2½′ Elev. Type CC Acoustiwall with 42″ chair rail.

*Gear Testing Room*
*Buick Division*
*General Motors Corp.*
*Detroit, Mich.*

Interior Sound Proof Test Room. Note Perforated Side Walls and Ceiling. Ivory finish.

SOUNDPROOF TEST ROOM CONSTRUCTION — The illustrations show a soundproof and sound absorbing construction for Test Rooms installed in the center of a plant. The interior walls and ceiling are acoustically treated for sound absorption while the exterior walls are of solid steel. (See details page 17). The double glazing plus acousti-wall treatment prevents shop noises from penetrating the interior. Conveyor line runs uninterrupted into test room entering and leaving through ducts which are lined with sound absorbant material. The muffled construction sound absorbing ducts prevents infiltration of all shop noises. The parts to be tested enter test room by means of a conveyor or special hand holes in the sides of partition. The hand holes have a felt sealed door on each side of the partition insuring sound proofness.

The air intake and exhaust tunnels are lined with acoustical treatment and muffled.

Double glazed observation windows permit vision without sacrificing soundproofness of partition. The entrance door is felt sealed. For double glazing details see opposite page.



# TYPE DD FLUSH ASBESTOS

## • 3"-4½" solid packed, beaded or V joints



**DD** TYPE
3"-4½" FLUSH
ASBESTOS (NS)

These types of DD partitions have similar characteristics to type DD flush steel (see page 9). They differ in that they employ wood and asbestos panels instead of steel. Steel, wood, marble and asbestos are all interchangeable on either or both sides of same chassis. Designs employing vertical or horizontal panels are possible with these types of Masterwalls. They are always custom-built to individual decorative detail. They may have beaded or V joints with metal or wood mouldings of optional detail (ns). Cornice moulds, chair rail and base may be similarly supplied (ns). All type DD partitions are designed for field assembly of prefabricated parts. The outward appearance of Type DD Steel is identical with Type AA Partitions. Field packing with sound deadening filler is optional with either type and necessary where soundproofness is required. Type DD Asbestos has $\frac{7}{16}$" asbestos panels with beveled edges. Type DD Wood has panels $\frac{11}{16}$" thick of fine selected veneered plywood and can be furnished in fire insulated construction to pass building code requirements for corridor walls.

*Portion of general office*
*U. S. Tobacco Company*
*Rockefeller Center*
*New York, N. Y.*
*Reinhard & Hofmeister*
*Architects*



*Conference room*
*U. S. Tobacco Company*
*Rockefeller Center*
*New York, N. Y.*

*Reinhard & Hofmeister*
*Architects*

# TYPE DD FLUSH WOOD

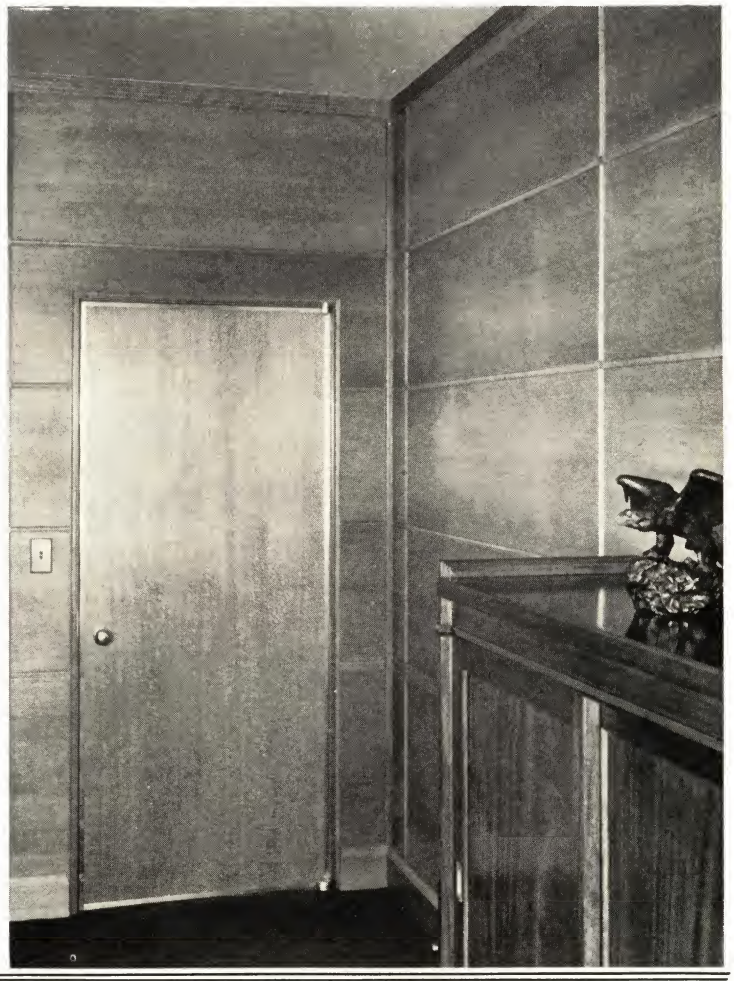
## • 3"-4½" solid packed, beaded or V joints

**DD** TYPE
3"-4½" FLUSH
WOOD (NS)

Asbestos, steel or mineral board top fillers are available or type DD asbestos. Type DD wood ordinarily does not employ a top filler as this partition is usually used with a level suspended ceiling and the wood panels run to the ceiling where they are trimmed with an applied ceiling mould. However, top fillers are furnished where desired.

The door and panel units in either type are interchangeable and partitions are completely movable. Both these types employ the same adjustable concealed steel posts which are anchored floor to ceiling at each panel joint as in type AA flush steel. Layin facilities are provided for wiring, air conditioning or plumbing lines. Floating steel door frames with felt cushioned or steel strike are available. Steel trim, base, doors, frames are all integrally built by Hauserman. The doors can be steel or wood veneer on steel as desired. Doors may be equipped with felt seal at the bottom, an important factor for best soundproof results. Transoms with concealed operator or flush panels may be used over doors. Designs, details and studies of your proposed treatments available on request.

*Private office*
*U. S. Tobacco Company*
*Rockefeller Center*
*New York, N. Y.*
*Reinhard & Hofmeister*
*Architects*



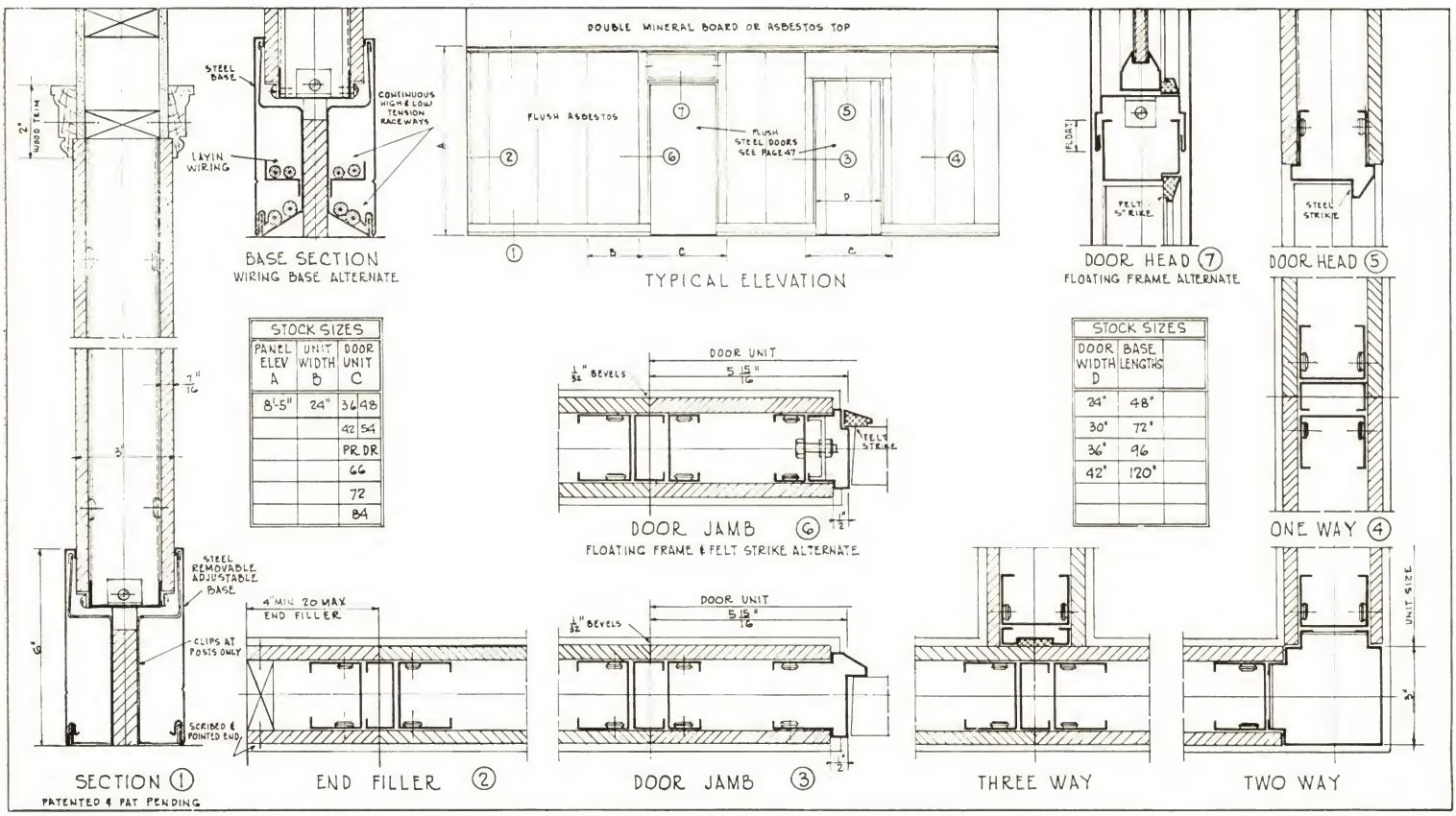


*Private Office*
*U. S. Tobacco Company*
*Rockefeller Center*
*New York, N. Y.*

*Reinhard & Hofmeister*
*Architects*

# TYPE EE FLUSH ASBESTOS

## • 3" thick — single line joint






Type EE Flush Asbestos and Asbestos and Glass are 3" thick and have shop assembled panel units. When solid packed with inorganic filler these Masterwalls are more soundproof than a tile and plaster wall. Type EE All Asbestos is absolutely flush with single $\frac{1}{32}$" bevel line joints. All Asbestos panel units are stocked in 24" units in an 8'5" elevation. Asbestos panels are $\frac{7}{16}$" thick and are secured to posts by means of concealed buttons.

Asbestos and Glass Panel units have flush asbestos with single $\frac{1}{32}$" bevel V joints to chair rail and asbestos faced posts 4" wide between glass panels. These units are stocked in 6" multiples 18" to 48" with 42" chair rail and in an 8'-5" elevation. Patented telescopic glazing is used throughout.

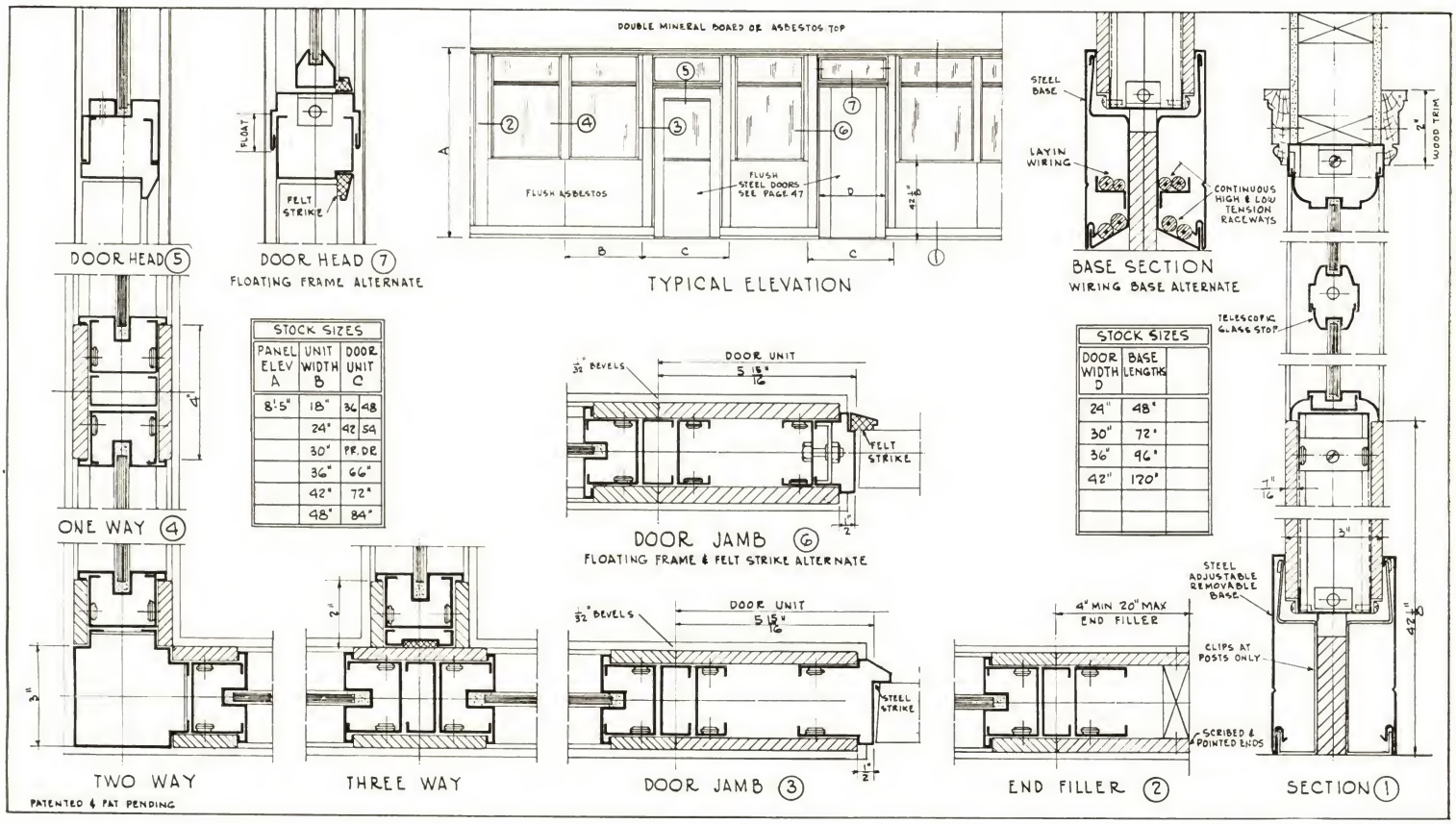
Door and panel units are interchangeable. A double mineral board or asbestos top filler matching panels is available with wood cornice trim mould. End fillers are strictly flush, scribed to the walls

***U. S. Tobacco Company,***
***Rockefeller Center,***
***New York, N. Y.***
***Reinhard & Hofmeister,***
***Architects***

Type EE Flush Asbestos 8'-5" elevation, light gray. Type CC 36" high railing with stainless steel hand rail.

# TYPE EE-ASBESTOS & GLASS

## • 3″ single glazed—single line joint




and pointed. Two types of flush door frames are available. A steel strike non-floating frame is regularly furnished but a full-floating frame with felted strike is recommended and will also be furnished at additional cost. A felt seal is also available for bottoms of doors, if desired — an important factor for sound reduction (see page 28). All doors are flush steel 1¾″ thick.

Steel base is adjustable to floor variations on both sides of partition. Base regularly furnished with clips at posts only but a double continuous raceway wiring base is also available (see details above).

There are lay-in wiring facilities, i. e., in the base through the end fillers and around the door frame. These lay-in facilities are also used for concealing air-conditioning lines and other piping, if desired.

Transoms with concealed operators, fixed glass panels or flush asbestos panels may be used above doors. Double glazed glass units are also available.

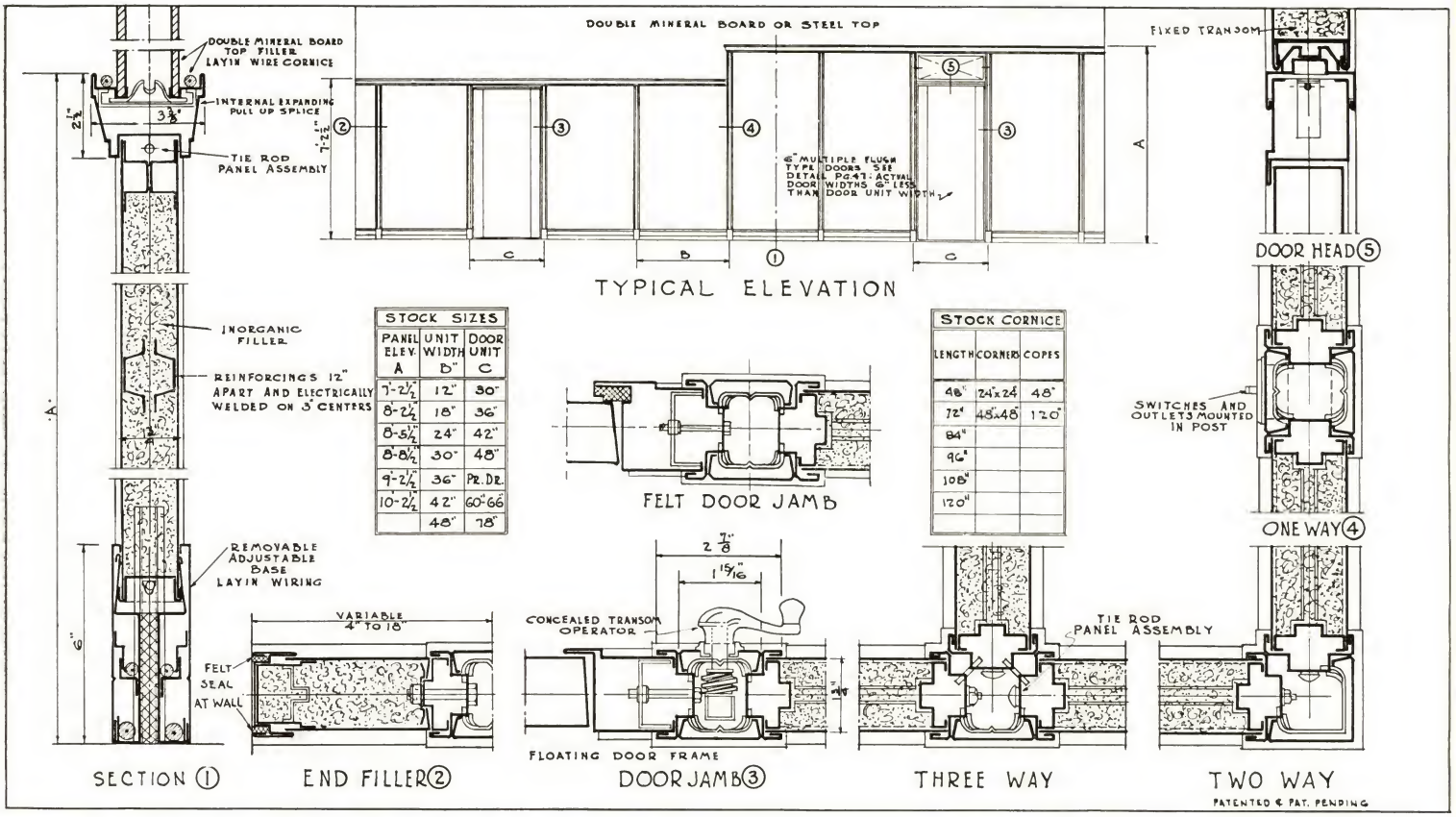
***U. S. Tobacco Company,***
***Rockefeller Center,***
***New York, N. Y.,***
***Reinhard & Hofmeister,***
***Architects***

Type EE Flush Asbestos 8′-5″ elevation with asbestos wainscoting at windows. Light gray finish.



# TYPE FF-SEMI-FLUSH STEEL

## • 1¾" De luxe construction, universal post




| STOCK SIZES | | |
|---|---|---|
| PANEL ELEV. A | UNIT WIDTH B" | DOOR UNIT C |
| 7'-2½" | 12" | 30" |
| 8'-2½" | 18" | 36" |
| 8'-5½" | 24" | 42" |
| 8'-8½" | 30" | 48" |
| 9'-2½" | 36" | Pr. Dr. |
| 10'-2½" | 42" | 60"-66" |
| | 48" | 78" |

| STOCK CORNICE | | |
|---|---|---|
| LENGTH | CORNER | COPES |
| 48" | 24"x24" | 48" |
| 72" | 48"x48" | 120" |
| 84" | | |
| 96" | | |
| 108" | | |
| 120" | | |



Type FF is essentially a glazed partition of the most refined detail. It is furnished in solid steel where desired in connection with installations largely glass and steel. The thinner panel provides a shallower reveal at the glass line and a more slender post with consequent greater glass area. It is a De luxe Masterwall of the finest type with neat, well proportioned lines. Tie rod shop assembled panel units permit field cut down feature. Type FF 2" semi-flush steel has maximum soundproofness for its panel thickness.

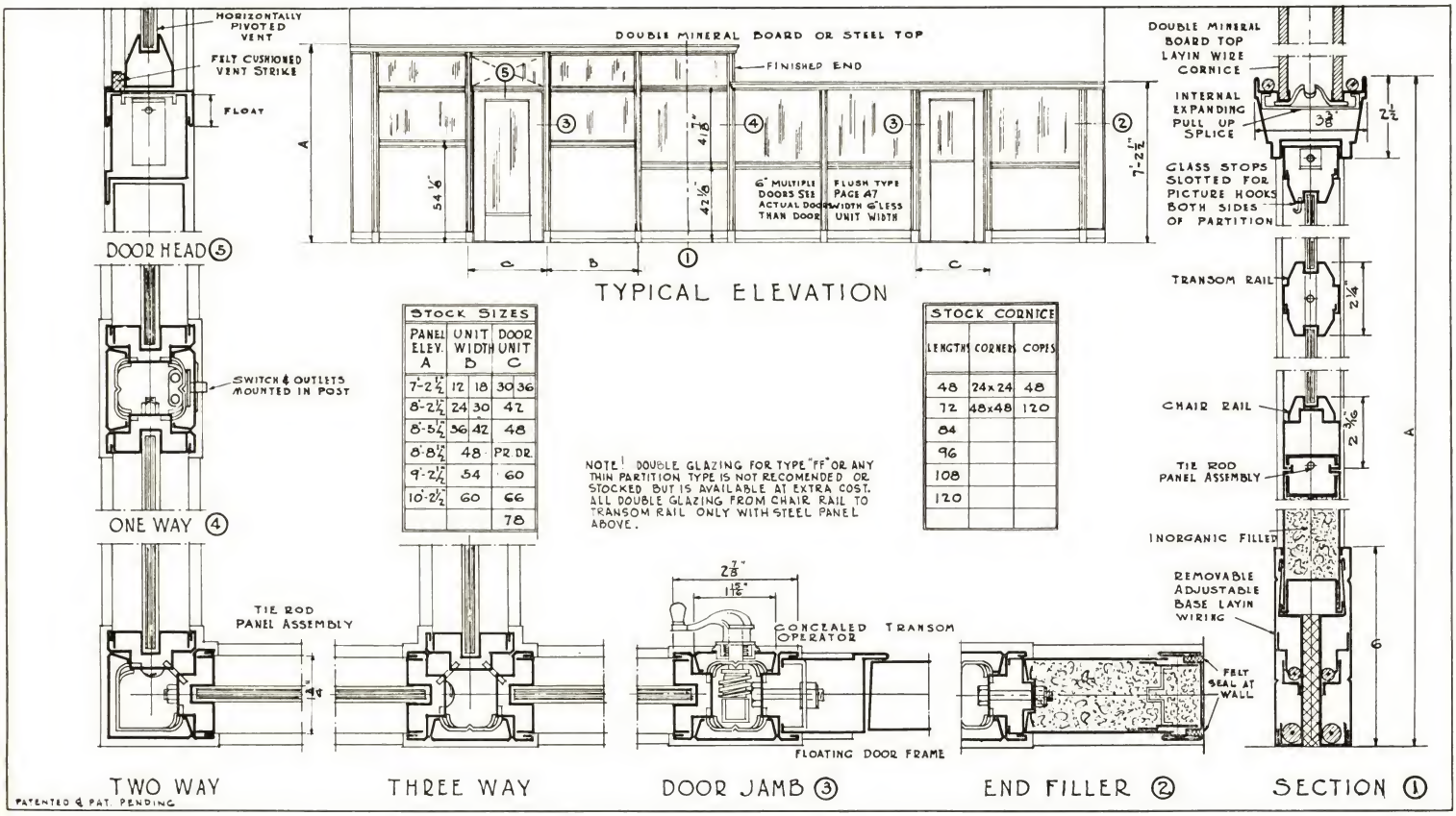
The panel units are stocked in 6" multiples from 12" to 48" wide and in 6 elevations. The glass and steel units are stocked in 6" multiples 12" to 60" wide 6 elevations with 42" or 54" chair rail height and have patented telescopic glazing detail above. All of the semi-flush steel panels in both the all steel and steel to chair rail are 1¾" solid packed with inorganic sound deadening filler.

***Upjohn Company,***
***Kalamazoo, Michigan***
***Albert Kahn Inc., Architect***

Type FF 9'-2½" elevation all steel with 9'-2½" steel glass steel 48" chair rail. Tan finish with black base.

# TYPE FF-GLASS

## • 1¾" glazed, De luxe construction, universal post




De Luxe construction, steel reinforced flat steel panels solid packed. Reinforcings spaced 12" apart electrically welded 3" on centers. Type FF has universal posts with rigid clip assembly of panel units concealed by snap-on post caps. A double mineral board or flush double steel top filler is optional with or without packing. The door and panel units are interchangeable without disturbing top filler, cornice or adjoining units.

Layin facilities are provided for wiring or air conditioning lines in base and cornice. The full floating door frame is available in either a felted or steel strike. Doors may be provided with felt seal at bottom for sound reduction if desired. (See details Page 28). Transoms with concealed operator or friction device are available. Semi-flush steel panels or a fixed glass panel may be used over doors. For railings and counters to match see Pages 42 and 43.

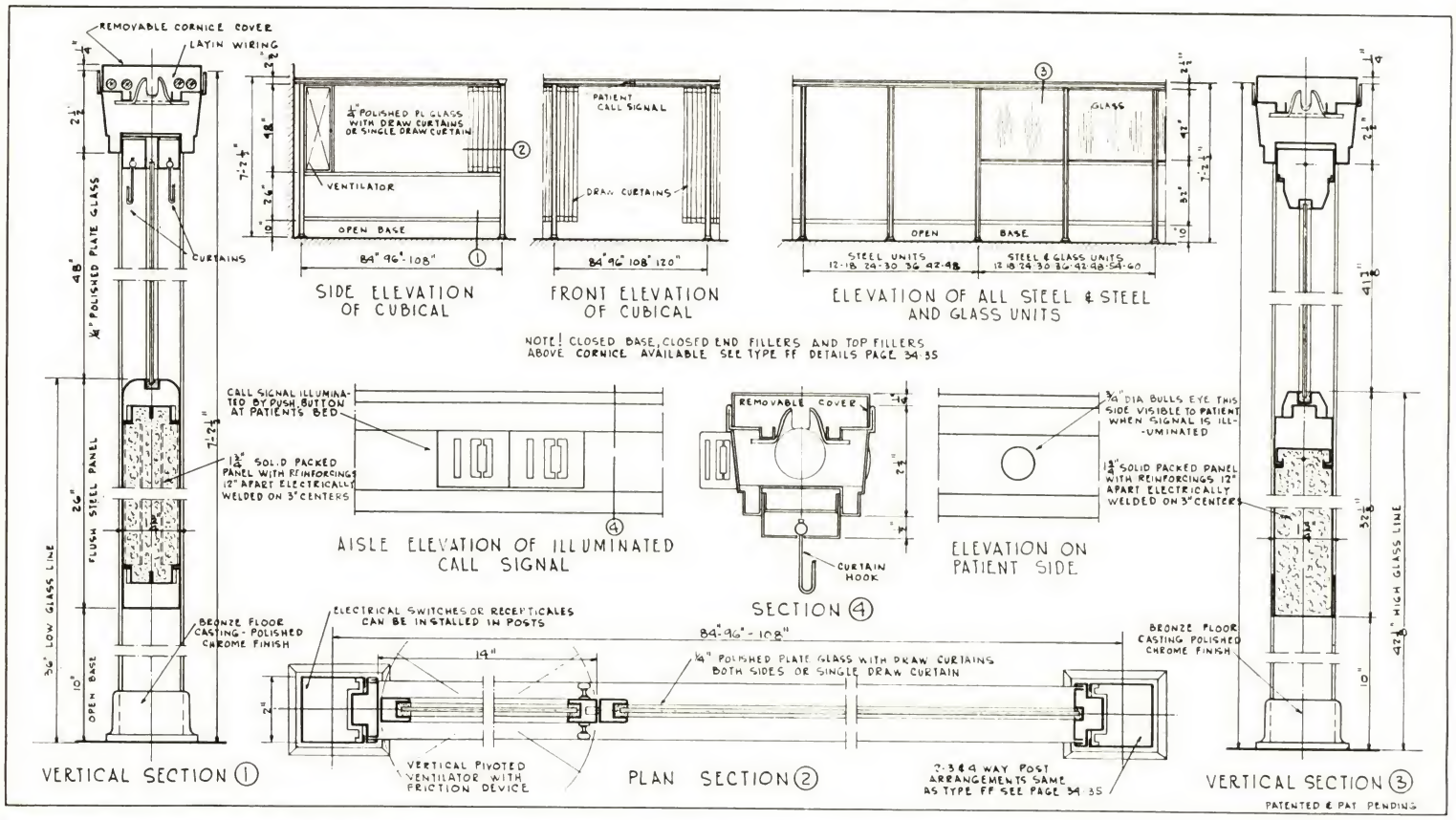
***Upjohn Company,***
***Kalamazoo, Michigan***
***Albert Kahn Inc., Architect***



Type FF 9'-2½" elevation to cornice with 48" chair rail and no transom rail. Tan finish with black base.

# HOSPITAL CUBICALS

## • maximum movability, ventilation, light






Hospital Cubical partition has the same features as type "FF" partition. Panels are 1¾" thick solid packed with inorganic sound deadening filler. Panels have reinforcings, spaced 12" apart electrically welded 3" on centers. Masterwall cubicles are flexible and can be easily moved without muss, fuss or dirt. Ventilation is provided by open ends, base, tops and ventilators in the panels when they are glazed.

Complete conversion of large rooms or areas is accomplished economically and quickly without the usual hospital ward atmosphere. Unique easy sliding ball bearing draw curtain fixtures are built in (see detail above). Cornice and universal posts provide electric wiring facilities and are sealed against dust and dirt.

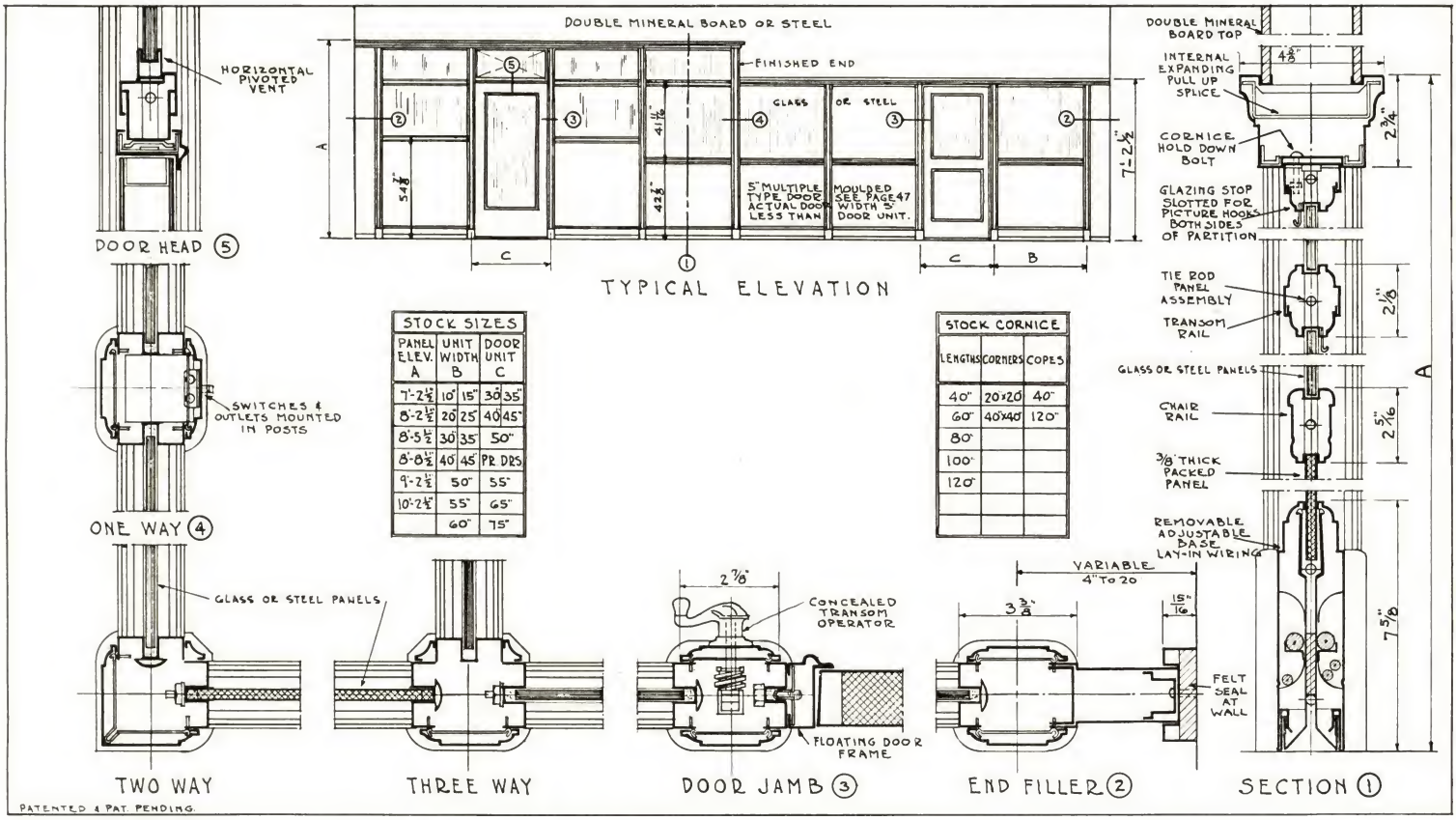
Illuminated individual patient call signals for each cubicle are furnished when specified. The call signal is built into the cornice. The extra wide glass panels give the maximum amount of light with fewer vision obstructing posts.

Stock sizes for the various combinations of cubicle are noted above on the details.

Hospital cubical 7'-2½" to cornice with open base.

# TYPE W-GLASS and STEEL & GLASS

## • 3/8" packed panel, single glazed, universal post




| STOCK SIZES | | |
|---|---|---|
| PANEL ELEV. A | UNIT WIDTH B | DOOR UNIT C |
| 7'-2½" | 10" 15" | 30" 35" |
| 8'-2½" | 20" 25" | 40" 45" |
| 8'-5½" | 30" 35" | 50" |
| 8'-8½" | 40" 45" | PR DRS |
| 9'-2½" | 50" | 55" |
| 10'-2½" | 55" | 65" |
| | 60" | 75" |

| STOCK CORNICE | | |
|---|---|---|
| LENGTHS | CORNERS | COPES |
| 40" | 20"x20" | 40" |
| 60" | 40"x40" | 120" |
| 80" | | |
| 100" | | |
| 120" | | |

Type W is of moulded design and has 3/8" solid packed steel panels. The glass panels above the chair rail are interchangeable with 3/8" packed steel panels and can be had in any combination. The tie rod shop assembled panel units permit field cut down. Type W has the patented telescopic glazing detail, universal post, and layin wiring base. The 3/8" solid packed panels consist of two steel plates cemented one on each side of a mineral board filler. Door and panel units are interchangeable.

The door frame is floating and has a steel strike. Transoms with concealed operator or friction device are available. Double mineral board or double flush steel top filler is available. See page 42 — for railing and counters to match.

Panel units are stocked in 5" multiples from 10" to 60" wide and in 6 heights with 42" or 54" high chair rail.

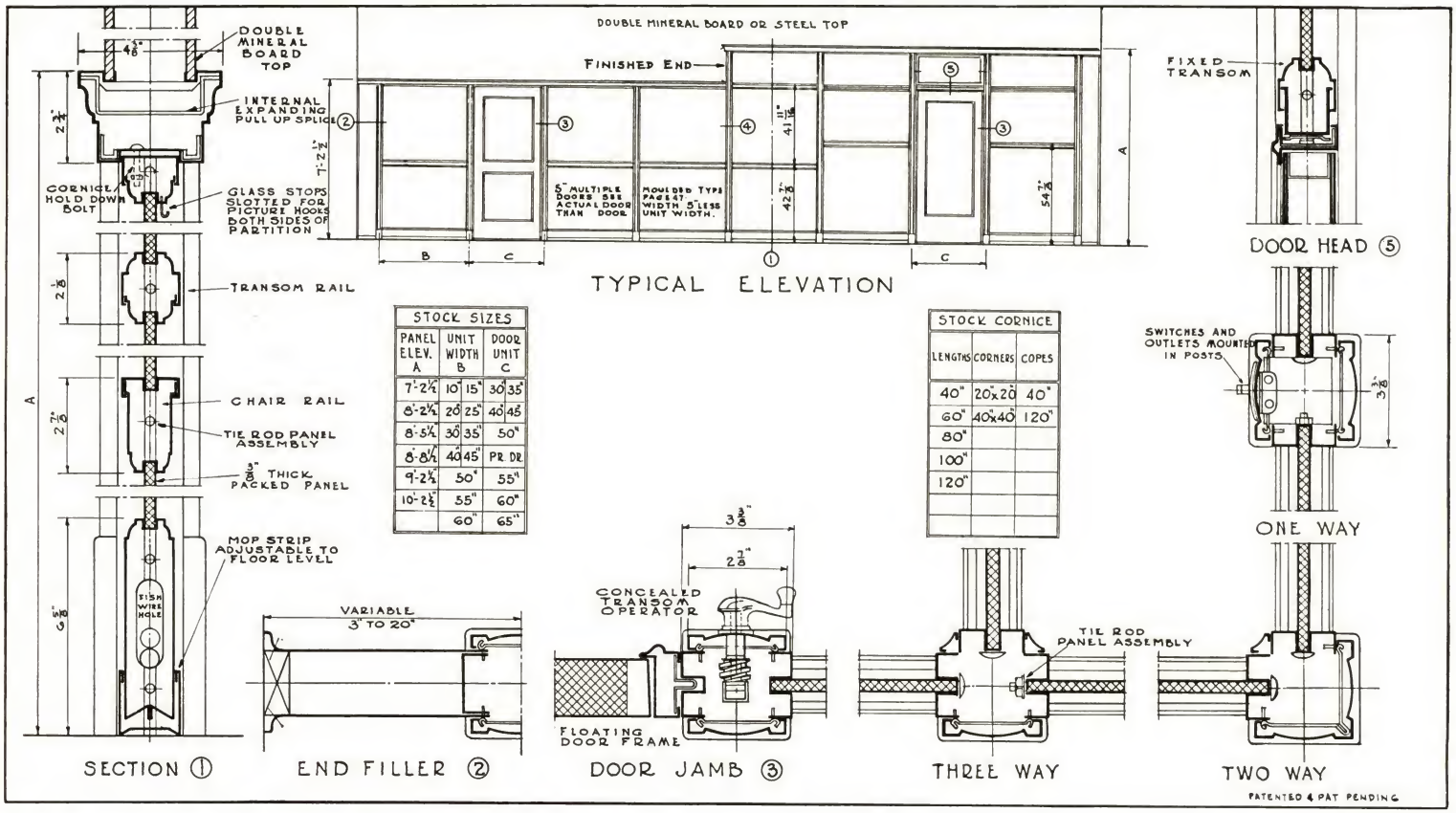
***E. I. DuPont De Nemours & Co.***
***Empire State Building,***
***New York City, N. Y.***

Type W 8'-5½" elevation with railing to match. Aurora glass to 7'-0", clear glass above. Walnut grain finish with 2" high black mopstrip and black painted handrail. This type is standard for the Empire State Building which has over 200,000 sq. ft. installed.



# TYPE R-STEEL

## • 3/8" packed panel — universal post




STOCK SIZES

| PANEL ELEV. A | UNIT WIDTH B | | DOOR UNIT C | |
|---|---|---|---|---|
| 7'-2½ | 10" | 15" | 30" | 35" |
| 8'-2½ | 20" | 25" | 40" | 45" |
| 8'-5½ | 30" | 35" | 50" | |
| 8'-8½ | 40" | 45" | PR DR | |
| 9'-2½ | 50" | | 55" | |
| 10'-2½ | 55" | | 60" | |
| | 60" | | 65" | |

STOCK CORNICE

| LENGTHS | CORNERS | COPES |
|---|---|---|
| 40" | 20"x20" | 40" |
| 60" | 40"x40" | 120" |
| 80" | | |
| 100" | | |
| 120" | | |



Type R differs from Type W, in that it has a different moulded design of post cap and has a fish wire base instead of layin wiring base. It is a very economical masterwall for all general office and industrial purposes. Type R has 3/8" solid packed panels with glass and steel panels interchangeable above chair rail and is available in any combinations of glass and steel. Tie rod shop assembled panel units permit field cut down feature. The panel units are stocked in 5" multiples from 10" to 60" wide, in 6 elevations with 42", 48" and 54" chair rail. The 3/8" solid packed panels consist of two steel plates cemented to either side of a mineral board filler. Patented telescopic

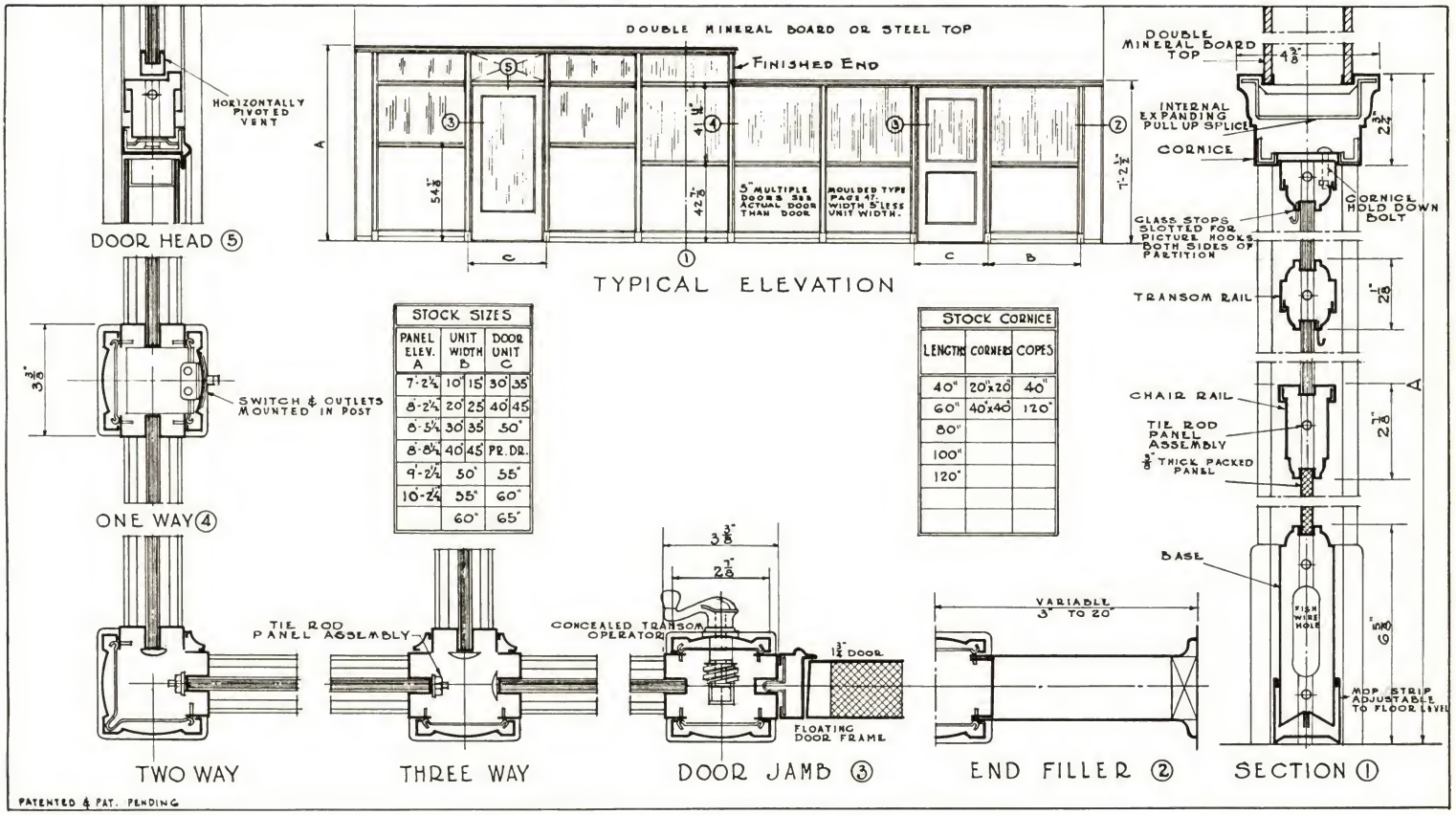
***Texas Company***
***Chrysler Building,***
***New York City, N. Y.***

Type R 8'-2½" elevation solid steel to 7'-0" with glass above. Grained walnut finish.

This type is standard for many offfce buildings including the Chrysler Building which has over 250,000 sq. ft. installed.

# TYPE R-GLASS

## • single glazed — universal post




| STOCK SIZES | | | | |
|---|---|---|---|---|
| PANEL ELEV. A | UNIT WIDTH B | | DOOR UNIT C | |
| 7'-2¼" | 10" | 15" | 30" | 35" |
| 8'-2¼" | 20" | 25" | 40" | 45" |
| 8'-5¼" | 30" | 35" | 50" | |
| 8'-8¼" | 40" | 45" | PR. DR. | |
| 9'-2¼" | 50" | | 55" | |
| 10'-2¼" | 55" | | 60" | |
| | 60" | | 65" | |

| STOCK CORNICE | | |
|---|---|---|
| LENGTH | CORNERS | COPES |
| 40" | 20"x20" | 40" |
| 60" | 40"x40" | 120° |
| 80" | | |
| 100" | | |
| 120" | | |

glazing used throughout for glass or steel glazing. Type R has universal posts with rigid clip assembly of panel units, concealed by snap-on post caps. A double mineral board or double flush steel top filler is available. Fish wire base is provided for wiring facilities.

The door and panel units are interchangeable without disturbing cornice, top filler or adjoining units. The door frame is floating and has a steel strike. Transoms with concealed operator or friction device are available. Fixed glass or steel panels may be used over doors. Moulded design railings and counters to match are detailed on pages 42 and 43.

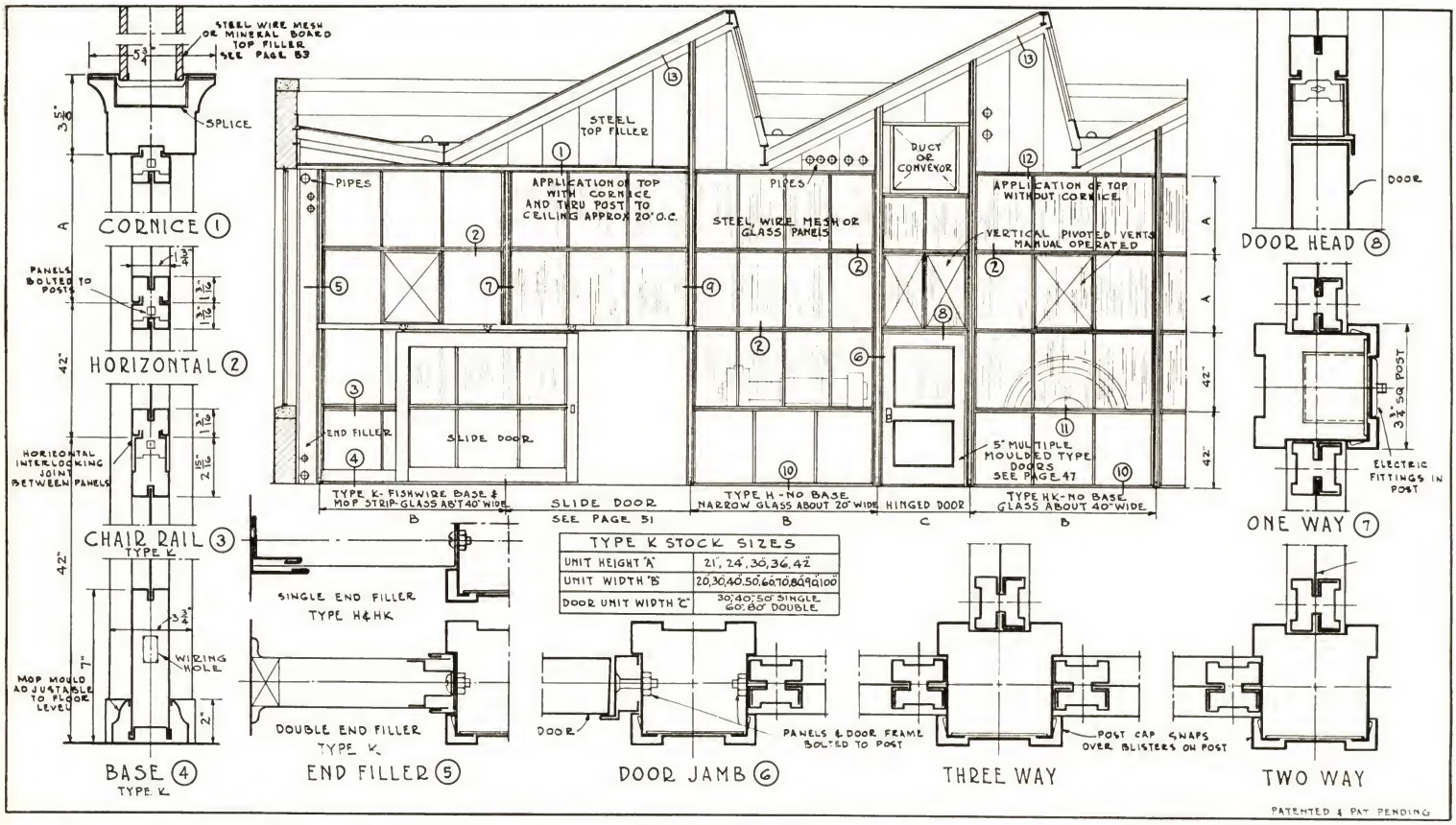


*General Motors Corporation, Detroit, Mich.*

Type R 9'-2½" elevation. Clear glass above chair rail. Grained walnut finish.

# TYPE HK-K INDUSTRIAL

## • single steel panels — universal posts






Type HK, Kand H differ from type R and all other types in that they have vertical as well as horizontal assembly of panels. They have No. 18 gauge single steel panels instead of packed panels. These Masterwalls are field assembled from prefabricated panels and posts. A very rugged and economical type for all industrial purposes, adaptable to high ceilings, trusses, saw tooth roofs, etc.

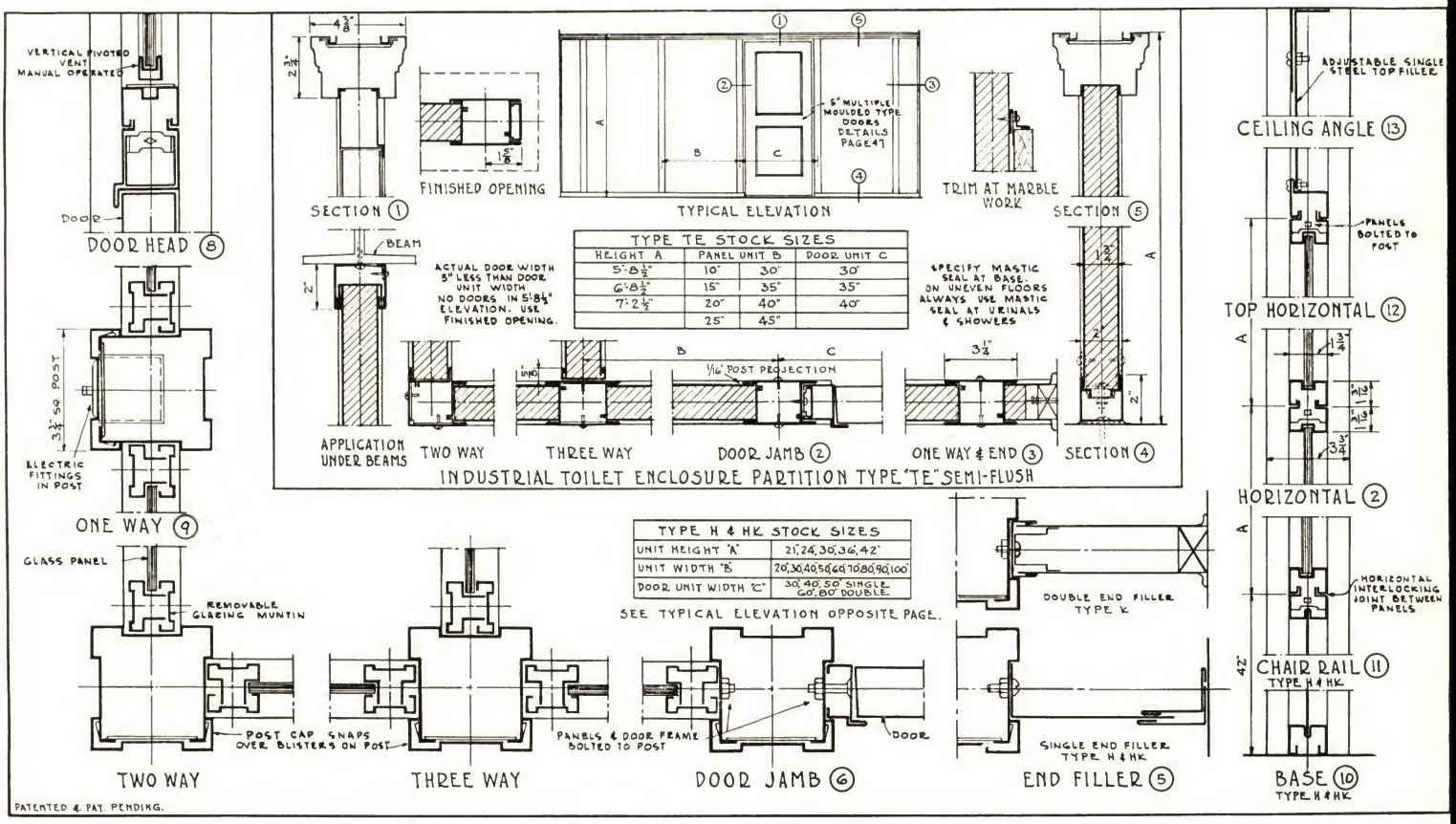
Panels are available in single steel, glass or wire mesh. For stock sizes; see details. The panels and door units are interchangeable. Single steel adjustable top or wire mesh top filler is available. Wiring facilities in posts only for Types HK and H. Type K has fish wire base with adjustable mop strip, a cornice and double mineral board or steel top filler. Type H has no base, narrow 20" glass lights. Type HK has no base and glass lights about 40" wide.

***Curtis Aeroplane Co., Buffalo, N. Y.***

Type HK 7'-3" cornice high in foreground. Type HK approx. 18'-0" to underside of truss in background with steel filler to underside of sloped roof.

# TYPES H-TE INDUSTRIAL

## • rugged and economical




Type TE (details above) differs from all other types: as it is progressively erected from prefabricated panels and posts. It was designed primarily as an enclosure wall for industrial toilets and washrooms and is adaptable to mezzanines or restricted ceiling heights. It has 1¾" solid packed steel panels, with inorganic filler.

Panel units and door are not interchangeable without dismantling run, but partition is completely movable. The panel units are stocked in 5" multiples 10" to 45" in 5'-8½", 6'-8½", 7'-2½" heights. Door units are stocked in 30", 35" and 40" widths. Top filler is not recommended because of ventilation, but mineral board or steel top filler is available if desired. The floating door frame has a steel strike. The base mould is set in mastic.

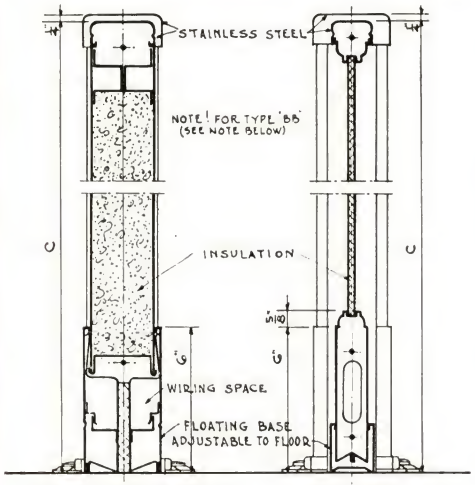
***Plymouth Division,***
***Chrysler Corp.,***
***Detroit, Mich.***



Type H with K cornice (in background) approx. 12'-6" high, glass to 10'-6". Employees conference room type CC soundproof and sound absorbing (in foreground).

# MASTER RAILINGS

## • flush, semi-flush and moulded types




VERTICAL SECTION
RAILING

**RAILINGS** — Flush and moulded type low railing with sectional hand rails and post capitals are stocked in 36", 42", 54" heights. Glazed railing with continuous hand rail is stocked in a 42" height.

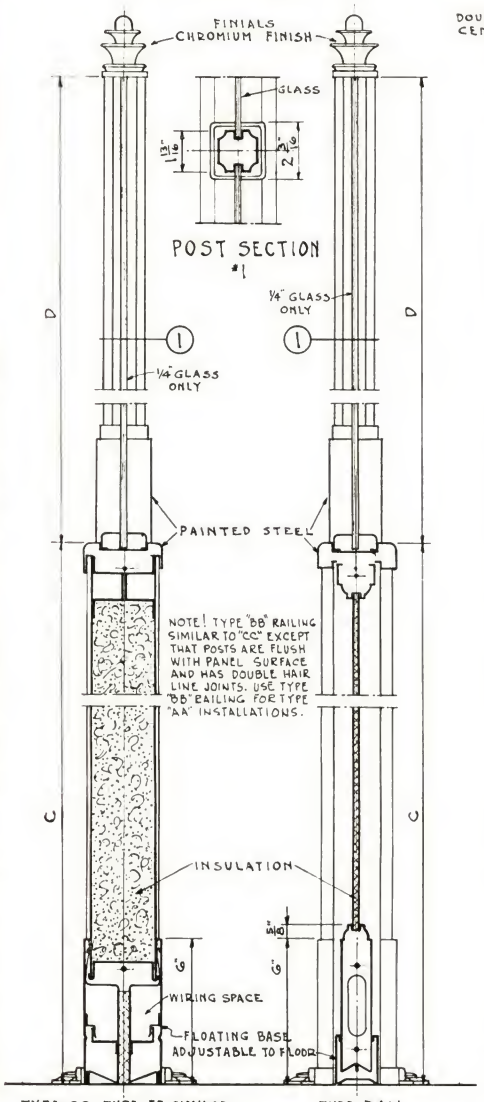
Handrails, Gate Crowns and Post Capitals are recommended only in stainless steel, satin finish (Tampico Brush) for the simple reason that this is the only material which does not need painting or maintenance polishing and consequently is the only finish which will not wear off or discolor from constant contact with the acids of the hand, the worst enemy of painted finishes.

Bronze finish is stocked but not recommended because of tarnishing. Painted steel in black or to match railing color is stocked to meet any demand for a relatively small saving.

Posts of smart design and slender proportions are used for glazed railings and are painted black, metallic or to match body of railing. Finials are stocked in chromium or bronze finish. Wickets or grilles to match may be installed in place of glass between posts. Railings are securely anchored to the floor and held rigid with substantial reinforcing posts through the verticals.

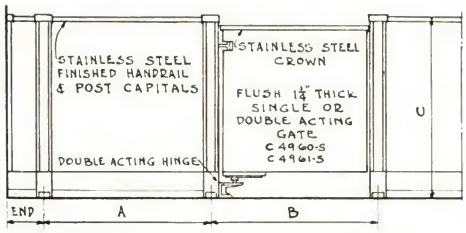
Low gates are stocked with Hauserman Self Centering, Double Acting Hinge or with Single Acting Checking Hinge. Wherever a secret gate latch or a lock is used on single acting gate . . . the gate should swing towards the inside. Single acting gates should always be provided with checking hinge and full height felt stops. Bottom hinge is regularly finished in plain color to match railing. All high gates are 1¼" thick and are furnished only with single acting checking hinge.

Low gates for all thick types are 1¼" thick. Low gates for all moulded types are ¾" thick.

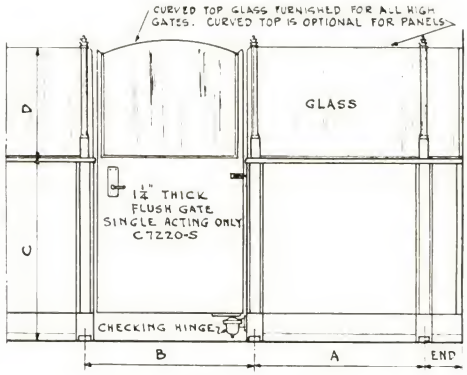



VERTICAL SECTION
GLAZED RAILING



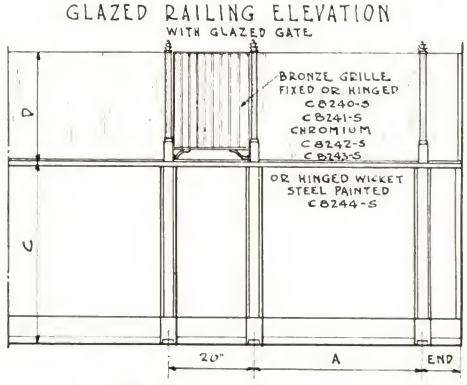




TYPICAL RAILING ELEVATION

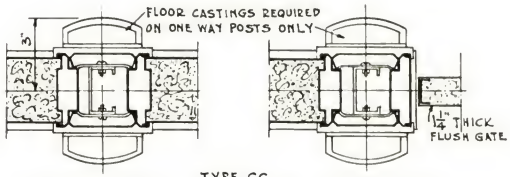


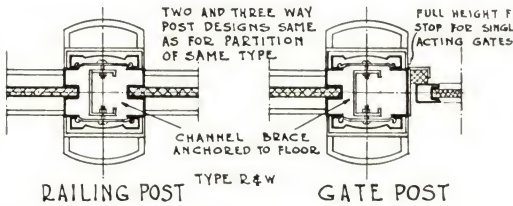

GLAZED RAILING ELEVATION

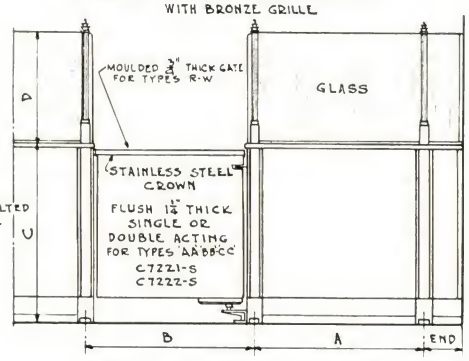
| SCHEDULE OF STOCK SIZES | | | | | |
|---|---|---|---|---|---|
| ITEM | TYPE | A | B | C | D |
| RAILING | BB,CC | 12" TO 60" 6" MULTIPLES | 36" | 36"-42"-54" | |
| " | FF | " | 36" | " | |
| " | R-W | 10" TO 60" 5" MULTIPLES | 35" | 36"-41"-54" | |
| " | WW | " | 35" | " | |
| NOTE: ON 54" HIGH UNITS, 46" & 50" MAX. WIDTH ON 6" & 5" MULTIPLE UNITS. | | | | | |
| GLAZED RAILING | BB,CC | 12" TO 60" 6" MULTIPLES | 36" | 42¼" | 23¾" |
| " " | FF | " | 36" | 42¼" | 23¾" |
| " " | R-W | 10" TO 60" 5" MULTIPLES | 35" | 41¼" | 23¾" |
| " " | WW | " | 35" | 41¼" | 23¾" |
| SCHEDULE OF CUT DOWN STOCK SIZES | | | | | |
| GLAZED RAILING | 42¼" STEEL PANEL WITH 11¾" OR 17¾" GLASS | | | | |
| " " | 54¼" " " " 11¾" OR 17¾" GLASS | | | | |
| NOTE! USE TYPE CC(6) WITH TYPES CC, FF. USE TYPE BB(6) WITH TYPE AA, BB, DD. | | | | | |




GLAZED RAILING ELEVATION
WITH GLAZED GATE




GLAZED RAILING ELEVATION
WITH LOW GATE

SHIPPING CLASSIFICATION
SUFFIX S = IN STOCK. CS = CUTDOWN STOCK. NS = NO STOCK

PATENTED & PAT. PENDING.

# COUNTERS-DISPLAY CASES

## • harmonizes with partition — completely movable

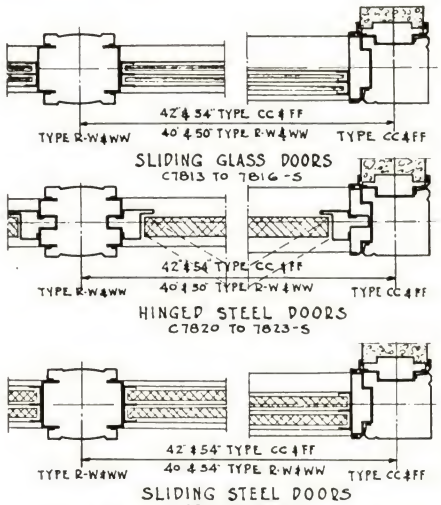
**COUNTERS** — Besides beauty, convenience and endurance these Hauserman Counters are both movable and salvable. They have the same interchangeable features as all Masterwalls They will long outlive the most extended depreciation. Alterations and additions involving partitions and accessories can be quickly made. Counter tops can be cut or spliced. Balance of counter parts are in stock.

Hauserman Counters are designed to harmonize with partitions and railings. Counters may be open or closed back with sliding glass, sliding steel or hinged steel doors. Adjustable or fixed steel or glass shelves can be provided if desired. Counters are also furnished with glass front panel and lighting for use as display cases.

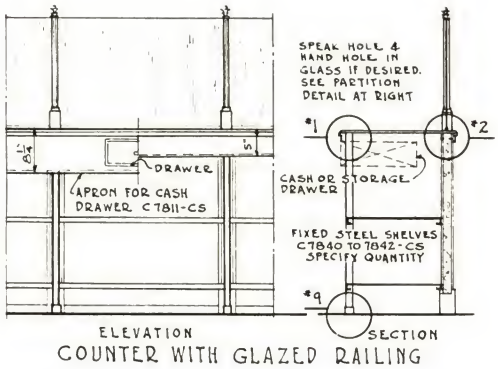
Space under the counters can be divided into sections by means of panels placed between the panel units. Stock cash drawers are equipped with bill compartments, sliding coin trays and paracentric locks only. Storage drawers are similar in construction but with compartments and trays omitted.

Stock sliding steel and hinged steel doors are provided with flat key locks only. Keys to counter doors and cash drawers are regularly furnished from stock and are keyed individually. If locks keyed alike are desired they must be so specified and additional delivery time allowed. See list of linoleum colors to harmonize with partition finishes below. No. 4416 Dark Brown and 2016 Dark Green are stock.

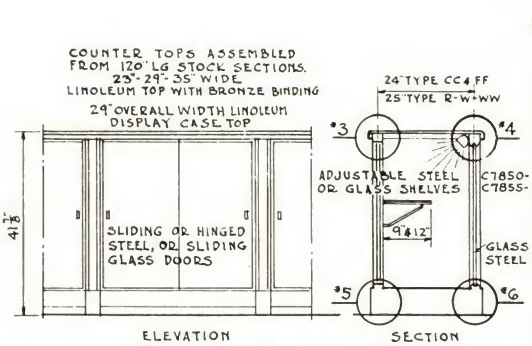
*Important Note: The Hauserman Company is not interested in counter business except as an integral part of a partition installation. We are not manufacturers of stock furniture or case goods.*



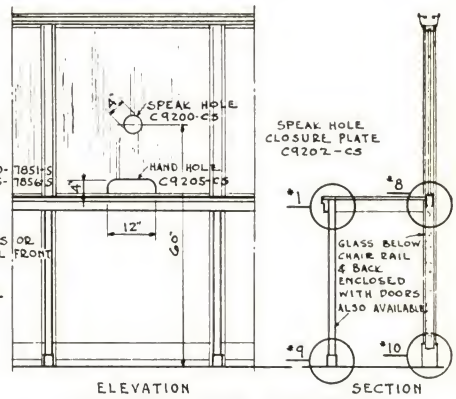

COUNTER & DISPLAY CASE DOORS



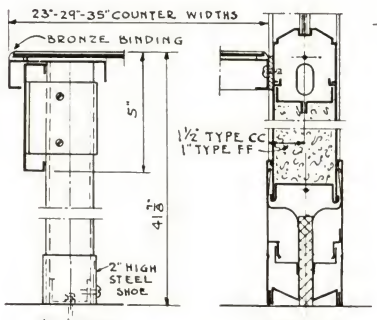

COUNTER WITH GLAZED RAILING

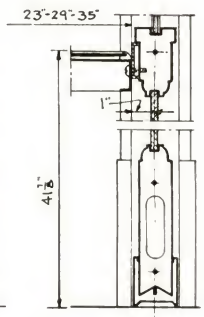


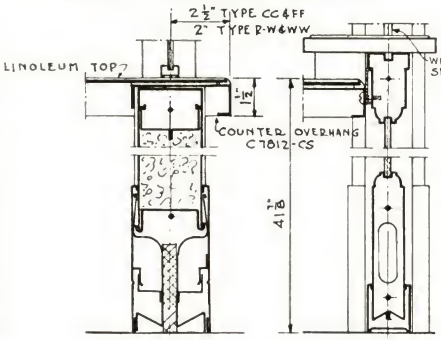

DISPLAY CASE OR COUNTER

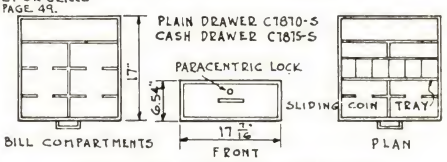



COUNTER WITH PARTITION



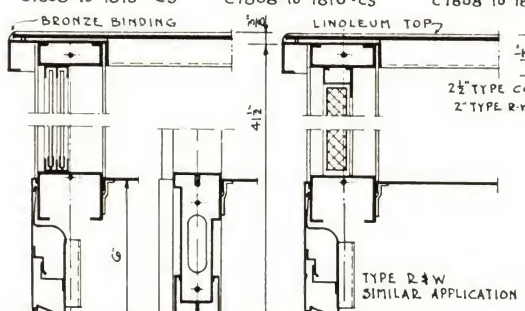



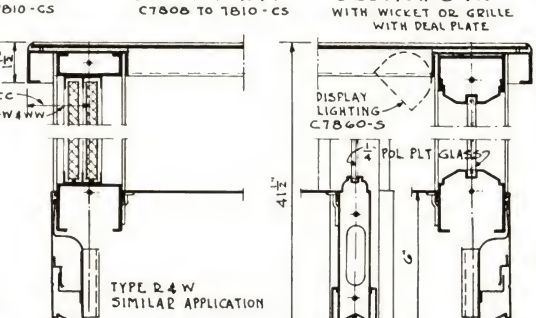



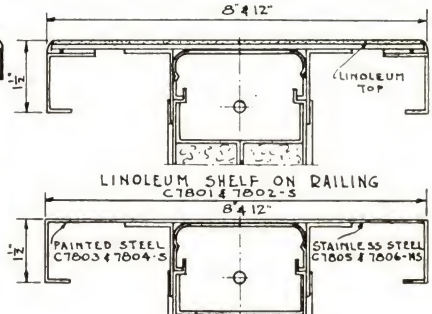




CASH OR STORAGE DRAWERS

| LINOLEUM COLOR NUMBERS | | | | | |
|---|---|---|---|---|---|
| COLOR | E. F. H. CO | ARMSTRONG | COLOR | E. F. H. CO | ARMSTRONG |
| DK. BROWN | 4416 | 20 | DK. GREY | 4438 | 22 |
| LT. BROWN | 3129 | 28 | LT GREY | 4436 | 26 |
| DK GREEN | 2016 | 21 | BLUE | 4421 | 43 |
| LT GREEN | 2010 | 42 | BLACK | 4380 | 27 |



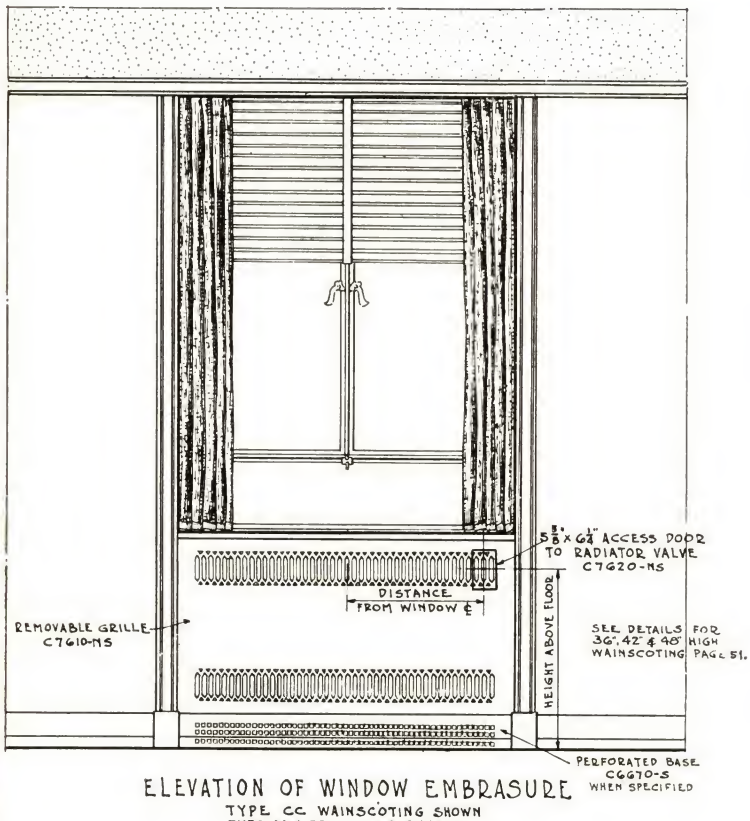

PATENTED & PAT PENDING

SHIPPING CLASSIFICATION
SUFFIX S = IN STOCK CS = CUTDOWN STOCK NS = NO STOCK

**A HAUSERMAN PARTITION WILL NEVER BE AN ORPHAN**

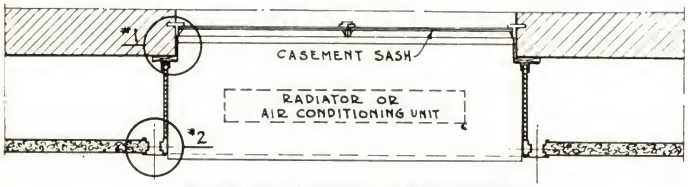
# MASTERWALL WAINSCOTINGS

## • make attractive interiors

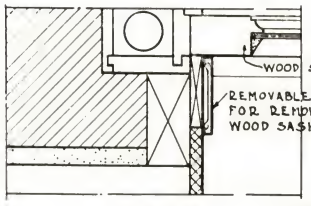



ELEVATION OF WINDOW EMBRASURE

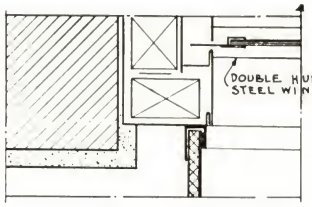
TYPE CC WAINSCOTING SHOWN
TYPE AA & DD SIMILAR EXCEPT
SINGLE LINE IN PLACE OF SEMI-FLUSH POSTS
C7600-CS



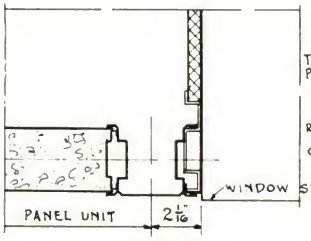

PLAN OF WINDOW EMBRASURE



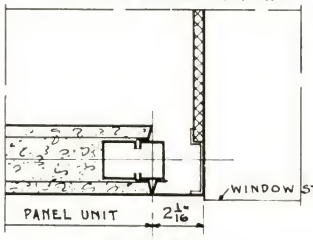

PLAN #1
FOR WOOD SASH



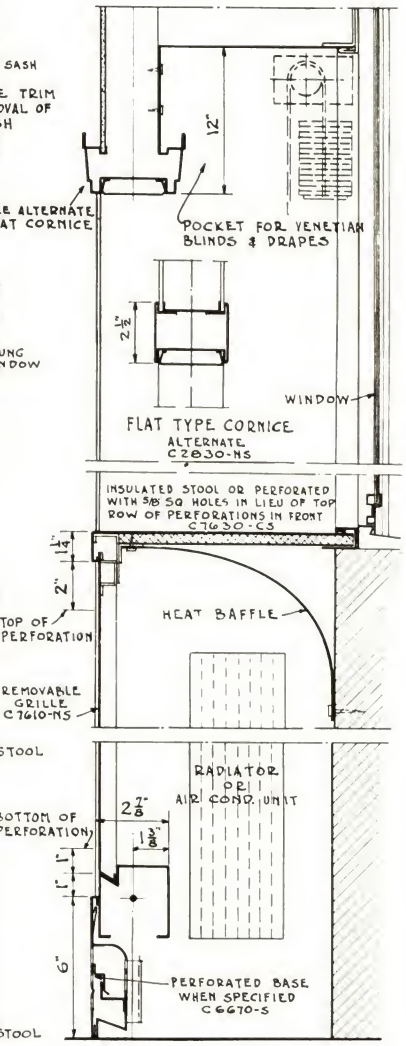

PLAN #1
FOR STEEL SASH



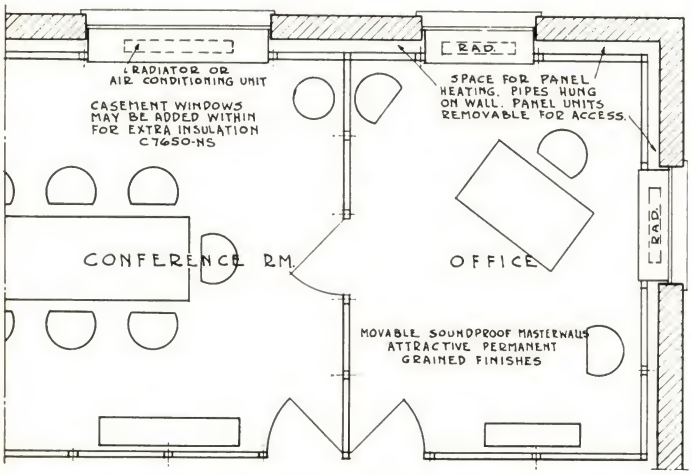

PLAN #2
TYPE CC WINDOW RETURN



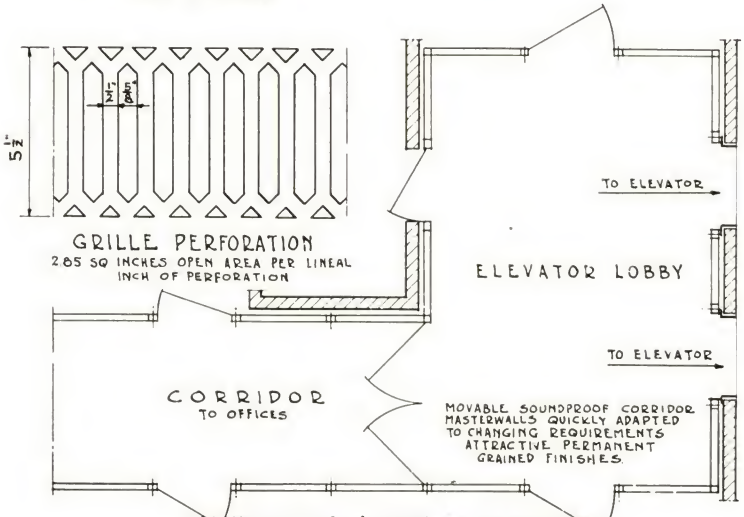

PLAN #2
TYPE AA WINDOW RETURN
TYPE DD SIMILAR




SECTION THRU
WINDOW EMBRASURE




WAINSCOTED OFFICE & CONFERENCE ROOM



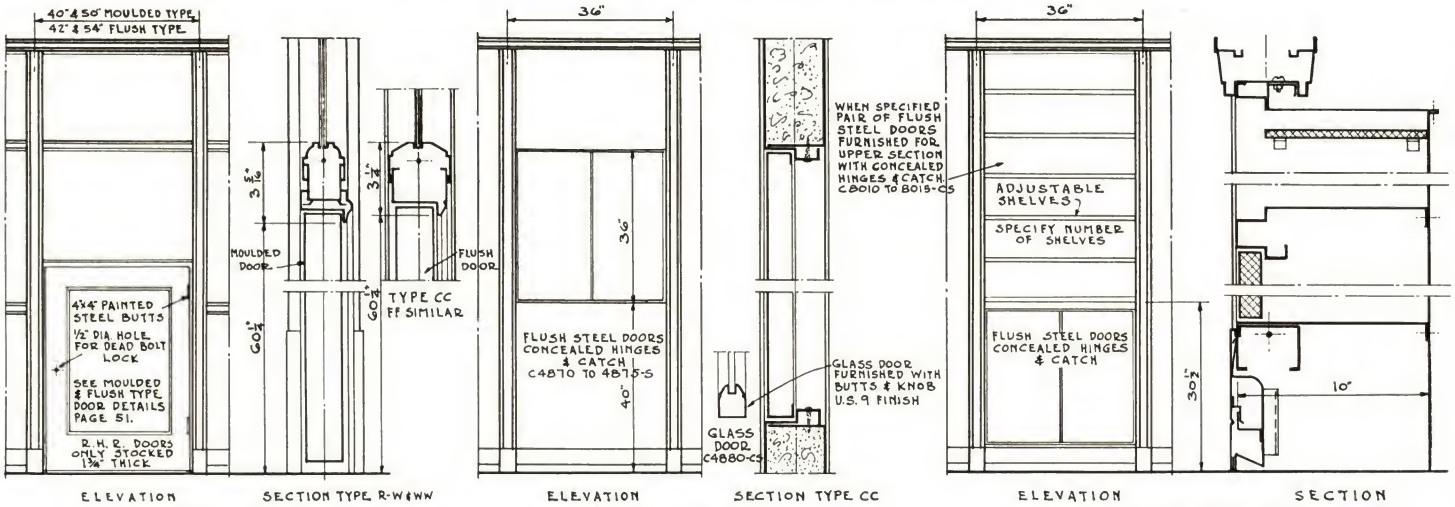

WAINSCOTED LOBBY & CORRIDOR

SHIPPING CLASSIFICATION
SUFFIX S = IN STOCK CS = CUTDOWN STOCK NS = NO STOCK

PATENTED & PAT. PENDING

# DELUXE REFINEMENTS

## • bookcases, grilles, wickets, access doors

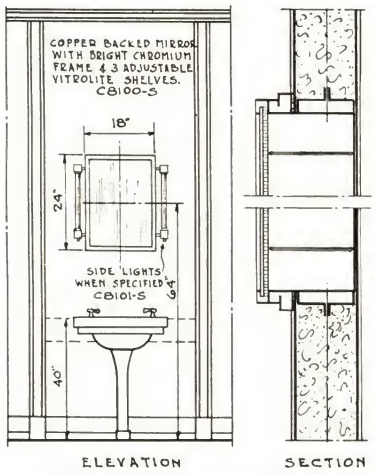



ACCESS DOORS TO TELEPHONE SWITCHBOARD
C4850 TO 4859-S

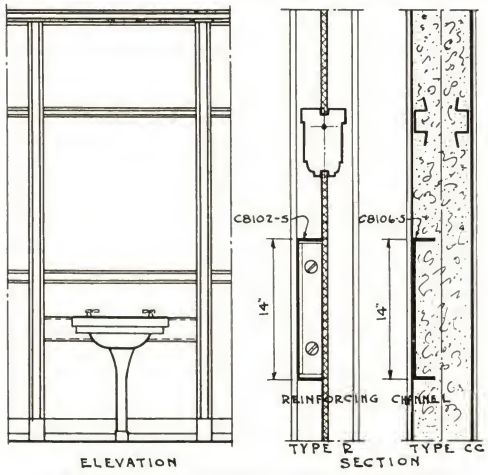
ACCESS DOORS TO FUSE & SWITCH BOX FIRE HOSE ETC.

BOOK CASE WITH CUPBOARD
TYPE CC
TYPE AA-BB & DD SIMILAR WITH SINGLE LINE JOINT IN PLACE OF PILASTER
C8000 TO 8005-CS

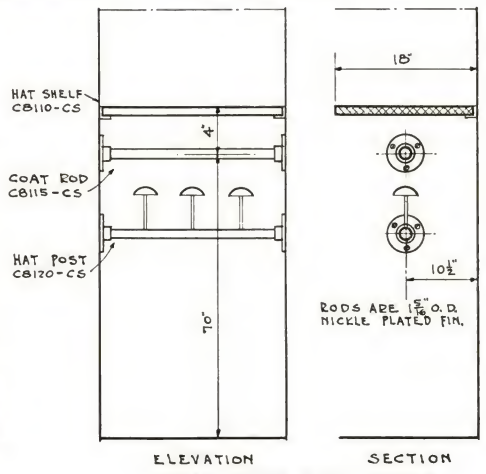
NOTE: THE USE OF REGULAR TYPE DOOR & UNIT IS AN ALTERNATE, PRACTICAL NEAT APPEARING ANSWER FOR CONCEALING SWITCHBOARDS, FUSE BOXES, SHELVING, FIRE HOSE.



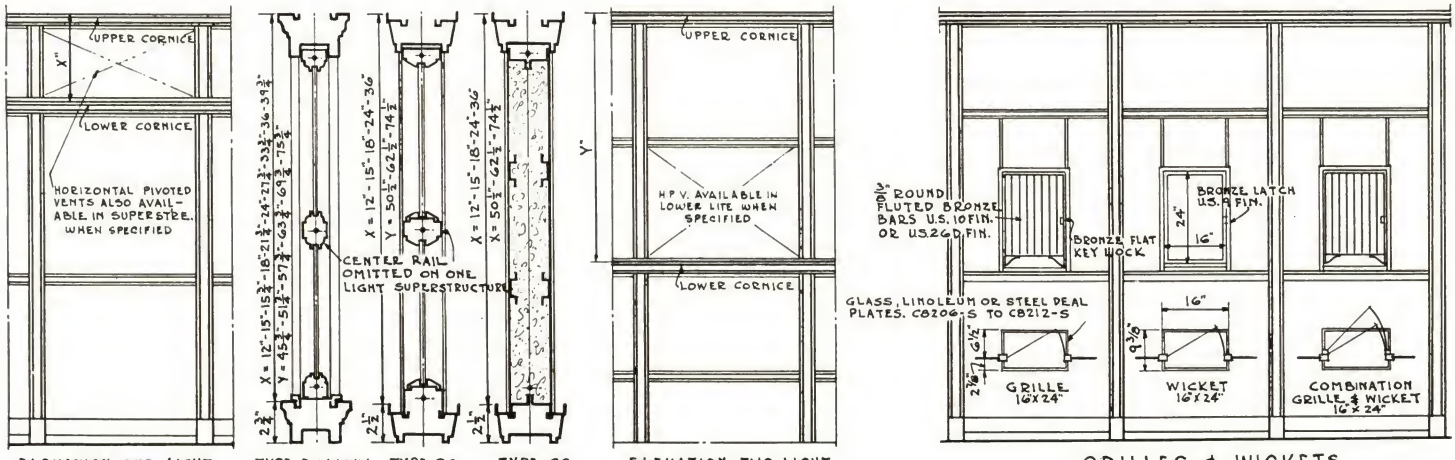

PANEL WITH MEDICINE CABINET




PANEL REINFORCED FOR LAVATORY




COAT RODS & HAT SHELF




SUPERSTRUCTURE
C8300 TO 8367-CS

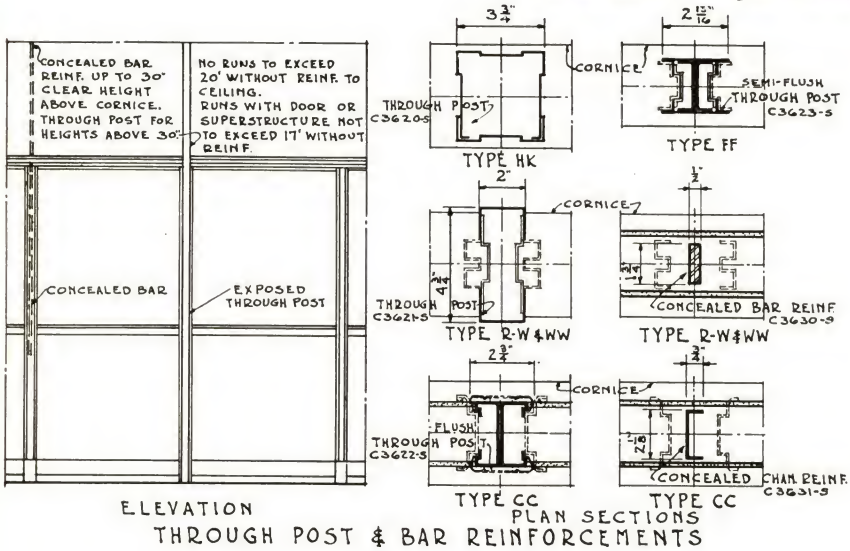
GRILLES & WICKETS
LEFT HAND SWING GRILLES & WICKETS SHOWN
ALSO AVAILABLE IN RIGHT HAND SWING

PATENTED & PAT. PENDING

SHIPPING CLASSIFICATION
SUFFIX S • IN STOCK CS • CUTDOWN STOCK NS • NO STOCK

# MASTERWALL PRACTICE

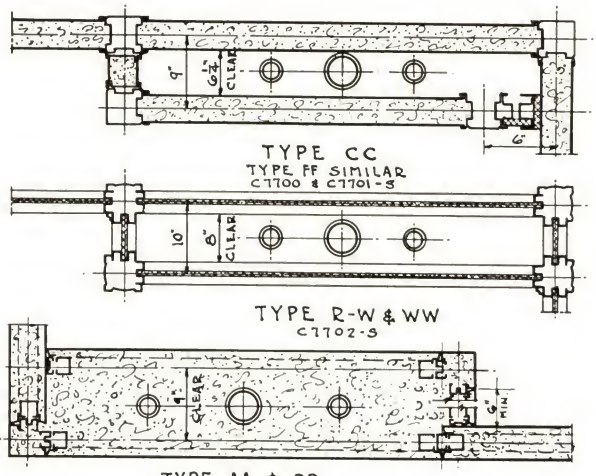
## • meets all job conditions




ELEVATION

PLAN SECTIONS

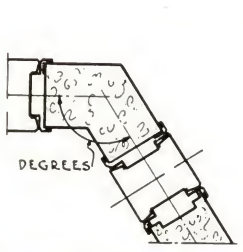
THROUGH POST & BAR REINFORCEMENTS



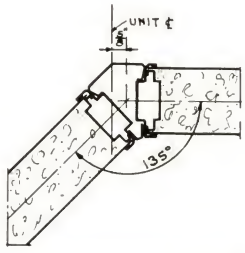

TYPE AA & DD
C7703 & C7706-S

PLUMBING ENCLOSURE PLANS

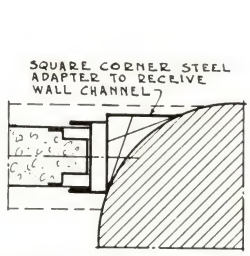
MINIMUM PANEL DEPTHS SHOWN MAY BE INCREASED BY STANDARD UNIT DIMENSIONS



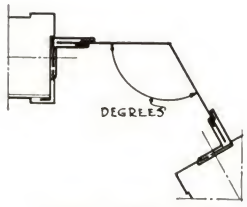

TWO WAY ANGULAR CORNER
TYPE CC & FF
CG800 & G801-NS



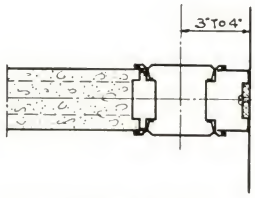

135° ANGULAR CORNER
TYPE CC
CG802-S



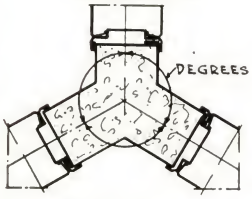

END FILLER AT ROUND COLUMN
TYPE CC & FF
CG810 & G811-S



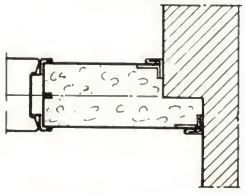

TWO WAY CORNER
TYPE HK
CG804-NS



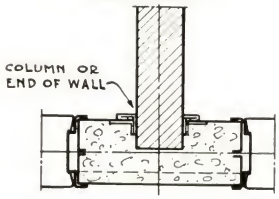

TIGHT END CONDITION
TYPE CC & FF
CG812 & G813-S



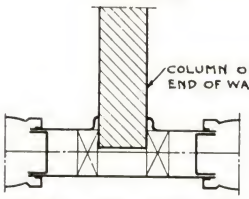

THREE WAY ANGULAR CORNER
TYPE CC & FF
CG820 & G821-NS



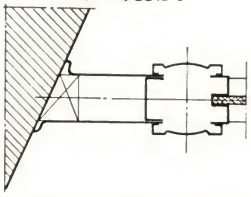
SPLIT END FILLER
TYPE CC & FF
CG814 & G815-S



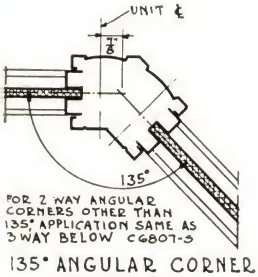

PANEL PAST COLUMN
TYPE CC & FF
CG830 & G831-S



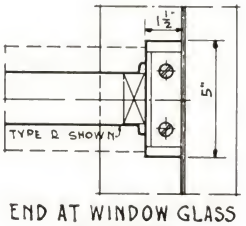

PANEL PAST COLUMN
TYPE R
CG833-S



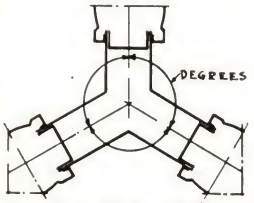
ANGULAR WALL END
TYPE R
CG816-S



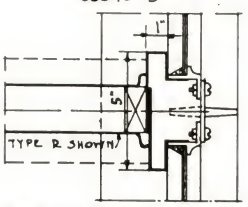

135° ANGULAR CORNER
TYPE R-W & WW
CG805-S



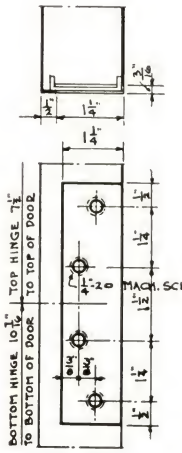

END AT WINDOW GLASS
ALL TYPES
CG840-S



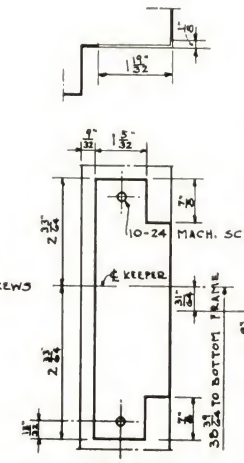

THREE WAY ANGULAR CORNER
TYPE R-W & WW
CG823 & G824-NS



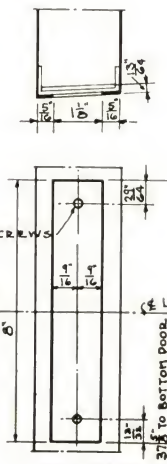

END AT WINDOW MULLION
ALL TYPES
CG845-S



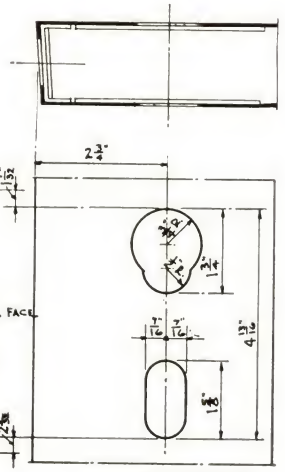

HINGE




KEEPER




LOCK FACE



LOCK MORTISE

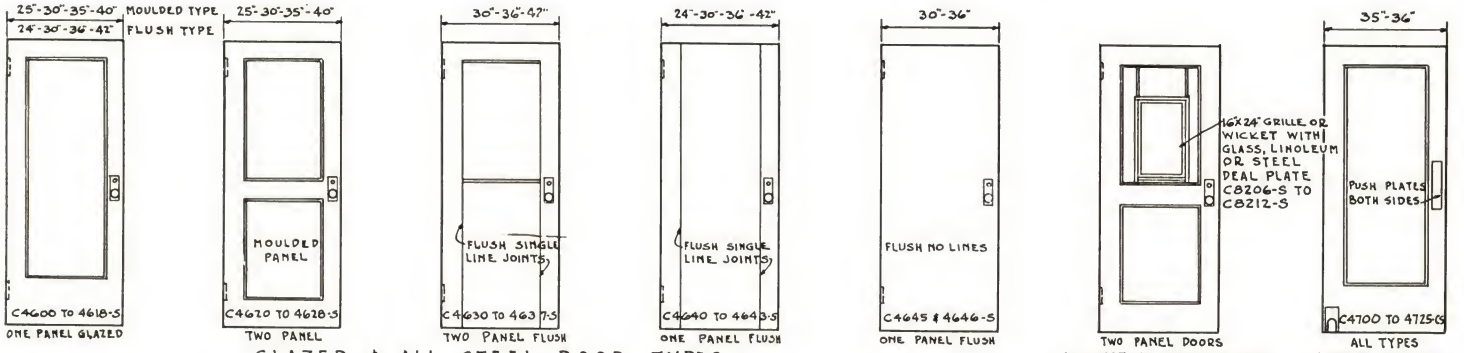
STOCK DOOR HARDWARE MORTISES

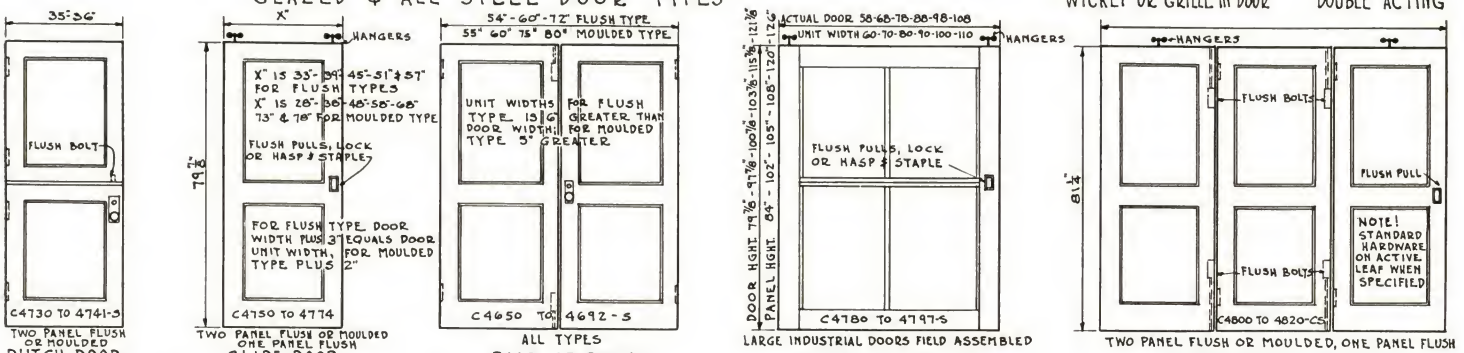
SHIPPING CLASSIFICATION
SUFFIX S • IN STOCK CS • CUTDOWN STOCK NS • NO STOCK

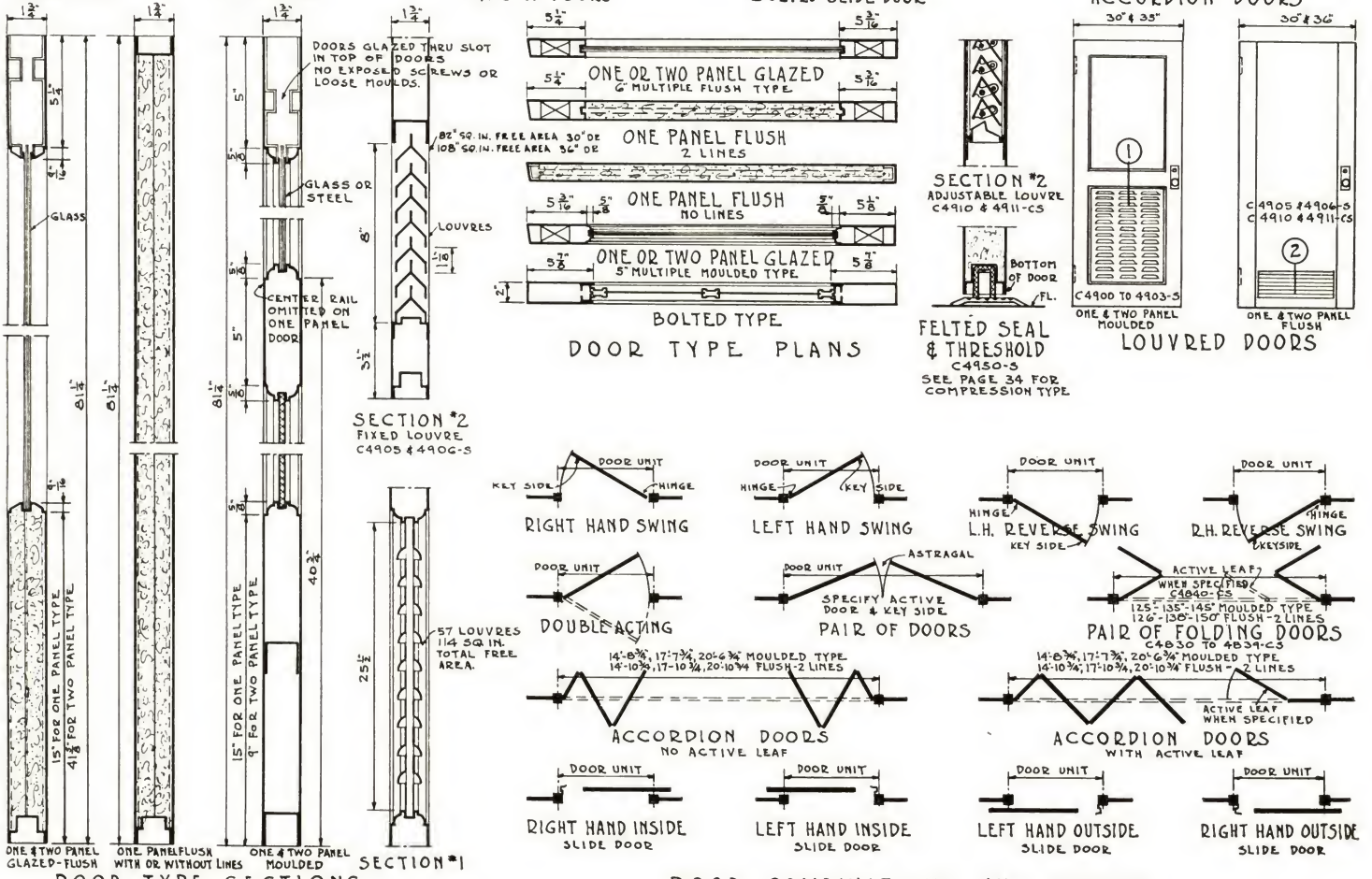
PATENTED & PAT. PENDING.

# DOOR TYPES

## • flush, moulded, louvered, folding and slide







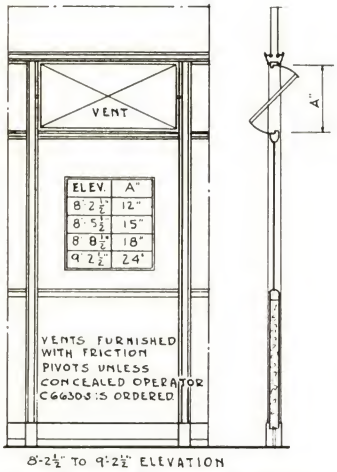
PATENTED & PAT. PENDING.

SHIPPING CLASSIFICATION
SUFFIX S • IN STOCK CS • CUTDOWN STOCK NS • NO STOCK

**THIS CATALOGUE OVER 90% STOCK**

# VENTILATION-SHELVING

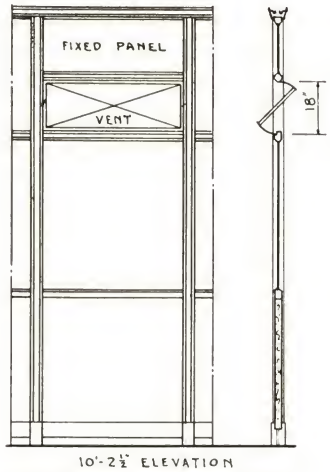
## • vents, wire-mesh, grilles and louvers




8'-2½" TO 9'-2½" ELEVATION

HORIZONTAL PIVOTED VENTS

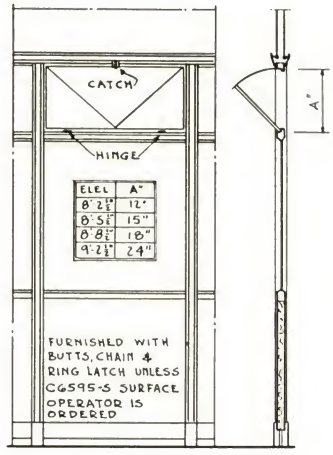
ALL TYPES OF GLASS PANEL EXCEPT H-K & HK CG520 TO G575-S




10'-2½" ELEVATION

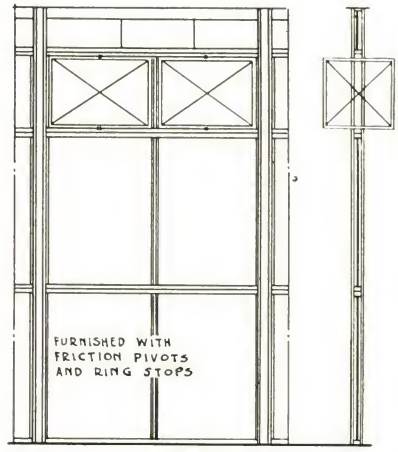
HORIZONTAL PIVOTED VENTS

ALL TYPES OF GLASS PANEL EXCEPT H-K & HK CG520 TO G575-S




BOTTOM HINGED VENTS

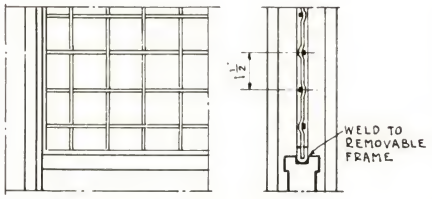
ALL TYPES CG580 TO G590-NS




VERTICAL PIVOTED VENTS

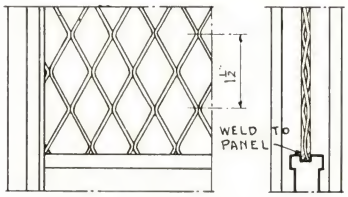
TYPE H-K & HK ONLY CG600 TO GG20-S

NOTE: IN STEEL PARTITION VENTS ARE STEEL GLAZED.



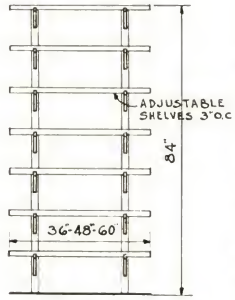

⅛" SQUARE WIRE MESH

C1220-CS



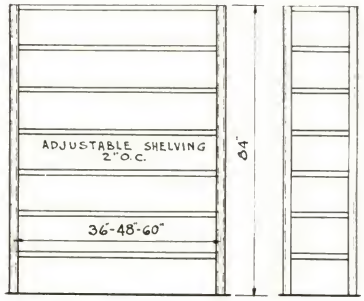

#9 GA. EXPANDED MESH

C1240-CS




ELEVATION

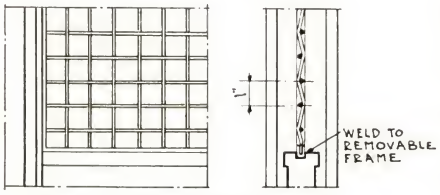
C7901 TO 7910-S




FRONT ELEVATION

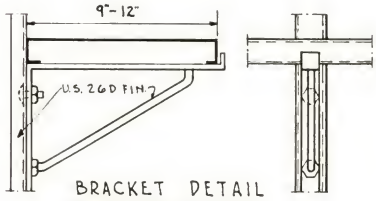
C7920 TO 7930-S

END




#10 GA. ROUND WIRE MESH

C1230-CS




BRACKET DETAIL

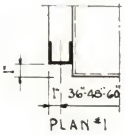
C7901 TO 7910-S SHELVING




PLAN




PLAN

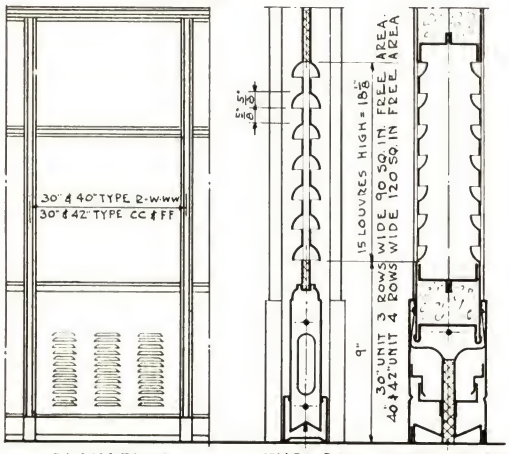



PLAN #1

ADJUSTABLE STEEL SHELVING

WIRE MESH PANELS

REMOVABLE WIRE MESH PANELS INTERCHANGEABLE WITH STEEL OR GLASS PANELS. WHEN USED WITH GRAINED FINISHES MESH IS PAINTED FLAT COLOR TO MATCH

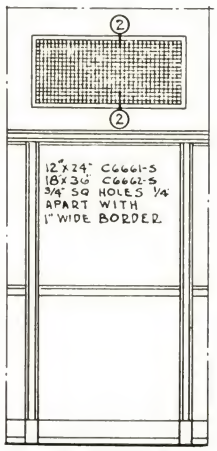



ELEVATION

TYPE R & W CG640 & G641-S

TYPE CC-FF & WW CG642 TO G647-S

LOUVERED PANELS

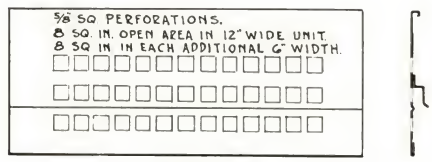



ELEVATION



SECTION #2

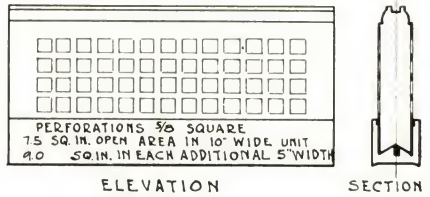
GRILLE IN TOP FILLER




ELEVATION

SECT.

TYPE CC-FF & WW CG670 & G671-S




ELEVATION

SECTION

TYPE R & W CG675 & G676-S

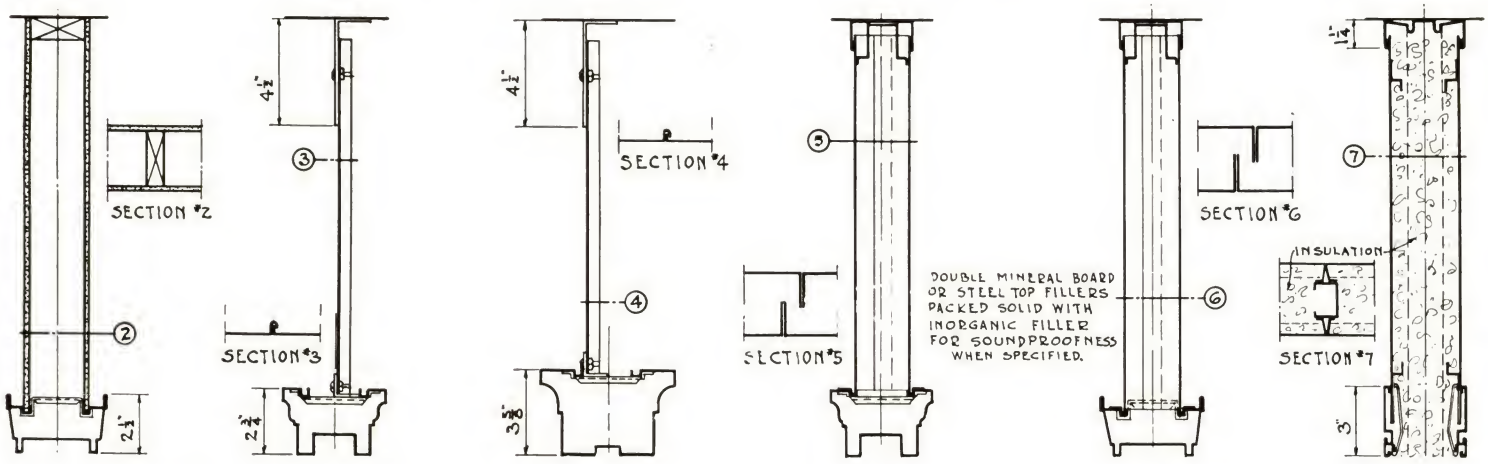
PERFORATED BASE

SHIPPING CLASSIFICATION
SUFFIX S = IN STOCK CS = CUTDOWN STOCK NS = NO STOCK

PATENTED & PAT PENDING

# TOP FILLERS-CEILING

## • insulated-acoustic — steel and mesh




DOUBLE MINERAL BOARD
TYPE R-W-WW-CC-FF
CC SHOWN
C2010 TO 2019-S

SINGLE STEEL
TYPE R
C2020 TO 2027-S

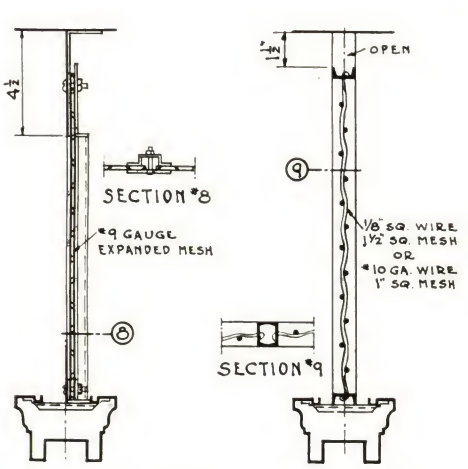
SINGLE STEEL
TYPE HK
C2020 TO 2027-S

DOUBLE STEEL
TYPE R
C2030 TO 2037-S

DOUBLE STEEL
TYPE CC & FF
C2030 TO 2037-S

DOUBLE STEEL
TYPE DD-AA & BB
C2040 TO 2046-S

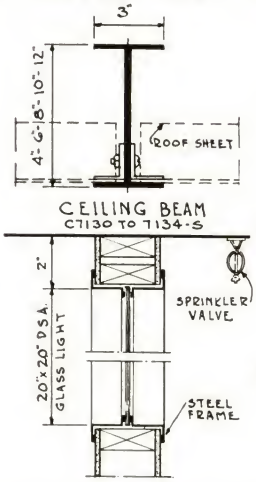
TOP FILLERS FROM CORNICE TO CEILING



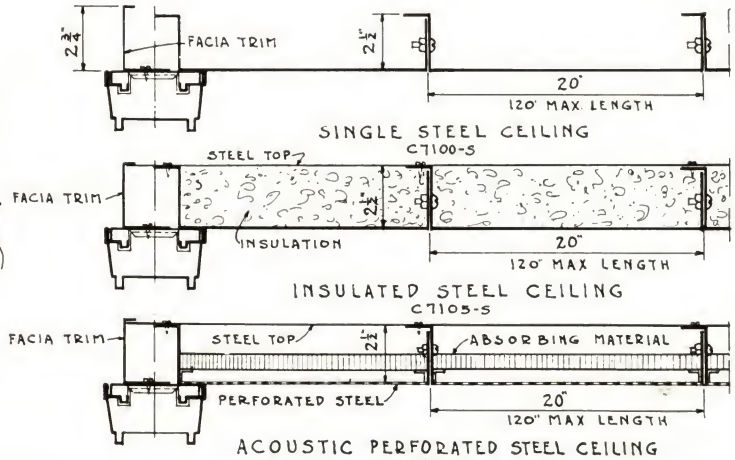

EXPANDED MESH
TYPE R & HK
R SHOWN
C2050 TO 2056-CS

WIRE MESH
TYPE R & HK
R SHOWN
C2060 TO 2066-NS

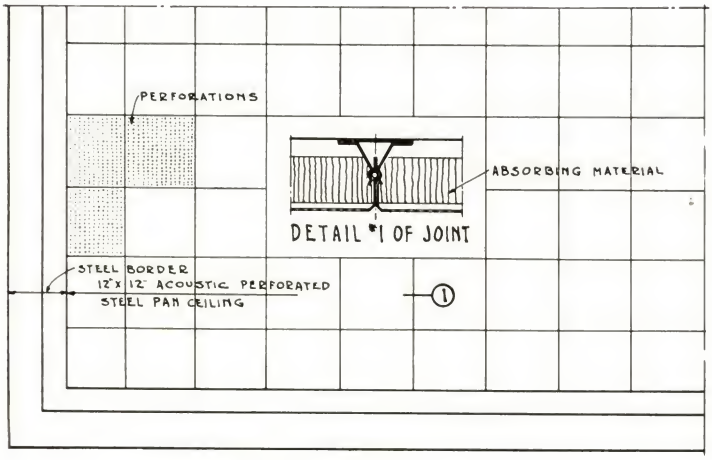
OPEN TOP FILLERS



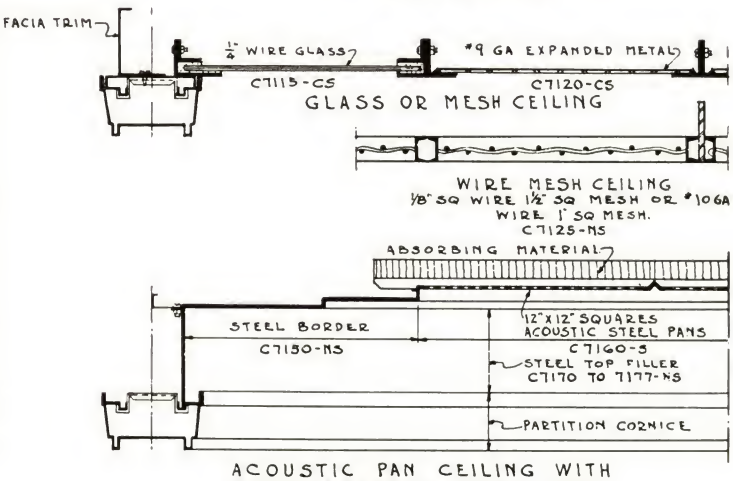

SPRINKLER GLASS IN TOP FILLER
OPPOSITE SPRINKLER VALVE
C2130-S




CEILING SECTIONS
CC TYPE OF CORNICE SHOWN, SIMILAR APPLICATION TO OTHER TYPES OF CORNICE




PLAN OF ACOUSTIC STEEL PAN CEILING WITH STEEL BORDER
C7160-NS



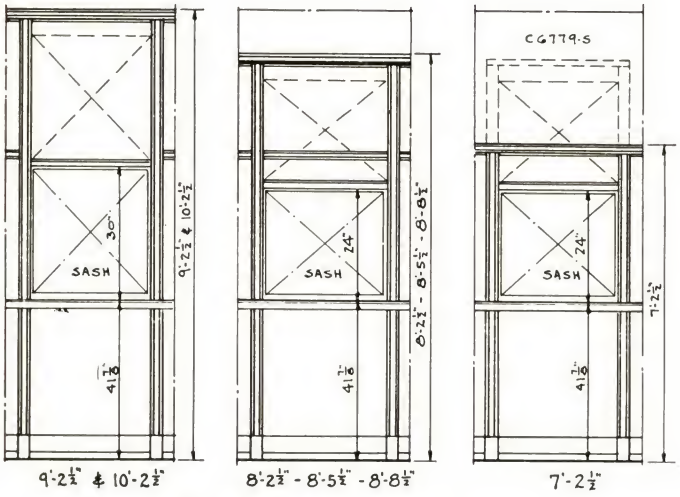

ACOUSTIC PAN CEILING WITH STEEL BORDER & TOP FILLER
CEILING SECTIONS

PATENTED & PAT. PENDING

SHIPPING CLASSIFICATION
SUFFIX S = IN STOCK CS = CUTDOWN STOCK NS = NO STOCK

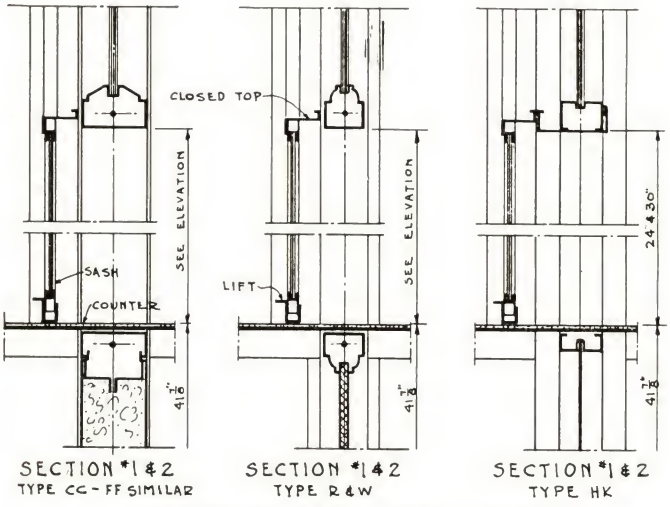
# SLIDEUP SASH-GRILLES

## • for all types of partitions



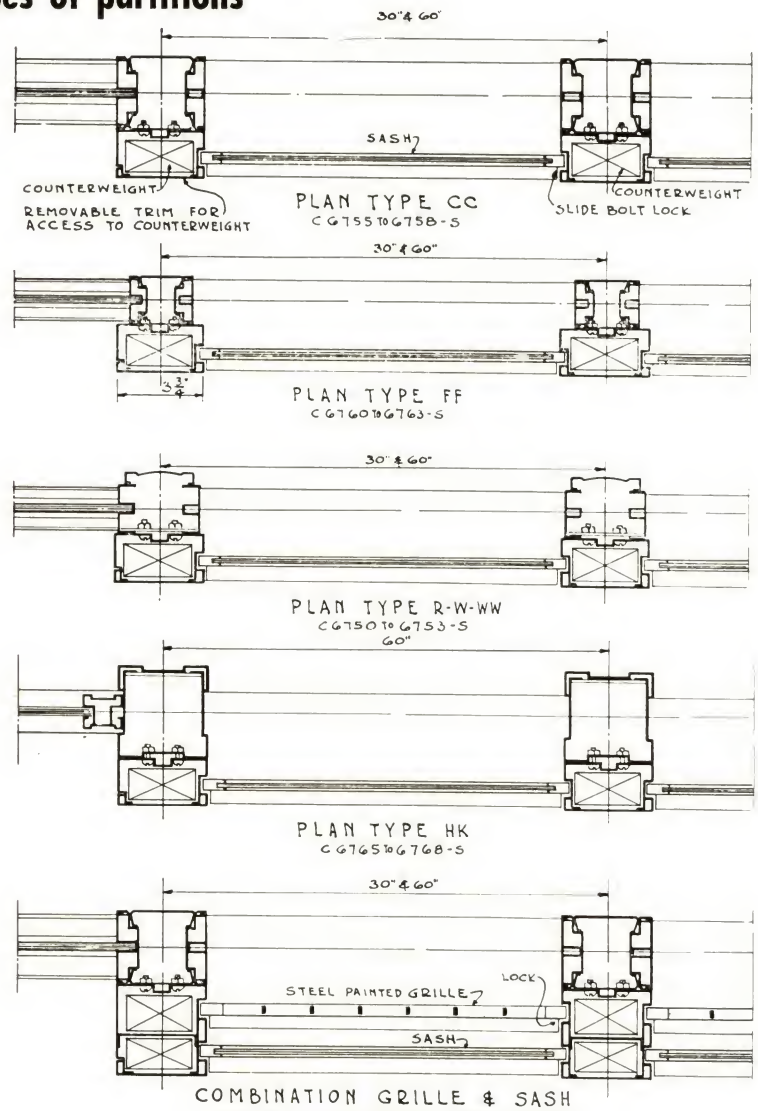

9'-2⅛" & 10'-2⅛" 8'-2⅛" - 8'-5⅛" - 8'-8⅛" 7'-2½"

SLIDE UP SASH ELEVATIONS

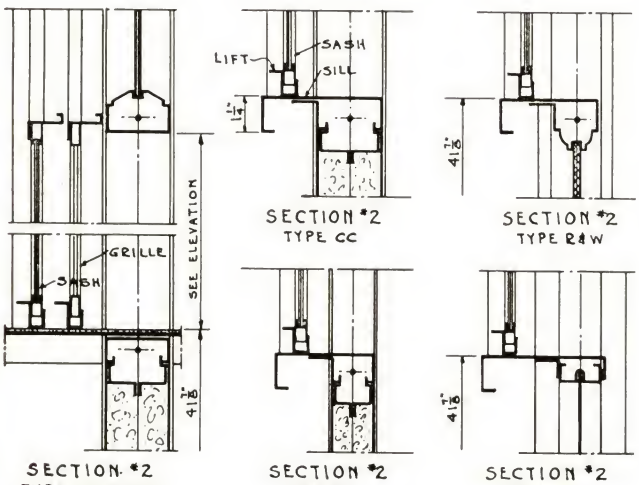



SECTION *1 & 2 TYPE CC - FF SIMILAR — SECTION *1 & 2 TYPE R & W — SECTION *1 & 2 TYPE HK

SLIDE UP SASH WITH COUNTER

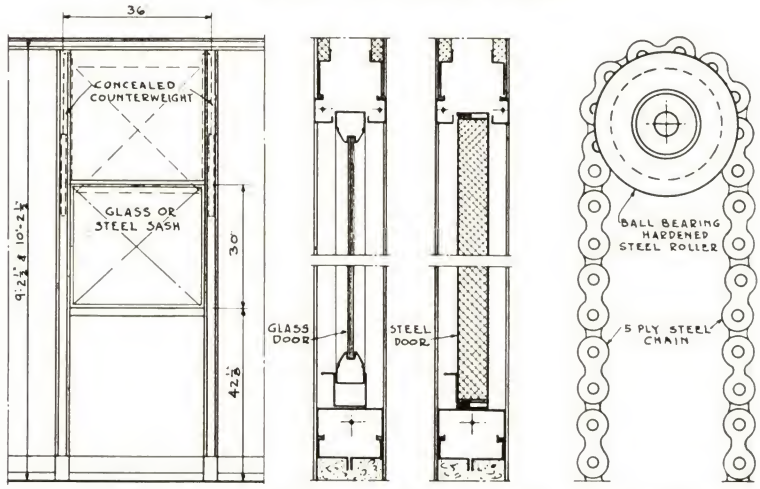



SLIDE UP SASH PLANS




SECTION *2 TYPE CC SHOWN — SECTION *2 TYPE CC — SECTION *2 TYPE R & W — SECTION *2 TYPE FF — SECTION *2 TYPE HK

SASH & GRILLE — SLIDE UP SASH WITHOUT COUNTER




ELEVATION — GLASS OR STEEL SASH SECTION TYPE CC — COUNTERWEIGHT PULLEY & CHAIN ALL SLIDE UP SASH

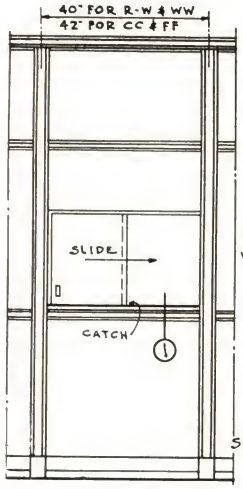
SLIDE UP SASH WITHIN PANEL
CG796 & G797-CS

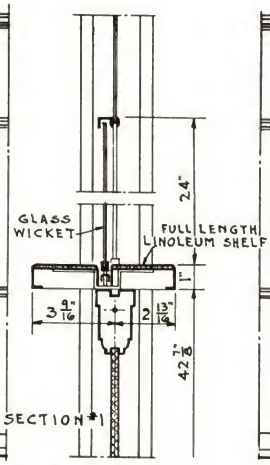
SHIPPING CLASSIFICATION
SUFFIX S = IN STOCK CS = CUTDOWN STOCK NS = NO STOCK

PATENTED & PAT PENDING

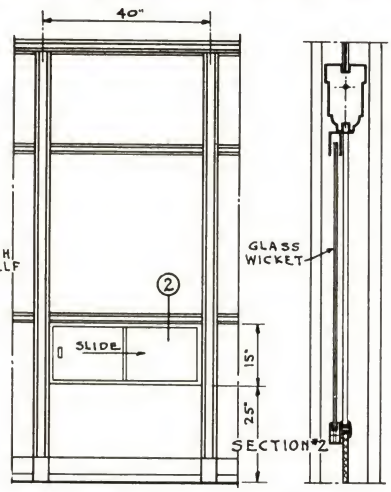
# DELUXE UTILITIES

## • slide wickets, partitions on curb, venetian panels

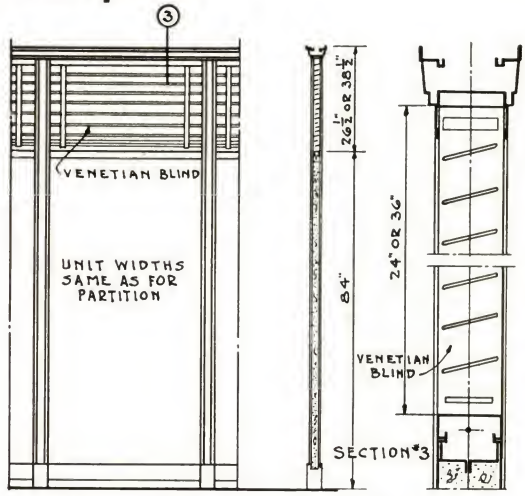


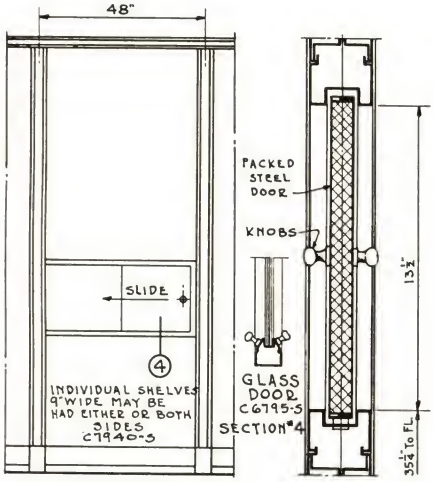

SLIDING GLASS WICKET
TYPE CC-FF-R-W&WW
ABOVE CHAIR RAIL
CG780 & G781-S



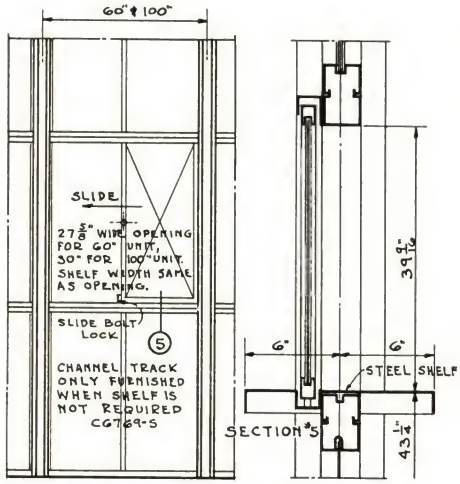

SLIDING GLASS WICKET
TYPE R & W
BELOW CHAIR RAIL
CG785-S



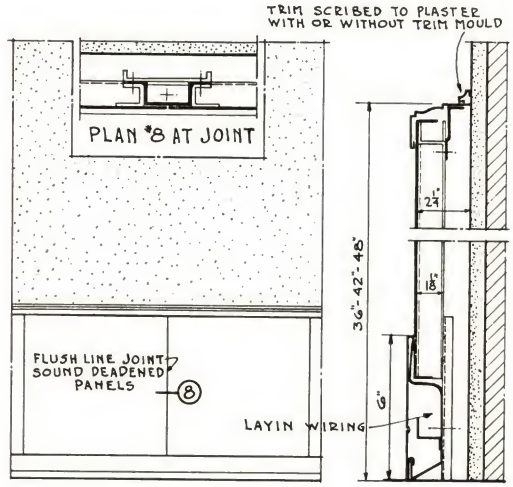

PARTITION WITH VENETIAN BLINDS
TYPE CC 9'-2½" OR 10'-2½" ELEVATION
CG680 & G681-S



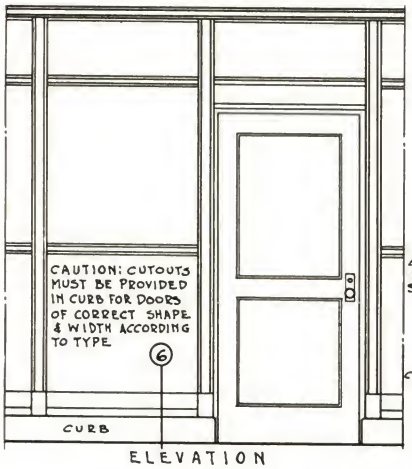

SLIDING STEEL WICKET
TYPE CC
CG790-S



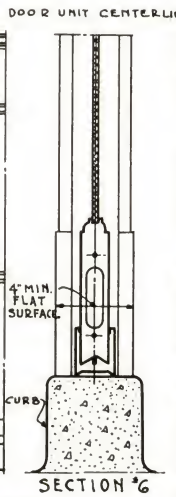

SLIDING GLASS OR STEEL WICKET
TYPE HK
CG782 & G783-S

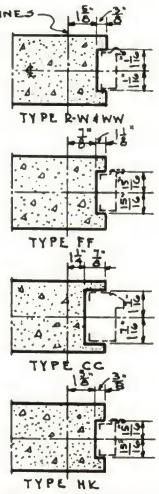



ELEVATION SECTION
LOW WAINSCOTING
UNIT WIDTHS 12"-24"-36"-42"-48"
C7450 TO 7470-NS

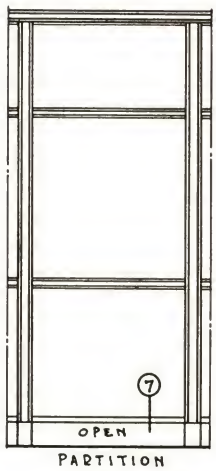



ELEVATION
PARTITION ON CURB
CG660 & G861-S

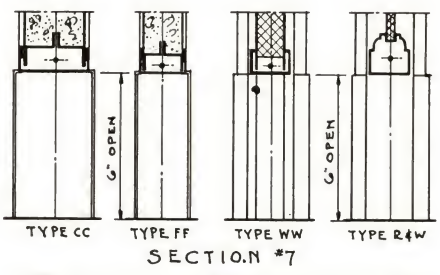


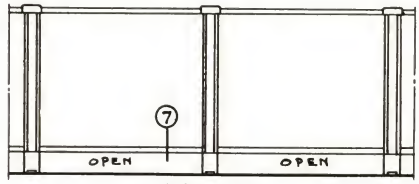

PLAN OF CUTOUTS FOR DOOR FRAME




PARTITION




SECTION #7




RAILING

OPEN BASE PARTITION & RAILING

PATENTED & PAT. PENDING

SHIPPING CLASSIFICATION
SUFFIX S=IN STOCK CS=CUTDOWN STOCK NS=NO STOCK

# MASTERWALL HARDWARE

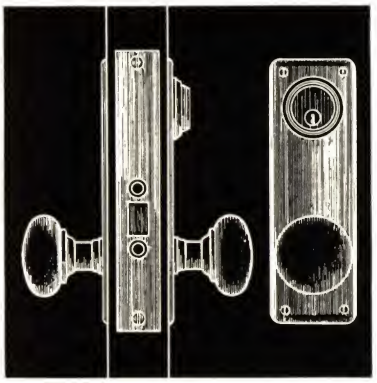
## • cylinder, latch, and communicating hardware



C6010-S — Bitt key lock set, latch operates from either side by knobs, dead bolt operated either side by bitt key, 2¾″ backset, 1⅛″ x 8″ lock face, 2¼″ x 7 7/16″ escutcheons, 2¼″ dia. round knobs, center of knobs 39⅝″ above floor, wrought or cast bronze trim, U. S. 10 finish; wrought steel trim, U. S. 18 finish is stocked. Used on partition doors.



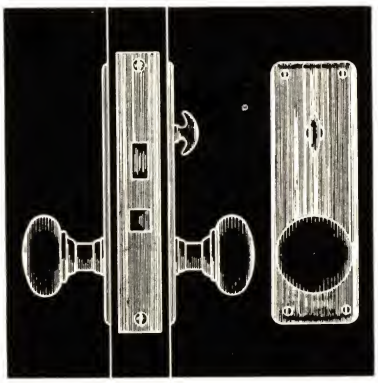
C6011-S — Latch set, operates from either side by knobs. It does not have a dead bolt. 2¾″ backset, 1⅛″ x 8″ lock face, 2¼″ x 7 7/16″ escutcheons, 2¼″ dia. round knobs, center of knobs 39⅝″ above floor; wrought or cast bronze trim, U. S. 10 finish and wrought steel trim, U. S. 18 finish is carried in stock. Used on partition doors.



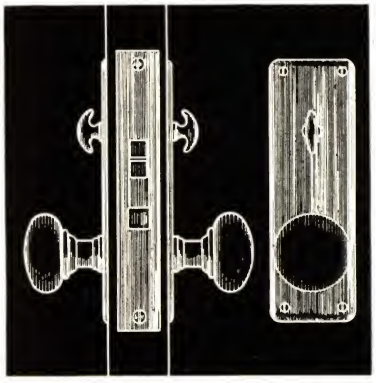
C6012-S — Cylinder lock set, latch operated inside by knob, outside by knob or cylinder. Buttons in lock face set operation from outside. 2¾″ backset, 1⅛″ x 8″ lock face, 2¼″ x 7 7/16″ escutcheons, 2¼″ dia. knobs, center 36½″ above floor, wrought or cast bronze trim U. S. 10 finish; wrought steel trim, U. S. 18 finish, stocked. Individual keys, Hauserman or bldg. masterkey.



C6013-S — Pickproof cylinder lock set, operated inside by knob, outside by knob or cylinder. Buttons in lock face set operation from outside. 2¾″ backset 1⅛″ x 8″ lock face, 2¼″ x 7 7/16″ escutcheons, 2¼″ dia. knobs, center 36½″ to floor, wrought or cast bronze trim, U. S. 10 finish; wrought steel trim, U. S. 18 finish, stocked. Individual keys, Hauserman or bldg. masterkey



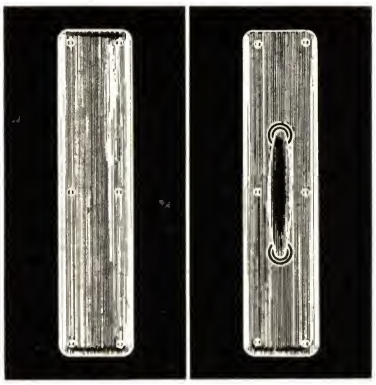
C6014-S — Single communicating lock set, operates from either side by knobs, thumbturn on inside operates the dead bolt. 2¾″ backset, 1⅛″ x 8″ lock face, 2¼″ x 7 7/16″ escutcheons, 2¼″ dia. round knobs, center of knobs 36⅝″ above floor, wrought or cast bronze trim, U. S. 10 finish, and wrought steel trim, U. S. 18 finish, stocked. Used on partition doors.



C6015-S — Double communicating lock set, operates either side by knobs, thumbturn on both sides operates individual dead bolts, 2¾″ backset, 1⅛″ x 8″ lock face, 2¼″ x 7 7/16″ escutcheons, 2¼″ dia. round knobs, center of knobs 36⅝″ above floor, wrought or cast bronze trim, U. S. 10 finish, and wrought steel trim, U. S. 18 finish, stocked.

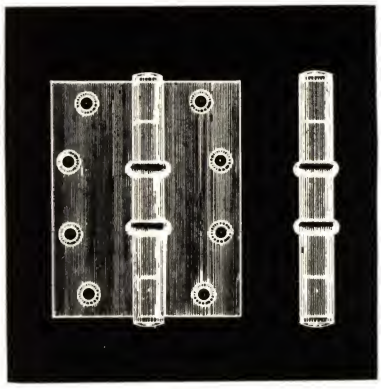


C6016-S—Mortise dead bolt lock, no knobs or latch, dead bolt operated outside by cylinder inside by thumb turn, 2¾″ backset, 1⅛″ x 8″ lock face, 2¼″ x 7 7/16″ escutcheons, wrought bronze trim, U. S. 10 finish; wrought steel trim, U. S. 18 finish, stocked. Individual keys, Hauserman or bldg. masterkey system.



C6017-S—Push plate at left, 3⅛″ x 14½″, center located 47″ above floor, wrought or cast bronze trim, U. S. 10 finish; wrought steel, U. S. 18 finish, stocked.

C6018-S—Pull plate at right 3⅛″ x 14½″, center located 43″ above floor, wrought or cast bronze trim, U. S. 10 finish; wrought steel trim, U. S. 18 finish, stocked.



C6019-S — Butts are 5″ x 4″ size and are of wrought steel hardened 3/64″ thick. They have ball bearing washers for easy, noiseless operation and long life. They are carried in stock in U. S. 10 and U. S. 18 finish. See page No. 46 for dimensional template.

SHIPPING CLASSIFICATION — Suffix (s) = in stock; (cs) = cut down stock. (ns) = no stock.

# SLIDE DOOR HARDWARE

## • pulls, locks, and hangers



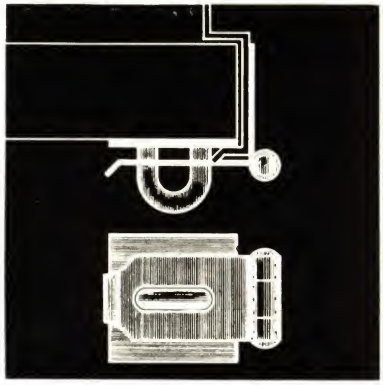
C6020-S — Cylinder lock set for slide door, latch operated inside by lever handle, outside by cylinder, hooked latch engages with cast bronze keeper. 2¾″ backset, 1⅛″ x 7¼″ lock face, 1⅞″ x 6¼″ recessed wrought bronze escutcheons. U. S. 10 and U. S. 18 finish stocked.



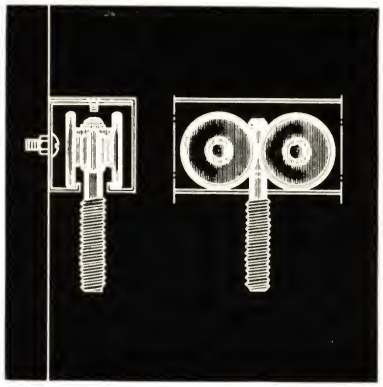
C6021-S — Latch set for slide door, latch is operated from either side by lever handles. The latch engages with the cast bronze keeper. It has a 2¾″ backset, 1⅛″ x 7¼″ lock face, 1⅞″ x 6¼″ recessed wrought bronze escutcheons. U. S. 10 and U. S. 18 finish is carried in stock.



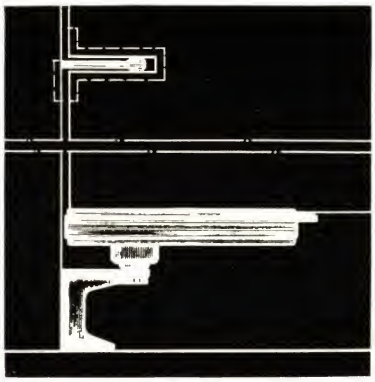
C6023-S—Flush door pull, cast bronze U. S. 10 finish or C6022-S cast iron U. S. 18 finish stocked. 3" x 4½" x ¾" deep, used on slide doors or accordian doors when latch or lock is not specified.



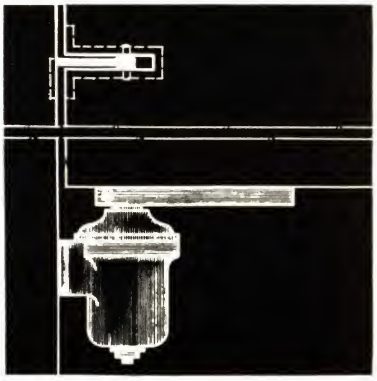
C6024-S — Hasp and staple, furnished on slide doors when specified. The padlock is not included. The hasp and staple are made of extra heavy wrought steel, the hasp being 1¾″ wide. They are carried in stock and have a painted finish.



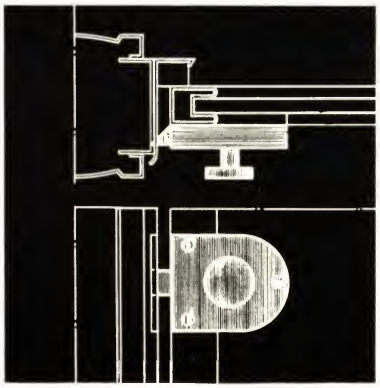
C6026-S — Hanger for slide doors has 2″ diameter ball bearing steel rollers and is adjustable in height, 2 rollers are furnished on doors up to 8 feet wide. 3 rollers are used on all slide doors over 8 feet wide. Hangers and track are carried in stock.



C6030-S — Gate hinge is double acting and self centering. It is ball bearing and has a steel die cast case, malleable iron bracket. Top pivot and bottom hinge painted flat color to match railing. It is carried in stock and used on low double swing railing gates.



C6031-S—Gate hinge is single acting, checking, ball bearing, with cast iron case sanded. Top pivot and bottom hinge painted flat color to match railing. It is carried in stock and used on high gates regularly, on low gates when specified single acting.



C6035-S — Gate latch is of the secret type and has a fixed knob. The latch is operated by pressing button on underside of case. Overall size is 2″ x 2⅜″ x ¾″. It is carried in stock in U. S. 10 and U. S. 18 finish. Used on low gates when specified.

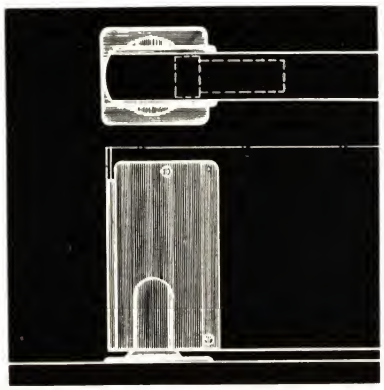


C6034-S—Gate lock set operated inside by lever handle, outside by lever handle or cylinder. Buttons in lock face set operation from outside. 2⅝" backset ⅞"x5½" lock face, 2" x 6" escutcheons. Cast bronze trim U. S. 10 finish. Cast iron trim U. S. 18 finish stocked. Individual keys, Hauserman or building masterkey system.

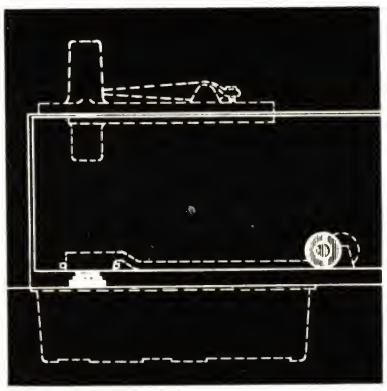
SHIPPING CLASSIFICATION — Suffix (s) = stock; (cs) = cut down stock; (ns) = no stock.

# HARDWARE DETAILS

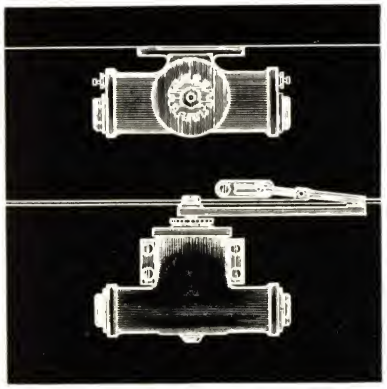
## • stops, checks, and catches



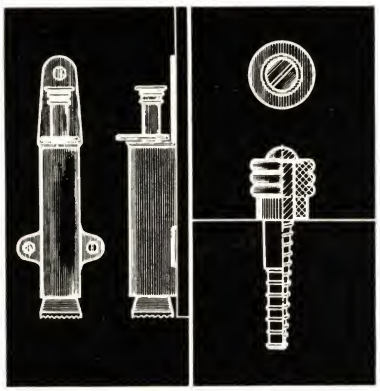
C6037-S — Double acting hinge, permits doors to swing both ways. It is ball bearing, with tension adjustment and has steel planished trim, floor plate and top pivot. U. S. 10 and U. S. 18 finish carried in stock. Used on partition doors.



C6038-S — Double acting checking floor hinge, case recessed in floor, 3 1/16″ for medium size, 3⅝″ for large size, Bronze floor plate. Use with threshold requires special non-stock threshold. Medium size used on doors up to 36″ wide, large size over 36″ wide, medium size remains open at 90°. Use permitting C-6037-S hinge is recommended.

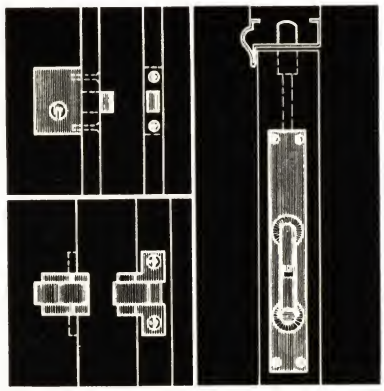


C6039-S — Door check, cast iron case, gold bronze and black finish stocked, holder arm for holding door in open position furnished when specified. Use size B on doors up to 30" wide, size C on doors 36" to 42", size D on doors over 42" wide.



C6045-S — Door holder (left), cast bronze or iron case foot operation, rubber floor grip. U. S. 10 and U. S. 18 fin. stocked.

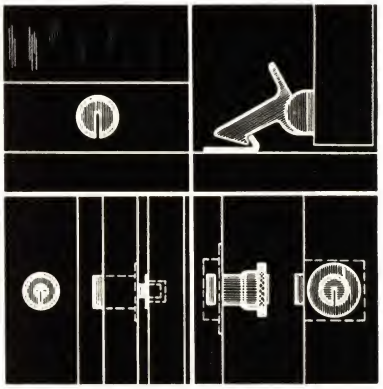
C6046-S — Door stop (right), rubber bumper, 1⅜" diameter, 1¼" high, metal collar U. S. 10 and U. S. 18 fin. stocked. Specify type floor.



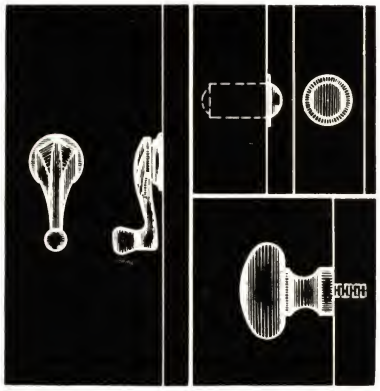
C6050-S — Grille lock (top left), bronze case, individual keying, used on stock hinged grilles.

C6051-S — Wicket catch, bottom left, mortise type, U. S. 10 fin. used on stock hinged wickels.

C6055-S — Flush bolts (right), cast bronze face 1″ x 6¾″, used on partition doors.



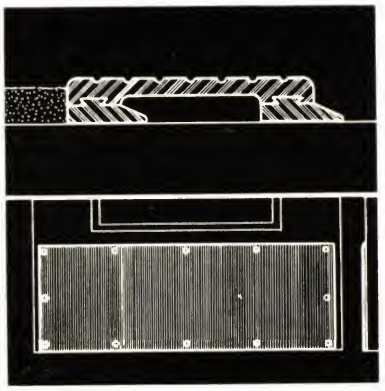
C6060-S — Flat key lock (top left), for sliding glass doors. C6061-S — Flat key lock (bottom left), for sliding steel doors, 11/16″ dia. cylinder. C6062-S — Door lock (bottom right), latch locked by flat key in 1⅛″ dia. knob, for hinged steel cabinet doors. U. S. 10 finish. C6063-S — Door catch (top right), for inactive hinged steel cabinet doors.



C6065-S — Transom operator handle (left), for concealed transoms, U. S. 10 and U. S. 18 fin. stocked.

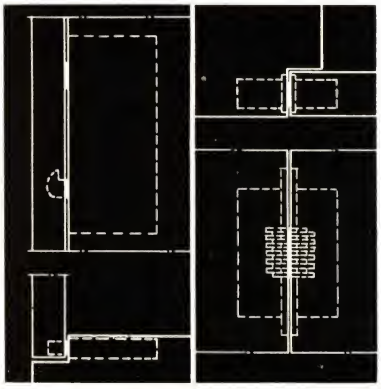
C6068-S — Knob (bottom right), 1″ diameter, wrought bronze U. S. 10 and U. S. 18 fin. stoc ed. For hinged or sliding steel cabinet or wicket doors.

C6067-S — Bullet catch (top right), ½″ diameter, spring operation, for hinged steel cabinet doors.



C6070-S — Threshold (top), extruded bronze ⅜″ high, 3½″ wide, ¼″ high adapters when specified for special conditions such as rugs, linoleum, etc.

C6076-S — Kick plates (bottom), specify one or both sides, No. 14 gauge, 9″ high, bronze or stainless steel brushed finish.



C6081-S — Concealed latch (left), used as invisible latch on hinged steel cabinet doors. Latch engages door when closed, exerting pressure on door, releases door. Door thrust open by trigger arrangement.

C6085-S — Concealed hinge (right), ply leaf hinges, invisible, for hinged steel cabinet doors.

SHIPPING CLASSIFICATION — Suffix (s) = stock; CS = cut down stock. (ns) = no stock.

# ELECTRICAL ACCESSORIES

## • switches, receptacles, push buttons



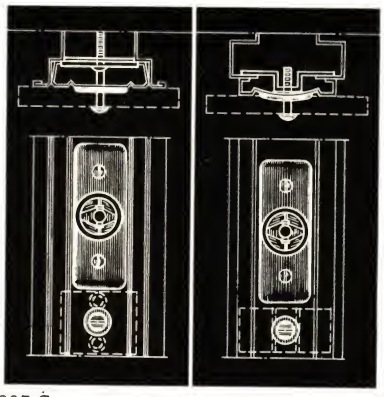
C7000-S — Duplex receptacle, (left), 1 3/4" x 4 3/16" x 1/8" plate, 15 amp. 125v.; 10 amp. 250 v., U. S. 10 and U. S. 18 finish. Fits all types, except FF posts.

C7001-S — Duplex receptacle, (right), 1 11/16" x 4 9/16" x 3/16" plate, 15 amp. 125 v.; 10 amp. 250 v. Fits all types. Fittings interchangeable in flush plates. U. S. 10 and U. S. 18 finish.



C7005-S — Two pole toggle switch, (left), vertical gang, 1 11/16" x 7 1/16" x 3/16" flush plate, 10 amp. 125 v. 5 amp. 250 v., U. S. 10 and U. S. 18 fin. For FF posts.

C7006-S — Three pole toggle switch, (right), vertical gang, 1 11/16" x 9 9/16" x 3/16" flush plate, 10 amp. 125 v., 5 amp. 250 v., U. S. 10 and U. S. 18 fin. For FF posts.



C7007-S — Fan bracket, (left), receptacle with flush plate, reinforced fan connection, CC application shown, AA, BB, FF similar U. S. 10 and U. S. 18 fin.

C7008-S — Fan bracket, (right), receptacle with flush plate, reinforced fan connection, R, W, WW application shown. U. S. 10 and U. S. 18 fin. Receptacles 15 amp. 125 v.; 10 amp. 250 v.



C7010-S — Single pole toggle switch, (left), 1 3/4" x 4 3/16" x 1/8" flush plate, 10 amp. 125 v.; 5 amp. 250 v. U.S. 10 and U.S. 18 fin. Fits all types, except FF posts.

C7011-S — Single pole toggle switch, (right), 1 11/16" x 4 9/16" x 3/16" flush plate, 10 amp., 125 v.; 5 amp. 250 v., U. S. 10 and U. S. 18 fin. Fits all types. Fittings interchangeable in flush plates.



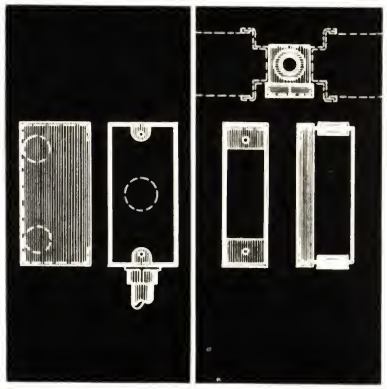
C7015-S — Two pole toggle switch, (left), 1 3/4" x 4 3/16" x 1/8" flush plate, 10 amp. 125. v.; 5 amp. 250 v. U.S. 10 and U.S. 18 fin. Fits all types, except FF posts.

C7016-S — Two pole toggle switch, (right), 1 11/16" x 4 9/16" x 3/16" flush plate, 10 amp. 125 v.; 5 amp. 250 v. U.S. 10 and U.S. 18 fin. Fits all types except FF posts. Fittings interchangeable in flush plates.



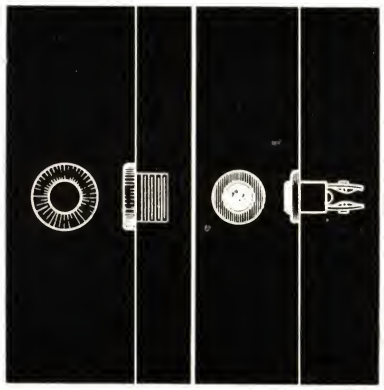
C7020-S — Three pole toggle switch, (left), 1 3/4" x 4 3/16" x 1/8" finish plate, 10 amp. 125 v.; 5 amp. 250 v, U. S. 10 and U. S. 18 finish. Fits all types except FF posts.

C7021-S — Three pole toggle switch, (right), 1 11/16" x 4 9/16" x 3/16" flush plate, 10 amp. 125 v.; 5 amp. 250 v, U. S. 10 and U. S. 18 finish. Fits all types, except FF posts. Fittings interchangeable in flush plates.



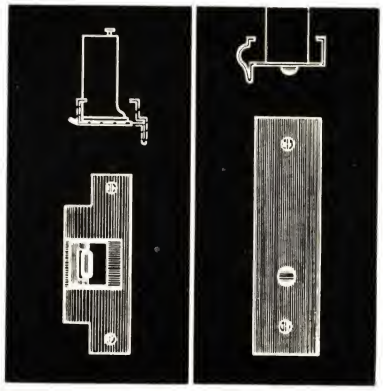
C7025-S — Electrical box, (left), for switches, receptacles etc., 2" x 4" x 1 7/8" deep, steel painted black. Fits all types, except FF posts.

C7026-S — Electrical box, (right), for switches, receptacles etc., bushings top and bottom, designed for type FF posts only.



C7030-S — Fibre bushing, (left), black finish, 3/8" diameter clearance hole, for use in partition as outlet for phone or other wiring.

C7035-S — Push button, right illustration, 7/8" diameter, pearl face. for bells, buzzers, etc., installed in posts or chair rail.



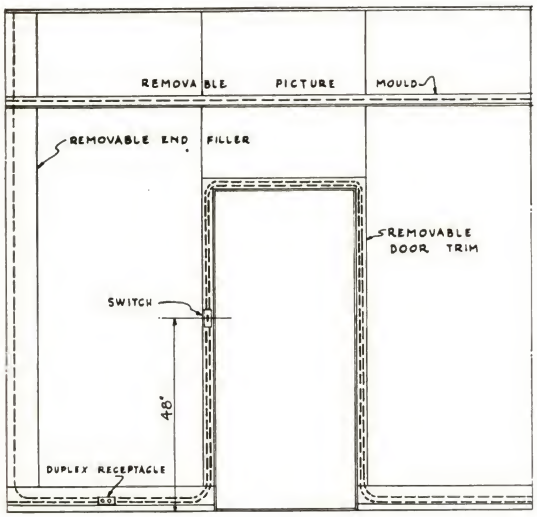
C7040-S — Electric door opener, (left), 2 ohms resistance, mortise type, roller nose. Used for releasing locked door by push button from remote position.

C7045-S — Electric door switch, (right), single pole, 6 amp. 125 v., 3 amp. 250 v., operates light when door is opened, used for closets, etc.

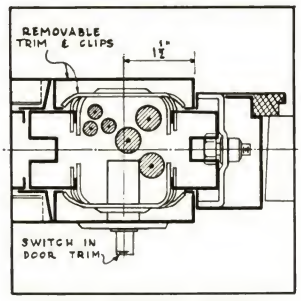
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# ELECTRICAL DETAILS

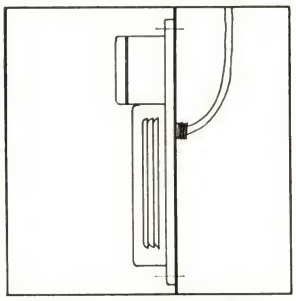
## • partition wiring facilities



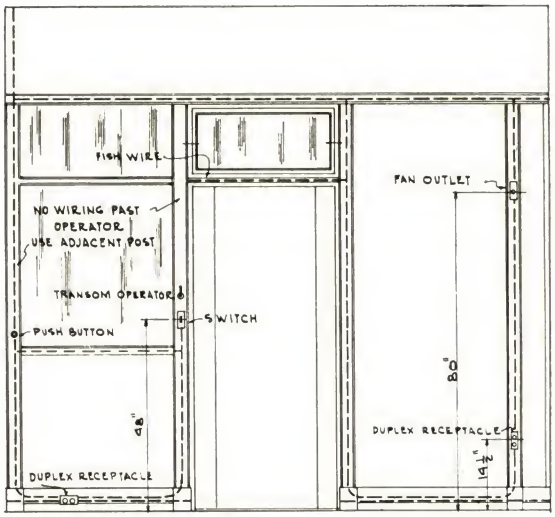

TYPICAL · TYPE · AA · DD



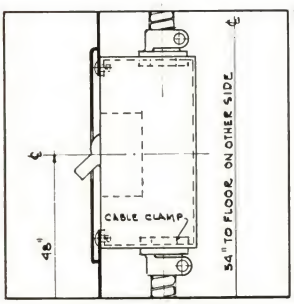

LAYIN WIRING TRIM



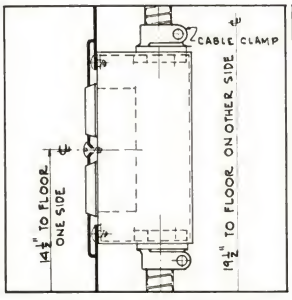
APPLIED · THERMOSTAT ·



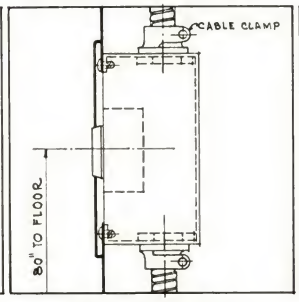

·TYPICAL · TYPE ·CC·FF·BB·



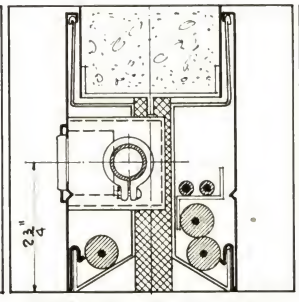

·SWITCH·IN·POST·



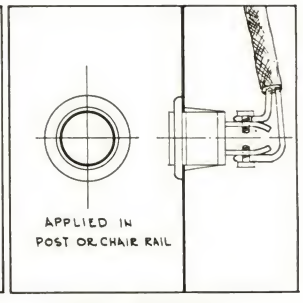

RECEPTACLE IN POSTS




·FAN·OUTLET




RECEPTACLE IN BASE




·PUSH·BUTTON·

**PARTITION TYPE WIRING FACILITIES:**—Layin wiring facilities for both high and low tension are provided in types AA, BB, DD and EE in wiring raceways. This includes removable base, ends, door trim for layin wiring both sides of partition. Removable picture mould for layin wiring, continuous from wall to wall, both sides is also provided. Wiring past operator in door trim is possible in types AA, BB, CC, DD and EE.

Types CC and FF both with double raceway layin wiring base and cornice trough each side of partition. Wiring at posts and fish wire in chair rails. No wiring past concealed operator, Type FF.

Removable base for double raceway layin wiring on types W and WW. Fishwire in base on type R and K. Wiring in posts and in cornice on types WW, W, R. Wiring in posts on HK, H and K.

Removable base for layin wiring in semi-flush rail and glazed railing, fish wire base in moulded design railing.

ELECTRICAL FITTINGS: General Electric fittings and accessories are standard for types CC, WW, W, R, HK, H, K. (See accessories page 55).

Pass and Seymour fittings and accessories are standard for types AA, BB, DD, EE and FF. (See accessories page 55). In instances where electrical fittings are to be furnished by others, contractor should be notified of our partition standards, which should be adhered to.

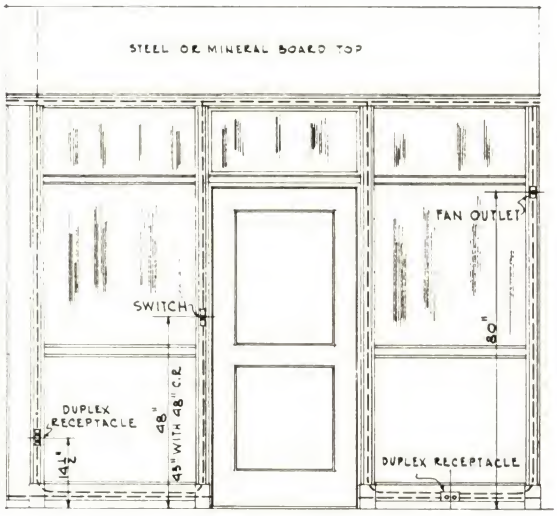
Floor feeds should never be located at posts of any type of partition, but should be turned into wiring base at least 6" away from post center line to allow for stampings and shims.

Ceiling feeds may be turned down in between top filler sheets into cornice and posts as required. Wall feeds may be run into partition through end filler.

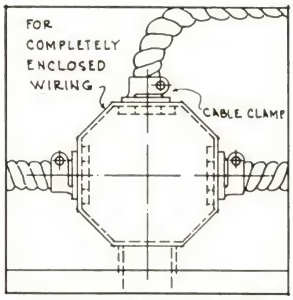
| MAX. BX CABLE AND TUBE SIZES | | | | |
|---|---|---|---|---|
| TYPE | POST | CORNICE | BASE | DR HEAD |
| DD | ⅞" | 2⅝" | 1½" | ⅞" |
| AA | — | 2⅝" | 1⅜" | ⅞" |
| BB | ⅜" | 2⅛" | 1⅜" | ⅞" |
| CC | 1⅜" | ½" | 1⅜" | ⅝" |
| FF | 2⅛" | ½" | 2⅛" | 2⅛" |
| W | 2⅛" | 2⅛" | 2⅛" | — |
| WW | 2⅛" | 2⅛" | 2⅛" | — |
| R | 2⅛" | 2⅛" | 2⅛" | — |
| H·HK | 2" | — | — | — |
| K | 2" | — | 2⅛" | — |
| RAILING AA·BB·CC·DD FF W·WW·R | 1⅜" 2⅛" 2⅛" | — — — | 1⅜" 2⅛" 2⅛" | — — — |

# ELECTRICAL DETAILS

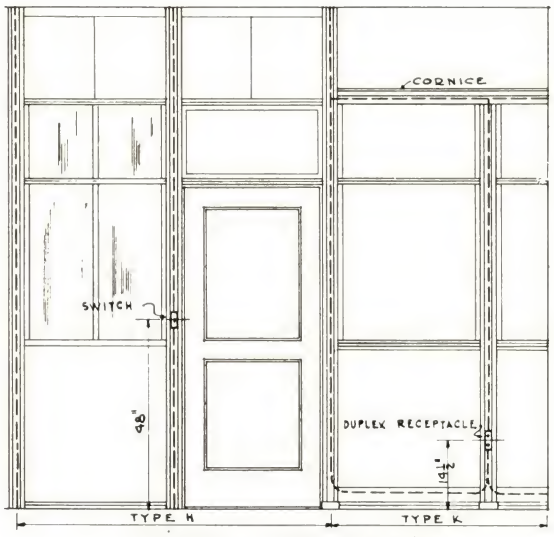
## • wiring systems and symbols



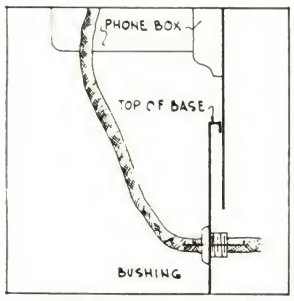

·TYPICAL· TYPE· R·W·WW·



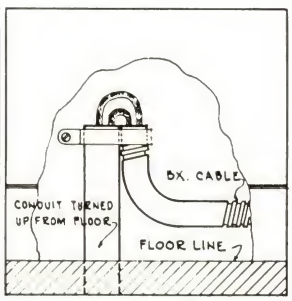

JUNCTION SPLICE BOX



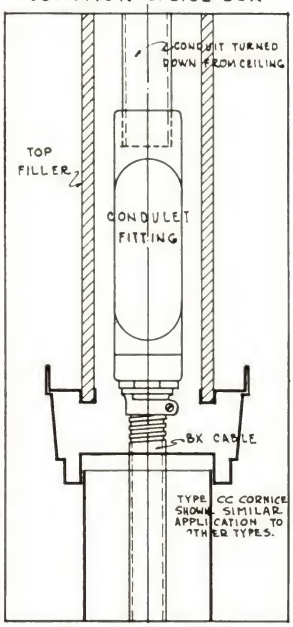

·TYPICAL · TYPE· H·K &HK·



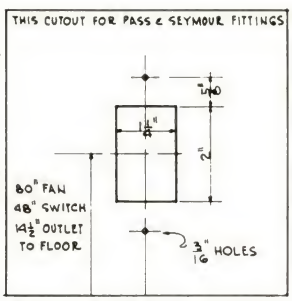

TELEPHONE OUTLET



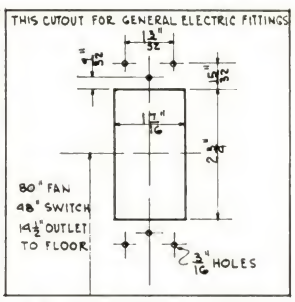

FLOOR FEED




CEILING FEED




P&S ELECTRICAL CUTOUT




G.E. ELECTRICAL CUTOUT

| STANDARD ELECTRICAL SYMBOLS | |
|---|---|
| SYMBOL | DESCRIPTION |
| $S_1$ | SINGLE SWITCH |
| $S_2$ | DOUBLE SWITCH |
| $S_3$ | TRIPLE SWITCH |
| $S_D$ | DOOR SWITCH |
| ⊢⊖ | DUPLEX RECEPTACLE |
| ⊢8 | FAN OUTLET |
| ⋈ | PHONE OUTLET |
| ⊡ | PUSH BUTTON |
| Ⓐ | THERMOSTAT |
| □/ | BUZZER |
| [1] | ELECTRIC DOOR OPENER |
| ▬ | ELECTRIC PANEL |

**WIRING METHODS:** The following method is recommended: All wiring completely concealed in partition and run in flexible BX cable. All connections and splices enclosed in junction boxes having BX cable ends securely clamped to boxes. Outlet boxes for all switch and convenience outlets with provisions for securing ends of BX cables. Ceiling and floor feeds connected to partition system at junction boxes.

Do not use rigid conduit in partition as flexible BX cable together with partition members meets National Fire Underwriters Code for No. 14 gauge rigid conduit system.

Another method used is the running of all wiring concealed in partition in flexible BX cable without use of junction boxes for splices and connections, provided adequate taping is used.

Layin wiring is completely enclosed in types AA, BB, DD and EE raceways. Enclosed raceways meet most code requirements without using BX cable. Small channel bridges can be supplied to carry raceways in base from one unit to the next.

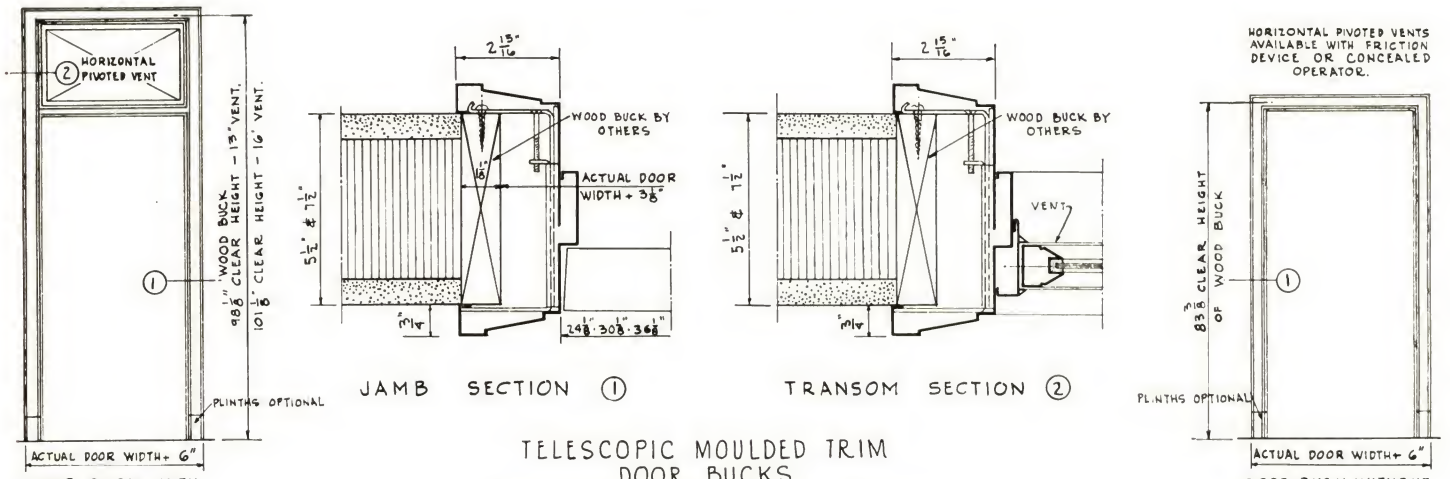
If open wiring is used the partition must be grounded to building conduit system.

**STANDARD SYMBOLS:** Adjoining table lists standard electrical indications as approved by architects and the American Society for Electrical Engineers. Whenever required on drawings these symbols should be used exclusively.

**AIR CONDITIONING FACILITIES:** New trends in offices often require air conditioning. Necessary suction liquid and drain lines are easily carried and concealed in raceways for electrical wiring. Line sizes that can be accommodated are listed in adjoining table on page No. 56.

# HOLLOW METAL TRIM

## • door bucks, wall base and blackboards

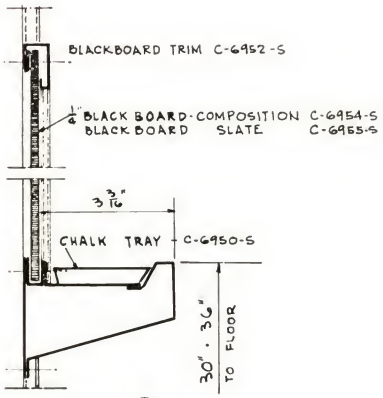



DOOR BUCK WITH TRANSOM
C-5300-S & 5301-S

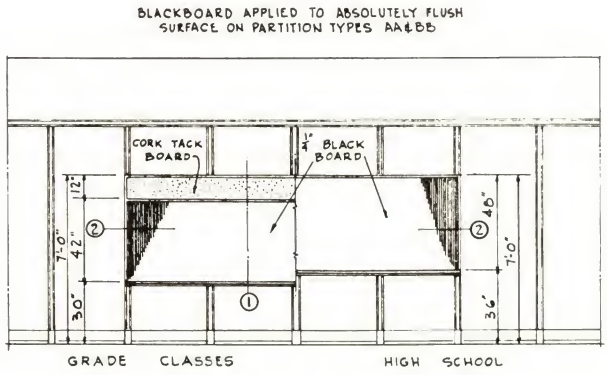
TELESCOPIC MOULDED TRIM
DOOR BUCKS

NOTE! GIVE HEIGHT & THICKNESS OF WALL BASE IF ANY. THUMB TURNS ONLY, FURNISHED FOR CONCEALED OPERATOR

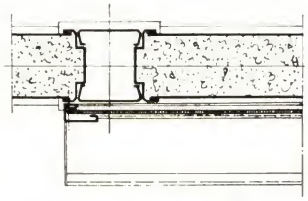
DOOR BUCK WITHOUT TRANSOM
C-5010-S TO 5067-S



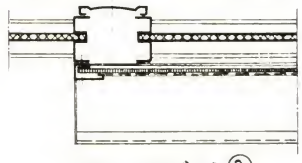

SECTION ①




TYPICAL BLACK BOARD ELEVATION
C-6950-S TO C-6965-S



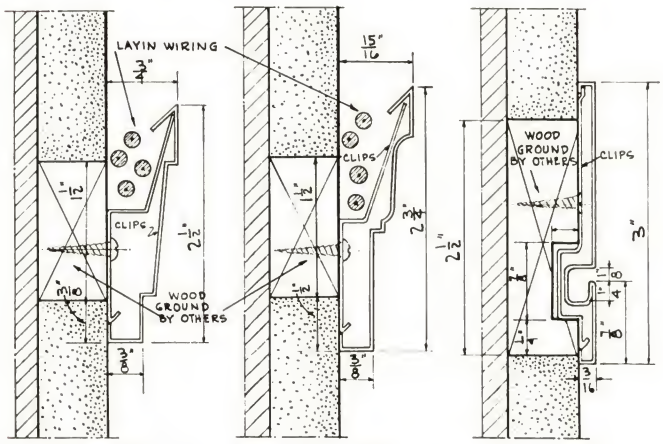
PLAN TYPE "CC" ②
APPLICATION TYPE "FF" SIMILIAR



PLAN TYPE "R" ②
APPLICATION TYPE "W & WW SIMILIAR

| PICTURE MOULD LENGTHS | | | | |
|---|---|---|---|---|
| LENGTHS | 30" | 60" | 102" | |
| CORNERS | 12" x 12" | 18" x 36" | 24" x 24" | 36" x 30" |
| R & L.H. COPES | 30" | 60" | 102" | |

| BASE LENGTHS • CORNERS • COPES | | | | |
|---|---|---|---|---|
| LENGTHS | 30 | 60" | 102" | |
| CORNERS | 12 x 12" | 18" x 36" | 24" x 24" | 36" x 30" |
| R & L.H. COPES | 30" | 60" | 102" | |

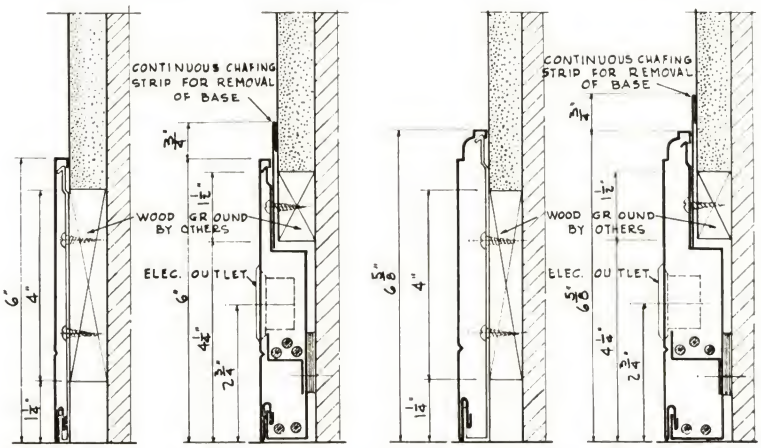



MOULDED TYPE
C5700 TO 5703-S

MOULDED TYPE
C5705 TO 5708-S

FLAT TYPE
C5710 TO 5712-S

PICTURE MOULD TYPES




FLAT DUMMY
C5500 TO 5502-S

FLAT WIRING
C5510 TO 5512-S

MOULDED DUMMY
C5505 TO 5508-S

MOULDED WIRING
C5515 TO 5518-S

DUMMY & WIRING BASE TYPES

SHIPPING CLASSIFICATION
SUFFIX S: IN STOCK CS: CUTDOWN STOCK NS: NO STOCK

PATENTED & PAT PENDING

# SPECIFICATIONS

## • safeguard of quality

**SPECIFY HAUSERMAN BECAUSE**—Leadership is the greatest assurance of value and acceptance. Specify Hauserman stock for a complete job, for speedy service, and for permanent satisfaction.

## HAUSERMAN MASTERWALL SPECIFICATION

**1. TYPE:** Furnish and erect complete The E. F. Hauserman Company Standard Type . . . (*insert type*) . . . Movable Steel Masterwalls. (*See partition types, index page 67, illustrations pages 8 to 15. Details pages 22 to 41. Features pages 18, 19.*)

*Note: Method of handling "Or Equal" clause; While there is no substitute for Masterwall Design, Quality and Service it is occasionally necessary for statutory reasons to provide the possibility for other bidders. To this end the following clause may be added at the end of paragraph No. 1.*

Partitions of other manufacturers which are proposed as generally meeting these specifications may be submitted for approval stating the exceptions from these specifications and amount of difference in price if any, effected by their use. *Note: Masterwall price levels are guaranteed on flat specifications within reasonable time limits.*

**2. SHOP DRAWINGS:** Shop drawings in duplicate showing partition layout, typical elevations, hardware schedule, finish and any special conditions shall be submitted for approval before fabrication.

**3. INTERCHANGEABILITY:** Door units shall be interchangeable with panel units of the same size. Units shall be so arranged and assembled that future extensions of either two-, three- or four-way may be jointed thereto in a neat symmetrical and substantial manner without removing the existing units, or using fillers. (*Omit this paragraph for type TE which is movable but panels are interchangeable only in complete run changes*).

**4. STEEL:** All exposed steel shall be cold rolled, furniture stock, properly annealed, process leveled with smooth, clean surfaces. Gauges specified are United States Standard

**5. PANELS:** Insert specification paragraph according to type as scheduled on pages 60 and 61. *For type AA in addition to panel insert specify — The single line joint where panels abutt shall not be over $\frac{1}{32}$" wide, and shall be flush with a tolerance of $\frac{1}{32}$". Surface of panels shall be commercially flat within the limits of commercial stretcher level steel. For types AA, BB, CC and FF in addition to panel insert specify — The inner surface of the sheets shall be coated with a mastic paint having a loose fibre content to deaden all metallic ring or rattle.*

*Partitions without door openings shall reduce sound transmission at least thirty-eight decibels for frequencies averaging from 256 to 4096 and partitions with doors shall reduce transmission at least twenty-five decibels average over the same range. (Types AA, BB and CC only.)*

**6. RAILS:**..... (*insert for type*) .....

**7. VERTICALS OR POSTS:**..... (*insert for type*) .....

**8. POST CAPS:**..... (*insert for type*) .....

**9. PLINTHS:**..... (*insert for type*) .....

**10. BASE:**..... (*insert for type*) .....

**11. CORNICE OR PICTURE MOLD:** (*insert for type*) .....

**12. END FILLERS:** Steel end fillers shall be used at the end of partition runs and shall be insulated similarly to partition panels. End fillers shall be neatly and securely fastened to the building wall. (*For type AA specify whether end fillers are to be type flush with partition surface at wall intersection, or type with flat mould trim.*) (*See details page 22 and 23*).

**13. TOP FILLER:** Top fillers for partitions that extend to ceiling shall be neatly scribed to ceilings, walls, beams, pipes, etc., and joints shall be reinforced, pointed and refinished smooth ready for painting. Top filler shall be finished to match ceiling. Top filler shall be double sheet mineral board ¼" thick, or steel. (*Omit if no top filler required. For steel top filler on types AA and BB, specify: Top filler for partitions that extend to the ceiling shall be double steel with flush line joints. Single line for type AA, double line for type BB. Top filler shall be removable both sides and held in place by snap-on clips concealed behind removable picture mould. Provide flat ceiling mould to receive steel top. Pack top solid with inorganic filler for sound insulation. Finish to be applied in plant to match approved color sample. See general note regarding top fillers, page 62*).

**14. DOORS AND FRAMES:** Doors shall be 1¾" thick, with not more than $\frac{3}{32}$" clearance at jambs and heads. Doors shall be standard, one or two panel, glass or steel panels, as shown or specified. Stiles and panels shall be sound deadened with packing.

Sinkages shall be provided in doors and frames for all mortise or countersunk interchangeable hardware. Steel reinforcement shall be inserted for attaching all hardware, and shall be of ample size to stiffen the sheet metal against the strain of the service required. Reinforcement shall be secured by electric welding. Reinforcements for butts shall be at least 9" long, No. 14 gauge steel channels with raised bosses tapered for screws. Double doors shall have bevelled meeting strikes.

Doors shall be glazed **without the use of exposed screws or loose glazing heads.**

Doors and frames shall be **floating type adjustable to variations in floor level.** (*Omit this line on types H, K & HK whose frames do not float. For types AA and BB add specifications as follows:*

*Frames shall have felt cushioned strikes to lessen sound transmission and assure more quiet operation of doors.*

*Provide snap-on door frame trim of design as shown on detail drawings. Trim shall be provided with raceways both sides for layin electric wiring. Type CC or FF can be furnished with steel or felted strikes. Specify which*).

**15. HARDWARE:** Hardware design and construction shall be as regularly furnished with the metal partitions. Hardware shall be interchangeable, with operation and finish as called for in hardware schedule. Doors to be hung on two ball bearing butts 5"x 4" in size. (*U. S. 10 and U. S. 18 finish stocked, hardware illustrated pages 52, 53, 54. Specify whether friction device or concealed operator on vents*).

**16. ELECTRICAL PROVISIONS:** Furnish and install electrical switches and plates 4'-0" above floor. Furnish and install duplex plug receptacles in the base, or post caps near base. Electrical fittings and receptacles shall be in number and location as shown on plans. All conduit and electric wiring by others. (*Electrical accessories and details shown on pages 55, 56, 57*).

**17. FINISH:** All surfaces shall be properly degreased clean and dry before paint or finish is applied. All coats shall be evenly applied, and all parts must be of uniform shade. Finish to be Masterwall color No... or as selected. (*See finish information page 20, specify black mop strip when required*).

Each coat of lacquer shall be put on in two applications, the second being worked at right angles to the first. Each coat of paint or enamel shall be baked to the proper degree of hardness before sanding.

Industrial or prime finish shall consist of one dip or spray coat of rust resisting paint baked on.

Flat color full finish shall consist of one dip or spray coat of rust resisting paint, baked on and sanded smooth. In addition two coats of pyroxylin lacquer shall be applied on all exposed surfaces, the first coat to be sanded smooth and the final coat to be an egg shell gloss finish.

*See note on page 20 regarding special finishes and textures. Stipple finishes are recommended for flush walls such as types AA and BB. Call the Masterwall Engineer.*

Grained finish shall consist of one dip or spray coat of rust resisting paint, baked on and sanded smooth, then grained to match approved finish sample. Two coats of clear pyroxylin lacquer shall then be applied, the first coat to be sanded smooth, and the final coat to be an egg shell gloss finish.

Finish coat shall pass a bend test of bending over a ½" diameter rod without showing cracks or imperfections in the finished surface.

**18. GLASS AND GLAZING:** Glass for metal partition work in this section shall be furnished by this contractor, of design, quality and thickness as specified or called for on drawings.

Glass shall be bedded in putty and back puttied. Putty shall be colored to match the finish of adjacent metal work, and shall not show on exposed surfaces. Glazing stops shall be **secure and without any exposed screw heads.** (*Omit if no glass required*).

**19. ERECTION:** Partitions shall be erected in a rigid and substantial manner, straight and plumb, with horizontal lines level. Units shall be interlocked and aligned at all panel and door unit joints. Securely anchor units to the floor with concealed fastenings adjustable to variations in floor level. Hardware shall be carefully adjusted and left in perfect working condition. Glass and metal surfaces shall be cleaned and left free from scratches and abrasions. Provide reinforcements to ceiling or bracing on runs exceeding 20 feet in length unsupported by cross runs.

# SPECIFICATIONS

## • panel, rail, vertical, inserts

**NOTE:** Paragraphs No. 5 to 11 inclusive are to be inserted in paragraphs No. 5 to 11 inclusive of the standard specification form on page 21. The paragraphs are to be read and used horizontally

SCHEDULE OF INSERTS FOR SPECIFICATION FORM—PAGE 59

| TYPE | 5. PANELS | 6. RAILS | 7. VERTICALS OR POSTS |
|---|---|---|---|
| AA<br>3″ Thick Flush<br>Single Line Joint<br>See details<br>Pages 8, 22, 23 | Panels shall be flush with single line joint. Panel plates shall be No. 20 gauge steel reinforced with steel members welded to panel plates approximately on 12″ centers with spotwelds about 3″ apart. Panels shall be packed solid with inorganic filler to form a firm backing and insulation. Panels shall be plant assembled in units by fastening on to verticals and designed to readily permit removal of panel plate on either side of partition. | Chair, transom and top rails shall be No. 18 gauge rolled steel shapes. Bottom member of transom and top rails of glass panels shall telescope into upper member, permitting insertion of glass without the use of removable stops. The soffit of telescopic glazing stops shall be perforated to receive picture hooks. | Verticals shall be No. 16 gauge formed steel shape perforated and notched for panel connections and electric wiring. Provide concealed adjustable posts anchored to floor and ceiling at each panel joint. |
| BB<br>3″ Thick, Flush<br>Double Line Joint<br>See details<br>Pages 8, 24, 25 | Panels shall be flush with double line joint. Panel plates shall be No. 20 gauge steel reinforced with steel members welded to panel plates approximately on 12″ centers with spotwelds about 3″ apart. Panels shall be packed solid with inorganic filler to form a firm backing and insulation. Panels shall be plant assembled in units by fastening on to verticals and designed to readily permit removal of units. Units to have universal post arrangement. | Chair, transom and top rails shall be No. 18 gauge rolled steel shapes. Bottom member of transom and top rails of glass panels shall telescope into upper member, permitting insertion of glass without the use of removable stops. The soffit of telescopic glazing stops shall be perforated to receive picture hooks. | Verticals shall be No. 16 gauge formed steel shape perforated and notched for panel connections and electric wiring. Provide concealed adjustable posts anchored to floor and ceiling at each panel unit. |
| CC<br>3″ Thick,<br>Semi Flush<br>See details<br>Pages 10, 26, 27 and 28 | Panels shall be flush type with projections at posts not to exceed ⅛″, and panel thickness not to be less than 2¾″. Panel plates shall be No. 20 gauge steel, reinforced with steel members welded to panel plates approximately on 12″ centers with spotwelds about 3″ apart. Panels shall be packed solid with inorganic filler to form a firm backing and insulation. Panels shall be assembled by means of tie rods, and designed to permit cut down in the field readily. | Chair, transom and top rails shall be No. 18 gauge rolled steel shapes. Bottom member of transom and top rails of glass panels shall telescope into upper member, permitting insertion of glass without the use of removable stops. The soffit of telescopic glazing stops shall be perforated to receive picture hooks. The face of rails shall be flush with face of panels. | Verticals shall be No. 16 gauge rolled steel shape perforated and notched for clip connections and electric wiring. |
| FF<br>2″ Thick,<br>Semi Flush<br>See details<br>Pages 11, 34 and 38 | Panels shall be flush type with projections at posts not to exceed ⅛″, and panel thickness not to be less than 1¾″. Panel plates shall be No. 20 gauge steel reinforced with steel members welded to panel plates approximately on 12″ centers with spotwelds about 3″ apart. Panels shall be packed solid with inorganic filler to form a firm backing and insulation. Panels shall be assembled by means of tie rods, and designed to permit cut down in the field readily. | Chair, transom and top rails shall be No. 18 gauge rolled steel shapes. Bottom member of transom and top rails of glass panels shall telescope into upper member, permitting insertion of glass, without the use of removable stops. The soffit of telescopic glazing stops shall be perforated to receive picture hooks. The face of rails shall be flush with face of panels. | Verticals shall be No. 16 gauge rolled steel shape perforated and notched for clip connections and electric wiring. |
| W<br>⅜″ Panel,<br>3″ Post<br>See details<br>Pages 12, 37 | Partitions shall be paneled type with packed steel panels ⅜″ thick, or glass panels. Panel plates shall be No. 24 gauge steel packed with $\frac{5}{16}$″ mineral board, excepting panels from chair rail to transom rail to be No. 20 gauge with corrugated fibre board packing. Panel assembly to be by means of tie rods, and designed to permit cut down in field readily. | Transom and top rails shall be No. 16 gauge rolled steel shapes. Chair rail shall be No. 18 gauge rolled steel shape. Bottom members of transom and top rails glass panels shall telescope into upper member, permitting insertion of glass without the use of removable stops. The soffit of telescopic glazing stops shall be perforated to receive picture hooks. | Verticals shall be No. 16 gauge rolled steel shape perforated and notched for clip connections and electric wiring. |
| R<br>⅜″ Panel,<br>3″ Post<br>See details<br>Pages 13, 38, 39 | Partitions shall be paneled type with packed steel panels ⅜″ thick, or glass panels. Panel plates shall be No. 24 gauge steel packed with $\frac{5}{16}$″ mineral board, excepting panels from chair rail to transom rail to be No. 20 gauge with corrugated fibre board packing. Panel assembly to be by means of tie rods, and designed to permit cut down in field readily. | Transom and top rails shall be No. 16 gauge rolled steel shapes. Chair rail shall be No. 20 gauge formed steel shape. Bottom member of transom and top rails of glass panels shall telescope into upper member, permitting insertion of glass without the use of removable stops. The soffit of telescopic glazing stops shall be perforated to receive picture hooks. | Verticals shall be No. 16 gauge rolled steel shape perforated and notched for clip connections and electric wiring. |
| HK or H<br>Single Steel,<br>3¾″ Post<br>See details<br>Pages 13, 40, 41 | Partitions shall be paneled type with No. 18 gauge steel panels, or glass panels. Units shall be assembled both vertically and horizontally with concealed bolted connections at the posts. | Horizontal rails shall be No. 20 gauge formed steel shapes. Vertical muntins to be No. 22 gauge formed steel. | Posts shall be No. 20 gauge formed steel 3¾″ square and extending full height to ceiling. (*Note, cornice high when cornice is used*). |
| K<br>Single Steel,<br>3¾″ Post, Base<br>See details<br>Pages 13, 40, 41 | Partitions shall be paneled type with No. 18 gauge steel panels, or glass panels. Units shall be assembled both vertically and horizontally with concealed bolted connections at the posts. | Chair rail and horizontal rails shall be No. 20 gauge formed steel shapes. Vertical muntins to be No. 22 gauge formed steel. | Posts shall be No. 20 gauge formed steel 3¾″ square and extending to bottom of cornice. Perforations to be provided at bottom of posts for electric wiring through base. |
| TE<br>2″ Thick,<br>Semi Flush<br>See details<br>Page 41 | Panels shall be flush type with projections at posts not to exceed ⅛″ and panel thickness not to be less than 1¾″. Panel plates shall be No. 20 gauge packed solid with inorganic filler. | None. | Posts shall be No 20 gauge formed flat shape with provisions for anchoring to floor channel and cornice. |
| DD TYPES<br>EE ASBESTOS<br>ACOUSTIC<br>HOSPITAL<br>CUBICALS<br>FIREPROOF<br>WALLS | Specifications and details furnished on request | | |

# SPECIFICATIONS

in the schedule opposite the type of partition being specified. The paragraph inserts should not be interchanged between partition types.

## • post caps, base, cornice, inserts

SCHEDULE OF INSERTS FOR SPECIFICATION FORM—PAGE 59

| TYPE | 8. POST CAPS | 9. PLINTHS | 10. BASE | 11. CORNICE OR PICTURE MOULD |
|---|---|---|---|---|
| AA<br>3″ Thick Flush<br>Single Line Joint<br>See details<br>Pages 8, 22, 23 | None. | None. | Base shall be No. 18 gauge 6″ high continuous with $\frac{5}{16}$″ projection. Base shall be removable for lay-in wiring with both sides independently adjustable for varying floor levels. Wiring raceways shall be provided for high and low tension wiring. | Picture mould shall be No. 18 gauge rolled shape 3″ high with $\frac{3}{16}$″ projection. Picture mould shall be removable each side for layin concealed electric wiring. Provide continuous picture hook slot in moulding. (If cornice is desired, specify the same as for type CC.) |
| BB<br>3″ Thick, Flush<br>Double Line Joint<br>See details<br>Pages 8, 24, 25 | Post caps shall be No. 18 gauge rolled shape, to snap on flush with panels. Caps shall be removable for disassembly, wiring, and the joining of panels at 2-, 3- or 4-way connections. | None. | Base shall be No. 18 gauge 6″ high continuous with $\frac{5}{16}$″ projection. Base shall be removable for lay-in wiring with both sides independently adjustable for varying floor levels. Wiring raceways shall be provided for high and low tension wiring. | Picture mould shall be No. 18 gauge rolled shape 3″ high with $\frac{3}{16}$″ projection. Picture mould shall be removable each side for layin concealed electric wiring. Provide continuous picture hook slot in moulding. (If cornice is desired, specify the same as for type CC.) |
| CC<br>3″ Thick,<br>Semi Flush<br>See details<br>Pages 10, 26, 27 and 28 | Post caps shall be No. 18 gauge rolled shape, to snap on flush with panel verticals. Caps shall be so designed as to form with panel verticals a pilaster relieved by vertical V-shaped lines. Caps shall be removable for disassembly and wiring. | Plinths shall be No. 14 gauge, flat, hook on type, vertically adjustable to floor at all posts. | Base shall be No. 18 gauge 6″ high with $\frac{1}{4}$″ projection. Base shall be removable for lay-in wiring with both sides independently adjustable for varying floor levels. Wiring raceways shall be provided for high and low tension wiring. | Cornice shall be No. 18 gauge rolled shape 2½″ high with internal expanding pull-up splice. Cornice shall provide for layin concealed wiring between top flanges of cornice and top filler after top filler is installed. This in addition to any concealed wiring within the cornice itself. |
| FF<br>2″ Thick,<br>Semi Flush<br>See details<br>Pages 11, 34 and 35 | Post caps shall be No. 18 gauge rolled shape, to snap on flush with panel verticals. Caps shall be so designed as to form with panel verticals a pilaster relieved by vertical V-shaped lines. Caps shall be removable for disassembly and wiring. | Plinths shall be No. 14 gauge, flat, hook on type, vertically adjustable to floor at all posts. | Base shall be No. 18 gauge 6″ high with $\frac{1}{4}$″ projection. Base shall be removable for lay-in wiring with both sides independently adjustable for varying floor levels. Wiring raceways shall be provided for high and low tension wiring. | Cornice shall be No. 18 gauge rolled shape 2½″ high with internal expanding pull-up splice. Cornice shall provide for layin concealed wiring between top flanges of cornice and top filler after top filler is installed. This in addition to any concealed wiring within the cornice itself. |
| W<br>$\frac{3}{4}$″ Panel,<br>3″ Post<br>See details<br>Pages 12, 37 | Post caps shall be No. 18 gauge rolled shape, moulded design, to snap on panel verticals. Caps shall be removable for disassembly and wiring. | Plinths shall be No. 16 gauge, snap-on type, vertically adjustable to floor at all posts. | Base shall be No. 20 gauge 7$\frac{5}{8}$″ high with moulded top. Base shall be removable for layin wiring with both sides independently adjustable for varying floor levels. Wiring raceways shall be provided for high and low tension wiring. | Cornice shall be No. 18 gauge rolled shape 2$\frac{3}{4}$″ high with internal expanding pull-up splice. Cornice shall be designed so as to allow concealed wiring to be run within. |
| R<br>$\frac{3}{8}$″ Panel,<br>3″ Post<br>See details<br>Pages 13, 38, 39 | Post caps shall be No. 20 gauge rolled shape moulded design, to snap on panel verticals. Caps shall be removable for disassembly and wiring. | Plinths shall be No. 18 gauge, snap-on type, vertically adjustable to floor at all posts. | Base shall be No. 20 gauge 6$\frac{5}{8}$″ high with moulded top, and 2″ high floor mould, adjustable for varying floor levels. Base design shall allow for concealed fish wiring within. | Cornice shall be No. 18 gauge rolled shape 2$\frac{3}{4}$″ high with internal expanding pull-up splice. Cornice shall be designed so as to allow concealed wiring to be run within. |
| HK or H<br>Single Steel,<br>3$\frac{3}{4}$″ Post<br>See details<br>Pages 13, 40, 41 | Post caps shall be No. 20 gauge formed steel, to snap on posts. Caps to be removable for disassembly and wiring. | None. | None. | If cornice required, specify same as for type K. |
| K<br>Single Steel,<br>3$\frac{3}{4}$″ Post, Base<br>See details<br>Pages 13, 40, 41 | Post caps shall be No. 20 gauge formed steel, to snap on posts. Caps to be removable for disassembly and wiring. | Plinths shall be No. 18 gauge, slip-on type, vertically adjustable to floor at all posts. | Base shall be No. 20 gauge 7″ high with moulded floor mould 2″ high, adjustable for varying floor levels. Base design shall allow for concealed fish wiring within. | Cornice shall be No. 18 gauge moulded shape 3$\frac{5}{8}$″ high with internal expanding pull-up splice. Cornice to be designed so as to allow for concealed wiring to be run within. |
| TE<br>2″ Thick,<br>Semi Flush<br>See details<br>Page 41 | None. | None. | Base shall be No. 18 gauge formed steel channel designed to receive panels and posts. (*Note: For uneven floors specify base to be caulked at floor line particularly at urinals and showers*). | Cornice shall be No. 18 gauge rolled shape 2$\frac{3}{4}$″ high with internal expanding pull-up splice. |
| DD TYPES<br>EE ASBESTOS<br>ACOUSTIC<br>HOSPITAL<br>CUBICLES<br>FIREPROOF<br>WALLS | Specifications and details furnished on request. | | | |

# SPECIFICATIONS

## • railings, counters, hollow metal

**SPECIFICATION PARAGRAPHS** on page 59 covering general conditions, performance, erection finish, etc., are to be used with the following various specifications as they apply.

**CEILINGS:** Specifications should call for, and drawings should show, type of ceiling desired. See various types illustrated on page 49.

**COUNTER:** (*Open Back*). Counter front and ends shall be constructed of steel panel units so as to readily permit rearrangement of counter if required. Panel units shall be E. F. Hauserman Company type .....

Counter top to be No. 14 gauge steel covered with ⅛" thick linoleum of color selected. Linoleum top to be securely cemented in place with edges bound by $\frac{3}{16}$" high bronze binding.

Open end of counter to have a wide apron and to be supported by 2" square posts with 2" high adjustable steel floor shoes.

Furnish (*quantity*) No. 16 gauge steel shelves under counter.

**COUNTER OR DISPLAY CASE:** (*Closed Back*). Furnish and install E. F. Hauserman Company counter type .....

Counter front and ends shall be constructed of steel panel units so as to readily permit rearrangement of counter if required.

Counter top to be No. 14 gauge steel covered with ⅛" thick linoleum of color selected. Linoleum top to be securely cemented in place with edges bound by $\frac{3}{16}$" thick bronze binding.

Back of counter to be enclosed with (*specify whether hinged or sliding steel or sliding glass*) doors with flat key lock. (*Note: Also specify whether front of counter is to have steel or glass panel. Specify fixed or adjustable glass or steel shelves giving width and quantity, also type and number of drawers*).

**DUSTPROOFING:** For dustproof jobs, partition types are recommended in the following sequence of dustproofness; AA; BB; CC, FF or WW; W or R. Intersection of partition extremities with building floor, walls and ceiling should be caulked. Clearance under doors should be sealed with threshold and felt strip. It is important to have felted door frames, which are available only in types AA, BB, CC and FF. Types H, K or HK are not recommended for dustproof jobs and if used caulking should also be applied between panel horizontals and at intersection of posts.

**GLAZED RAILING:** Furnish and install E. F. Hauserman Company type ..... glazed railing. (*See details page 42*). Panel and gate units to be movable and interchangeable.

Securely anchor railing to floor by means of pipe braces and floor castings.

Panels to be steel to 42" high, glazed above with 24" high glass ¼" thick. Glass to be held in place with well proportioned steel posts. Posts to be topped with ornamental finals, U. S. 10 or U. S. 26-D finish. Top, horizontal of panels at glass line to be steel painted.

When low gates are called for they shall have straight top, with stainless steel crown.

High gates to be 60" high, 6" above floor, glazed with curved top glass.

Double acting gates to have die cast self-centering gate hinges.

Single acting gates to have checking hinge, felted gate stop, full height of bottom steel panel and latch operated by lever handles both sides (*Specify cylinder lock when required*).

**LIGHTPROOFING:** Recommendations for lightproof jobs are the same as for dustproofing. Practical lightproof entrances are made by the use of two doors with a small vestibule. Louvers or grilles are lightproofed by covering with a metal hood with black interior.

**PICTURE MOULD:** Furnish and install E. F. Hauserman Company type ..... picture mould. (*See page 58*)

Continuous wood ground as detailed to be furnished and installed by others.

Picture mould to be No. 18 gauge with accurate profile and square ends. Clips for holding picture mould to be No. 14 gauge, located 18" on center.

**RAILING:** Furnish and install E. F. Hauserman Company, type ..... movable steel railing. (*See details page 42*). Panel and gate units to be interchangeable.

Securely anchor railing to floor by means of pipe braces and floor castings.

Double acting gates to have die cast self-centering gate hinges.

Single acting gates to have checking hinge and felted gate stop full height of gate.

Gates shall have straight top with stainless steel crown.

Hand rail and post capitals to be stainless steel tampico brush finish.

**SLIDE UP SASH:** Sash frames shall be constructed of steel. Neat appearing counterweight boxes and sash guides to be fabricated of No. 18 gauge steel. Provide removable cover for access to counterweights. Counterweight pulley to be hardened steel with ball bearings. Chain shall be heavy 5 ply steel chain. Sash to be locked in closed position by dead bolts.

**SOUND PROOFING:** Partition shall be E. F. Hauserman Company type ..... soundproof partition.

Steel panel units shall be insulated full thickness. Glass panels to be double glazed. Glass to be glazed so as to be easily removed for cleaning. All four edges of glass to be well sealed to prevent sound leakage. (*¼" thick glass is recommended*).

Seal the point of contact of partition base and floor with mastic seal. Base at floor stamping connections, post caps and end fillers to be well packed with inorganic filler.

Ventilation to be provided by means of sound absorbing duct installed at top filler. (*Transoms not recommended due to sound leakage*).

Door frames to be provided with felted frames to insure quiet operation of door and eliminate sound transmission. Provide felt wiper and bronze threshold to close opening at bottom of door. (*Source of large leakage*).

Top filler to be packed with inorganic filler for sound insulation.

**TOP FILLERS:** Specifications should call for, and drawings should show, type of top filler desired. Partition types AA, and BB with picture mould regularly furnished with double steel insulated top filler. Steel top filler is the best answer for flush walls providing greater durability, flexibility and salvability.

Double mineral board top fillers with cornice or picture mould also available for types AA and BB.

Double mineral board regularly used with all other partition types having cornice. Double steel tops also available. Single steel top filler used with types K, H, HK when used with posts to ceiling without cornice. (*See various types illustrated on page 49*).

**TELESCOPIC DOOR BUCK:** Furnish and install the E. F. Hauserman Company telescopic type door bucks with No. 18 gauge removable trim. Trim to be securely held in place with No. 12 gauge clips. Wood buck by others must be 1⅛" thick stock installed plumb and accurately. Inside clearance of wood buck to be 3⅛" wider than actual door width, with 83⅜" clear height above finished floor.

For bucks with vents wood bucks should provide 98⅛" clear height for 13" vent and 101⅛" clear height for 16" vent.

Overall width and length of wood buck must not exceed overall width and height of metal trim. (*See page 58*)

(*Note: Specify door bucks whether with or without vents and concealed operator or friction device.*

**WALL BASE:** (*Non-wiring type*). Furnish and install E. F. Hauserman Company non-wiring type . . . wall base. (*See page 58*)

Continuous wood ground ¾" x 4" to be furnished and installed by others with top of ground located 5¼" above finished floor line.

Wall base to be securely held in place by No. 14 gauge steel clips located 18" on center.

Outer base to be No. 18 gauge with accurate profile and square ends.

**WIRING WALL BASE:** Furnish and install E. F. Hauserman Company type . . . wiring wall base. (*See page 58*)

Continuous wood ground ¾" x 1½" to be furnished and installed by others with top of ground located 5¾" above finished floor line.

Wall base to be removable for access to electric wiring. Provisions to be made for high and low tension wiring, with continuous 18 gauge compartment for high and low tension wiring.

Outer base to be No. 18 gauge with accurate profile and square ends. Provide continuous metal chafing strip at plaster line for easy removal of base and protection of plaster.

**WINDOW EMBRASURES:** Furnish and install E. F. Hauserman Company type ..... window embrasures as called for on plans.

Radiators to be enclosed with removable panel front full width for access to radiators.

Radiator enclosure to have neat perforated grille openings for air circulation. Access to radiator valve to be by means of concealed access door in removable front. Radiator stool to be insulated and have baffle to reflect heat into room.

At head of window embrasure provide pocket to receive drapes and Venetian blinds. (*Note: Specify perforation location, whether in base, stool, or top and bottom of removable front grille. See details page 44*).

# HAUSERMAN PRACTICE

## • the result of experience

**THE POLICY OF THE HAUSERMAN COMPANY** is to take full responsibility for the delivery of a complete job. This means analysis of the prospective customer's uses, the application of Masterwalls to these uses, their manufacture, erection and glazing, their finishes and furnishings such as hardware and other accessories. The co-ordination of all of these items with other trades or activities, are all included under our slogan "Organized for Service."

**COMPLETE INFORMATION** is all important, the faster the job the more important. Such items as color, hardware, glass, approved drawings, field dimensions, are all vital to service. The best facilities must have genuine co-operation in these matters from the customer if speed and satisfaction are to be attained. Much time can be saved in erecting partitions by making layouts as correctly as possible to field conditions. This is done by taking field measurements of old or rough walls, floors and intersecting mechanical equipment. End fillers must be wide enough for end posts to completely clear all pipes, radiators and window ventilators. Factory trained engineers clean up these items promptly in the field.

Speed demands stock. Stock shipments demand clean orders and no changes while in the shop. A buyer is safe to go "full steam ahead" as Masterwalls have the built-in facilities for the inevitable last minute changes which are usually handled in the field.

**ERECTION:** Many years of experience have taught us that in the main our men do the best, quickest and most practical erection job. Floor levels are important. They are usually out at least ½" and frequently 1" to 1½". Some old buildings are out of level as much as 2" or more. Facilities for meeting these conditions are present in all Masterwalls by the use of floor shims, floating door frames, bases and plinths. High or low spots can be taken care of without cutting the partitions and thereby interferring with their re-use. As a general rule Masterwalls should be erected on top of finished floor or floor covering. This reduces patching of floor or floor covering when partitions are moved

Wherever possible, walls and ceilings should be painted before partitions are installed. This makes satisfactory retouching possible when partitions are moved as paint line at intersection of wall and partition is almost impossible to remove when walls are painted after erection of partition. This will also eliminate spattering of partitions with paint and plaster touchup when walls are painted. Masterwalls are only one step ahead of furniture and carpets and should be handled as such. Remember the original shop finish is the finest finish and should never be touched with anything but the best soap and water to keep it clean. It will remain fresh and bright a lifetime.

**NON STOCK HARDWARE:** No single item causes as much trouble and confusion as non stock hardware. This is notorious. We strongly urge against its use. Hauserman hardware is designed so that bitt key, cylinder and communicating locks are interchangeable in the same mortise. This hardware is the product of one of the leading hardware manufacturers. Built to our specifications to meet the difficiencies that 20 years of extensive hardware use have taught us. A user will be free from many irritations due to inability to interchange locks in doors without changing entire door, as different mortises are required for different locks. All Hauserman locks are interchangeable in same mortise which is standard for all doors. Masterkeyed cylinders of all standard manufacturers fit Hauserman locks.

This catalogue shows our complete stock line. The use of non stock hardware results in inevitable delay and usually added cost must be recognized. Masterwall complete stocks eliminate three to twelve weeks' time, the time usually required for actual hardware shipments, not promises. Hardware is best installed in the doors in the shop.

**GLASS:** Where vision is desired use clear glass, either ¼" polished plate or D. S. A. window glass (about ⅛" thick). Polished plate glass provides perfect vision, while D. S. A. has more or less distortion and is used where a saving outweighs the irritation incident to distorted vision. New processes have reduced this distortion but it is still present in varying degrees. Where borrowed light only is desired, use obscure glass either ⅛", 3/16" or ¼" thick available in various patterns. Consult the Masterwall engineer for various samples and prices. Glass ⅛" thick (clear or obscure) should never be used in one-panel doors, glazed railing, or when glass is chipped or sand-blasted, glass ¼" thick is recommended for these purposes. Clear glass actually should not be used above the transom. Clear glass in transoms admits no more light than obscure glass. Also obscure glass requires less frequent cleaning. Obscure glass diffuses light from ceiling fixtures and hides ceiling irregularities.

**PUTTY:** Glass is set in Hauserman metal partition putty, bedded and back-puttied. The putty is tinted to match the partition finish and will hold the glass securely against rattles without causing compression cracks. Ordinary wood sash putty should never be used as it will sag when fresh and harden and chip as it ages.

**EXPERIENCE GETS THE RIGHT ANSWERS** and has produced "Organized for Service." This means smart designs, fine manufacturing facilities, factory trained engineers and erectors constantly in the company's employ.

# MASTERWALL POINTS

## • that he who runs may read

1 **QUALITY:** Uniform quality and perfect fitting are accomplished through thorough standardization, costly tooling, trained workmen and rigid inspection—all possible only with large volume.

2 **SPEED:** The Hauserman method of carrying a complete stock of parts and finishing them to individual specifications, assures quick shipment of partitions fabricated and finished to your particular requirements.

3 **SERVICE:** All details of planning and erection are handled by full time trained partition specialists. Rearrangements, too, are handled by experts. Unified training and unified control, make the Hauserman organization effectively "Organized for Service, Coast to Coast."

4 **A TYPE FOR EVERY PLACE & PURPOSE:** A wide selection of types is offered for all dividing or sub-dividing purposes in industrial and commercial buildings. Any special decorative or utilitarian feature available in any wall may be had plus, in Masterwalls.

5 **LONG SERVICE:** The life of Masterwalls is from 25 to 50 years, being fireproof, vermin proof and flood proof. They are always useful as their flexibility always meet changing needs and surroundings.

6 **FLUSH WALLS:** Flush partition types with absolutely flush, permanently flat steel walls, outmode tile and plasterwalls everywhere. Hauserman flush type Masterwalls produce the most refined interiors, yet provide complete movability.

7 **DELUXE REINFORCING:** Panels of thick partition types are reinforced horizontally 12″ apart, electrically spotwelded on 3″ centers. This construction gives maximum strength, soundproofness and permanent flatness.

8 **DELUXE SOUND DEADENING:** Panels of thick partition types are sound deadened, heat insulated by being packed solid with inorganic filler. This insulation eliminates sound vibration and provides maximum protection against sound and heat transmission.

9 **MOVABLE UNITS:** The entire wall panel or door and frame may be slipped out of place without disturbing adjacent sections. A door may thus be substituted for a panel or vice versa, or various width panels may be interchanged to provide a post at the requisite location to receive a cross partition.

10 **HARMONY IN UNIT WIDTHS:** In order to make Masterwalls fit a given space and to make possible nice balance in panel arrangements various types have many stock panel widths. "Paneled" types in 5″ multiples (plus cut down feature) from 10″ to 60″ wide, Semi-flush types in 6″ multiples (plus cut down feature) from 12″ to 60″ wide, Flush types in 3″ multiples (no cut down feature) from 9″ to 48″ wide.

11 **RANGE OF HEIGHTS:** Many Hauserman standard heights meet the requirements of various ceiling heights. Top filler or superstructure panels are furnished to extend the partitions to any desired height. Even though the ceiling heights vary on different floors, it is advantageous to use one height throughout for interchangeability between floors, taking up floor height differences in size of top filler. To this end picture mould should be a uniform height from floor on all floors.

12 **SIMPLE RIGID ASSEMBLY:** All panel units, door units and end fillers are internally fastened by interlocking clips. The post caps are snapped over the clips concealing them. Thus ease of disassembly is affected without unsightly exposed screws.

13 **UNIVERSAL POSTS:** The design of partition verticals permits the units to be joined together with interlocking clips to form one-way, two-way, three-way and four-way intersections. Cross-runs of partition may be started from either side of any post merely by omitting the post cap and clipping together the intersecting units. Likewise partition runs may be omitted and the post cap substituted for intersecting run. See page 18.

14 **METHOD OF LEVELING:** No building floors are level. It is essential that all partitions be erected plumb and true so that doors will operate freely and all horizontal lines be straight. The Hauserman method of stamped interlocking shims provides a firm level foundation.

15 **FLOOR CONNECTIONS:** Positive non-shifting anchorages to the floor are securely held by removable fastenings, drive nails and lead shields in concrete floors and lag screws in wood floors. Runs of partitions can be extended in any one, or all four directions, from any post.

16 **FLOOR CONTACT:** Adjustable floor moulds, base and plinth, provide perfect floor contact and a finished appearance over irregular floors. When necessary to lay linoleum or carpet after the partition is erected, the base and plinths may be readily raised without removing and the floor covering inserted beneath without disturbing the partition proper.

17 **DOOR & FRAME:** All doors, transoms and hardware are assembled in their frames at the factory, insuring accurate fit. They are shipped and erected as units, each perfectly fitted and smoothly operating initially and always. Steel doors cannot warp, swell crack or stick — hence need no maintenance.

18 **LAYIN WIRING DOOR FRAME:** A raceway for high and low tension wiring is provided around doors in flush partition types. Thus the same layin wiring raceways in the base are continued up and over the door, and are covered by removable snap on door trim.

19 **CLEARANCE UNDER DOOR:** The floating door frame (*all types*) provides for a suitable clearance at all times to meet variations in floor level or permit adjustment up or down to accommodate new or changed linoleum, carpets or rugs. Accurate adjustment to floor is readily made should the door be moved to another point in the building.

20 **FELTED STRIKES:** Felted strikes on doors and transoms prevent sound leakage and provide quieter operation, a nice refinement.

21 **CONCEALED TRANSOM OPERATORS:** The transom operator is well designed, compact, has concealed mechanism with small handle which operates a worm gear for opening transom to full 90 degrees without noise or effort and automatically locks transom in any position.

# MASTERWALL POINTS

## • 15 minutes reading time

22 **PICTURE MOULDS:** The flush partition types are furnished with flat picture mould instead of cornice. Picture mould has continuous slot for hanging pictures and is easily removed for layin electric wiring. Facilities are provided for hanging pictures on all types either with hook into slot or over top edge of cornice on semi-flush types or picture hooks in transom and cornice rails on paneled types.

23 **STEEL TOP FILLER:** The steel top filler is easily installed and removed, has flush line joints, and is salvable some as partition units. This is a real improvement and eliminates wood struts, field painting and pointing joints inescapable with mineral board tops.

24 **SOUNDPROOFNESS:** Panels packed solid full thickness with inorganic sound deadening fireproof filler provide genuine sound and heat insulation. *Masterwall panels deluxe construction 2¾" thick are more soundproof than a masonry wall of twice this thickness.*

25 **ACOUSTICS:** Sound absorbing partitions and ceilings are furnished for eliminating excessive noise at the source. It pays to buy quiet. Few investments made by management will pay greater dividends than those for noise elimination.

26 **DOUBLE GLAZING:** Where soundproofness is desired and either vision or light are necessary, double glazed partitions are used. Glass is set in removable frames for cleaning. Felt seal is provided on all four edges of frames.

27 **FIREPROOF:** The first step in fire protection is to reduce the amount of combustible material. Masterwalls will not feed flames. They will retard the spread of fire. They are permanently fireproof and with steel tops are completely non-combustible. (see page 66).

28 **HARDWARE:** 7 types of door locks are standardized in size and are interchangeable in any Masterwall door. They are stocked together with a complete line of other partition hardware. Knobs have cast bronze thimble and shanks. See pages 52, 53 and 54.

29 **PANELING AND WAINSCOTING:** Masterwalls are being used increasingly to form all four sides of finer offices. By enclosing structural irregularities, coat closets and washrooms may be installed in otherwise waste spaces. Partitions may be expanded to carry large waste or supply pipes, concealed book cases, private compartments and such. Nice decorative effects to please any taste and purse are possible. Still always movable.

30 **EMBRASURES:** Partitions are fitted around windows to form complete finished interiors. Such window units are interchangeable with stock panel sections and may be moved or rearranged. Radiators are concealed behind removable grilles flush with the paneling.

31 **ACCESSORIES:** Parts are stocked to produce an extensive line of accessories. Such as counters, shelving, display cases, counters on railing, access doors, book cases, medicine cabinets, coat rods, sliding or hinged wickets and grilles, louvres, grilles, wire mesh panels, slide up sash, etc.

32 **HOLLOW METAL TRIM:** Door bucks, wall base, chair rail and picture mould for masonry walls designed to harmonize with the various types of Masterwalls are stocked. The two piece telescopic buck, factory finished, can be installed after the masonry walls are finished (*at the same time partitions are installed*) details on page 58. These items permit harmony in detail in offices which have tile and plaster walls in conjunction with metal partition.

33 **MOVABLE STEEL PARTITIONS ARE A PERMANENT ASSET:** Tearing down tile and plaster partition and carting away the debris means that partition dollars are thrown on the junk pile. Installing new tile and plaster partition requires a repetition of the experience of reinvesting and duplicating the original cost, plus inconvenience and costly delays. Further on a rising market each succeeding replacement costs proportionally more. Masterwalls have only the current first cost. From then on they provide constantly increasing savings in many ways. Hauserman partitions arrive on the job completely finished, are quickly erected, and are easily and economically rearranged at any time without damage or waste.

34 **HIDDEN COSTS:** Rubbish removal, cleaning of rugs, drapes and business machines are real costs which result when tile and plaster partitions are installed or removed. Masterwalls save these and many other costs.

35 **ECONOMY:** Masterwalls are always a sound investment through making possible at low cost those unpredictable changes, which every business that lives and grows, must eventually make.

36 **MODERNIZATION:** Unsightly spaces in old office buildings, factory buildings, warehouses and stores, have been most economically modernized by the use of Masterwalls. Examples of these modernization possibilities are given on pages 6 and 7.

37 **HELPFUL SUGGESTIONS:** The benefit of the combined experience of the Hauserman Company is available to each of ou customers all the time. Matters of decorating, color, illumination, acoustics, ventilation, floor covering, layouts, glass and maintenance, each is solved by the Hauserman staff organization which consists of specialists in various phases of partition usage.

38 **ORPHAN PARTITIONS:** Twenty-five years devotion to the creation of this industry, the producing of over ⅔ of all the steel partition in use to date, and the constantly increasing success of our endeavors are assurance that the Hauserman Company will not likely forsake this business on which it has concentrated so long. Hauserman Service will remain a vital institution and not evaporate as has the "service" of over 50 manufacturers in this line during the last 30 years. Parts, tools and finishes are permanently maintained on all Masterwall types for duplication.

39 **SPECIALISTS:** The manufacture of partitions is not a "side-line" or "filler-in" for the Hauserman Company. The Hauserman organization is a group of partition specialists, concentrated on the continual development of Quality, Speed and Service in movable partitions.

40 **LEADERSHIP:** Leadership is the greatest assurance of value and acceptance. A large volume of business permits the carrying of large stocks for speed and service

# FIREPROOF MASTERWALLS

## • prefabricated, movable fire walls



Exterior of fire test chamber with pyrometers in place before fire.



Exterior disassembled panel after fire, showing panel and packing unaffected.



Interior of the fire chamber before igniting of fire, showing fuel in place.

**THESE FIREPROOF** insulated movable steel Masterwalls comply with the American Society for Testing Materials one hour fire test requirements. Standard Specifications for Fire Test of Building Structures and Materials (C-19-33) require exposure, in a confined space, to fire having a standard temperature rise reaching 1700° F. in one hour. The exterior surface temperature must not rise 250° F. over the air temperature. (*Masterwalls passed this test with only a 70° F. temperature rise.*) After one hour, inside panels are subjected to a fire hose using 30 pounds water pressure from a 1⅛" nozzle. The panel joint must remain vertically straight and tight without passage of flame and water.

**THIS FIREPROOF WALL** is available in 3" and 4" thickness both of which have passed the one hour fire test. Outward appearance is identical with type "AA" wall permitting use of fire wall with straight run of partition in the same room. All type "AA" features apply to these fire walls in addition to special treated insulated joints at panels, ends, top fillers, and ceiling connections. (Details on request).

Exterior after test showing surface unaffected by fire, finish is intact.



Unit removed after fire, showing panel edges and post free from any warping.



Interior surface after fire still intact, free from any failure. Wall remains rigid.



# INDEX

## • classification of partitions

### INDEX OF PARTITION TYPES

| TYPE PANELS | PANEL THICKNESS | CHARACTERISTICS | POST | USE | PAGE |
|---|---|---|---|---|---|
| HK, H, K STEEL, GLASS, WIRE MESH PANELS (s) | Single steel. | Horizontal and Vertical panel assembly with individual universal post, steel top. | 3¾" square paneled. | Industrial | 13, 40 41 |
| R GLASS & STEEL Interchangeable panels (s) | ⅜" packed steel. | Moulded type, fish wire base, universal post, mineral board or steel top. | 3⅜" wide x 3" deep, moulded design. | General purposes Offices Industrial | 13, 38 39 |
| W GLASS & STEEL PANELS Interchangeable or SOLID packed (s) | ⅜" packed steel. | Moulded type, layin wire base, univeral post, mineral board or steel top. | 3⅜" wide x 3" deep, moulded design. | Offices Wainscoting | 12, 37 |
| WW GLASS & STEEL PANELS Interchangeable or SOLID packed (s) | 1½" solid packed steel with low density wood fiber board. | Moulded type, layin wire base, universal post, mineral board or steel top. | 3⅜" wide x 3" deep, moulded design. | Offices Wainscoting | 12 |
| FF GLASS & STEEL PANELS Interchangeable or SOLID packed (s) | 1¾" packed solid with inorganic filler, reinforcings 12" apart electrically welded 3" centers. De luxe construction. | Semi-flush, layin wire base, universal post, steel top, alternate, mineral board. | 2⅜" wide x 2" deep, flat ⅛" projection. | Finest Glass and Steel Partitions, Offices, Schools, Laboratories | 11, 34 35 |
| HOSPITAL CUBICALS, Glass and steel panels interchangeable, open or closed base and ends. | 1¾" packed solid with inorganic filler, reinforcings 12" apart electrically welded on 3" centers. Deluxe construction. | Semi-flush, wiring facilities, universal post, with or without steel or mineral board top. | 2⅜" wide x 2" deep, flat ⅛" projection. | Hospital bed cubicals, Institutional partitions, Clinics, Beauty Parlors | 36 |
| CC SOLID PACKED OR STEEL & GLASS Interchangeable panels, single or double glazing (s) | 2¾" packed solid with inorganic filler, reinforcings 12" apart electrically welded 3" centers. De luxe construction. | Semi-flush, soundproof, layin wire base, universal post, steel top, alternate, mineral board. | 3¾" wide x 3" deep, flat ⅛" projection. | Offices Wainscoting Corridors Schools Solid Partitions | 10, 26 27, 28 |
| BB SOLID PACKED OR STEEL & GLASS. Double Line Joint. Interchangeable panels, double glazing optional (s) | 3" packed solid with inorganic filler, reinforcings 12" apart electrically welded 3" centers. De luxe construction | Absolutely flush, soundproof, layin wire base and door frame, universal post, steel top, alternate, cornice or picture mould with mineral board top, shop assembly. | Flush cap, double line joint. | Offices, Schools Wainscoting Corridors Department Stores | 8, 24 25 |
| AA SOLID PACKED OR STEEL & GLASS. Single line joint. Interchangeable panels, double glazing optional (s) | 3" packed solid with inorganic filler, reinforcings 12" apart electrically welded 3" centers. De luxe construction. | Absolutely flush, soundproof, layin wire base and door frame, steel top, alternate, cornice or picture mould with mineral board top, shop assembly. | Concealed post, flush single line joint. | All former uses, plaster and tile walls, Offices, Lobbies Corridors | 8, 22 23 |
| EE ASBESTOS OR ASBESTOS & GLASS Single line joint. nterchangeable panels, double glazing optional. | 3" asbestos with or without sound insulation packing full thickness. De luxe construction. | Flush with 1/32" beveled V joints, layin wire base and door trim, mineral board or asbestos top, shop assembly. | Concealed post, flush single line joint. | Decorative Offices, Wainscoting, Lobbies, Corridors, Executive Suites. | 32-33 |
| FIRE PROOF SOLID PACKED MASTERWALLS Fush steel, straight single line joint. | 3" or 4" packed solid with rockwool, reinforcings 12" apart electrically welded 3" centers. De luxe construction. | Absolutely flush, fire proof, soundproof, layin wire base, packed double steel top, shop assembly. | Concealed post, flush single line joint. | For all uses where non-load-bearing fire wall is required. | 66 |
| DD STEEL SOLID PACKED PANELS Single line joint. Vertical panels (s), horizontal panels (ns). | 3" or 4½" packed solid with inorganic filler, reinforcings 12" apart electrically welded 3" centers. De luxe construction. | Absolutely flush, soundproof, layin wire base and door frame, steel top, alternate mineral board, panels field assembled of prefabricated parts. | Concealed post, flush line joint. | All former uses, plaster and tile walls, Offices, Corridors, Maximum Soundproofness | 9 |
| DD WOOD SOLID PACKED PANELS vertical or horizontal (ns) | 3" or 4½" wood, inorganic insulation full thickness, steel reinforcing 12" centers. | Flush with wood beads, or v joints, layin wire base, panels field assembled. | Concealed post, beaded joint. | Decorative offices Wainscoting Lobbies | 9, 31 |
| DD ASBESTOS SOLID PACKED PANELS Vertical or horizontal (ns) Single or double glazing (ns) | 3" or 4½" asbestos, with or without sound insulation packing full thickness. | Flush with V or beaded joints, layin wire base, door trim, picture mould; field assembled prefabricated parts. | Concealed post, beaded joint. | Decorative offices Lobbies, Corridors Wainscoting | 14, 30 |
| SOUNDPROOF & SOUND ABSORBING ACOUSTICS (ns) | See various details of construction for answers of sound control in walls, ceiling, ventilation, door and conveyor openings, etc. | | | Quiet rooms, offices Test rooms | 16, 17 28, 29 |

Shipping Classification: (s) indicates in stock (cs) indicates cut down stock; (ns) indicates no stock.

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Patented and Patents Pending

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## BRANCH OFFICES

| | | |
|---|---|---|
| Albany, N. Y. | 310 Home Savings Bank | 3-3891 |
| Boston, Mass. | 39 Hartford St. | Hancock 4885 |
| Buffalo, N. Y. | 617 Main St., Room 315 | Washington 5041 |
| Chicago, Ill. | 222 No. Bank Drive | Delaware 1916 |
| Cincinnati, Ohio | 802 Times Star Bldg. | Ch. 7566 |
| Cleveland, Ohio | 6994 Grant Ave. | Diamond 1400 |
| Detroit, Mich. | General Motors Bldg. | Madison 6040 |
| Kansas City, Mo. | 402 Midland Bldg. | Victor 6700 |
| New Haven, Conn. | 39 Center St. | 7-0115 |
| New York City, N. Y. | 30 Rockefeller Plaza | Circle 7-5442 |
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6994 GRANT AVE. CLEVELAND, OHIO

ORGANIZED FOR SERVICE

COAST TO COAST



20/7

by Johns-Manville

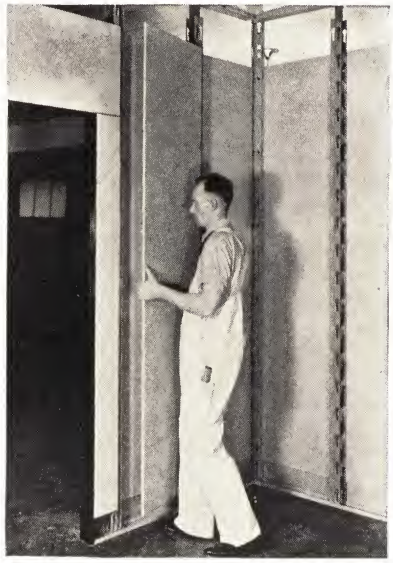
# TRANSITE WALLS

# TRANSITE WALLS *by* JOHNS-MANVILLE

***A wall construction for sub-dividing building interiors that combines the best features of conventional walls with an entirely new conception of what a movable partition can offer***

Until recent years, conventional office walls have always been of either one or two general types. The permanent type of wall offered advantages of privacy and solidity but did so at the expense of movability. Any essential change in office layout necessitated complete and total wreckage with little or no salvageability of materials.

Movable partitions, on the other hand, have offered only a partial solution to this problem. Providing only a small degree of privacy, they presented a temporary appearance, offered little in the way of sound resistance and were of course structurally inferior to the permanent type.



*Concealed holding devices and steel studs form the framework for Transite Walls, the most modern of movable wall partitions. Easily and quickly erected, they are also virtually 100% salvageable.*

Johns-Manville Transite Walls, while retaining all the advantages of the conventional solid type of wall, have completely changed the accepted conception of what a movable partition can offer in the way of adaptability to present-day needs.

The material Transite is not new in building construction. For over a quarter of a century, this rugged asbestos and portland cement product has been giving satisfactory service in hundreds of industrial plants, where it has withstood virtually every condition destructive to ordinary building materials. Johns-Manville engineers have taken this proved material — Transite — and combined it with an ingenious construction method to produce what may truly be called the first all-purpose partition.

Permanent, yet erected in a fraction of the time required for solid walls; strong and sturdy, yet readily movable and adaptable to re-location and office expansion with an economy and speed hitherto unknown in movable walls; highly resistant to abuse, yet capable of unlimited decorative possibilities; modern in appearance because of their flush projection-free surfaces; fire-proof, sound-resistant and practically maintenance-free, Transite Walls meet every partition requirement of modern business from factory production areas to president's office.



*A feeling of permanence and solidity pervades this reception room of Schenley Distillers Corporation's executive offices, yet its Transite Walls, finished in curly maple veneer, provide advantages of movability found in no other type of wall construction. Hegeman Studios, Inc., designers.*



*The adaptability of Transite to decorative treatment is illustrated by this attractive office reception room, in which the walls are finished in English sycamore wood veneer. The recessed display case in the rear was easily accommodated in the standard Transite Wall construction.*

# TRANSITE WALLS *by* JOHNS-MANVILLE



*A typical example of the use of free standing Transite and glass walls in a large industrial plant. The installation is one of several which have been made for the General Electric Company, Schenectady, New York.*



*Ceiling-high Transite Walls assure adequate visual control and provide for future re-location or expansion at minimum expense in these offices of a large investment house. The glass light frames are standard units.*

# ADVANTAGES OF TRANSITE WALLS

**SPEED AND SIMPLICITY OF ERECTION**—Made possible by exclusive patented features and by the use of small easily handled, interchangeable units which can be transported from stock to floor inside elevator cabs. Only ordinary carpenter's tools are required for erection or dis-assembly; no specially trained labor is necessary. In fact, mechanics accustomed to other types of movable partitions testify to the speed and simplicity of making office layout changes with Transite Walls.

**ENTIRELY DRY CONSTRUCTION**—Permits walls to be painted immediately if desired—no long delays for drying out before the decorative plan can be completed.

**MAXIMUM SALVAGEABILITY**—The use of interchangeable units insures maximum salvageability in the event that offices are re-located or wall changes are made subsequent to the original installation.

**ADAPTABLE TO CHANGING CONDITIONS** — Transite Walls afford an adaptability to changing conditions unequalled by any other form of wall construction. For example, a solid Transite Wall can be changed to one of Transite and glass, door openings can be re-located or eliminated and similar extensive alterations made after installation with a minimum investment in new materials and with a minimum of labor and disturbance. Salvaged parts can be stored in a small part of the space required for storing movable partitions of the sectional type.

**UNLIMITED DECORATIVE POSSIBILITIES**—An almost unlimited variety of distinctive interior effects are possible because of the unusual ability of Transite to take decorative finishes. Wood and cork veneers, lacquer, paint, leather and cloth are among the more popular surfacings; often the natural finish of the material itself is simply waxed to produce a most attractive and inexpensive wall treatment. Different decorative treatments may be used on the two sides of the same wall, as, for example, a wood veneered finish on Transite for an executive office with a painted finish on the opposite side of the wall to meet the simpler requirements of a general office.

**ALL WIRING AND PIPING EASILY ACCESSIBLE**—Transite Walls provide safe, adequate and out-of-sight provision for electric and telephone wiring, and plumbing, heating and ventilating systems with easy accessibility for making changes or repairs. Wiring and piping concealed within Transite Walls can be exposed with a minimum of disturbance and without any of the litter necessary with plaster walls.

**FIREPROOF**—Transite itself is fireproof, as are all accessories used in the construction of Transite Walls. As a fire-retardant, Transite Walls have been tested by the Testing Laboratories of Columbia University and accepted by the Bureau of Buildings of New York City for use where walls capable of passing a one-hour fire test are required.

**SOUND-RESISTANT**—Transite Walls are equal to many types of permanent walls and are superior to most movable partitions in sound resistance. Where additional privacy is required, provision can be made for greater sound-resistance without resorting to non-standard construction. The results of exhaustive comparative sound-resistance tests conducted at the J-M Acoustical Research Laboratory are available on request.

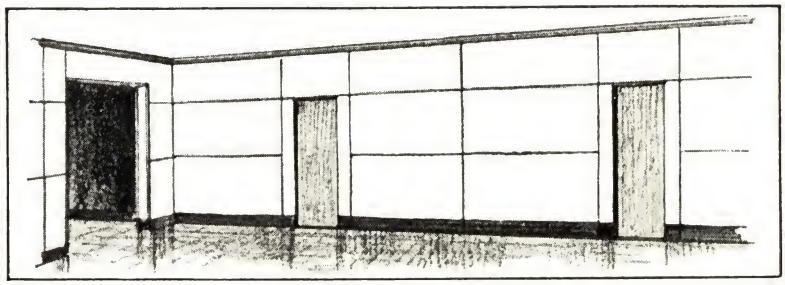
**PERMANENT**—All materials used in the construction of Transite Walls are permanent. The steel floor and ceiling channels, steel studs, patented holding devices and the Transite panels, baseboards and friezes are as enduring as the structural walls of the building. Transite Walls are highly resistant to shock and will not crack or dent even under severe abuse.

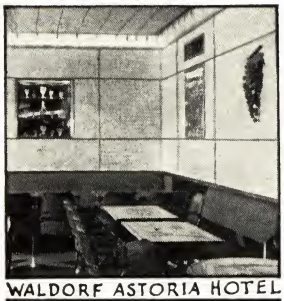
**ADAPTABLE TO ALL TYPES OF WALLS**—Transite Walls are adaptable to any conventional type of construction, including floor-to-ceiling walls and free-standing partitions of various heights, with or without borrowed lights, as well as railings of all standard heights, from low rail to bank screen.

# TRANSITE WALLS *by* JOHNS-MANVILLE



YARDLEY & CO. LTD N.Y.

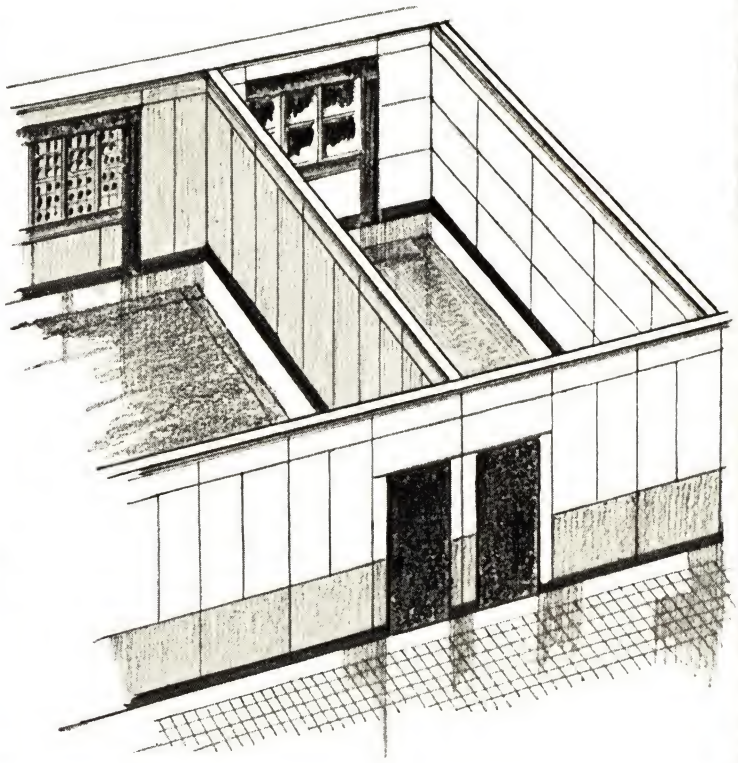


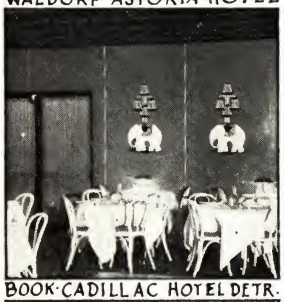


WALDORF ASTORIA HOTEL

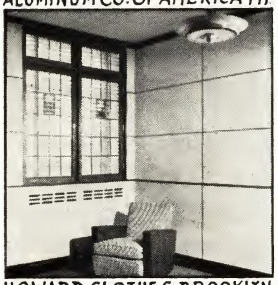


ALUMINUM CO. OF AMERICA PIT.





BOOK-CADILLAC HOTEL DETR.



HOWARD CLOTHES BROOKLYN



BANKERS TRUST COMPANY N.Y.



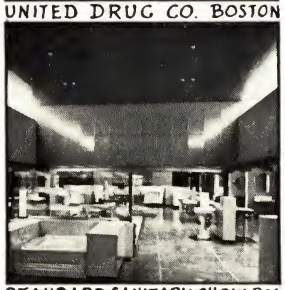
LEHMAN BROTHERS N.Y.



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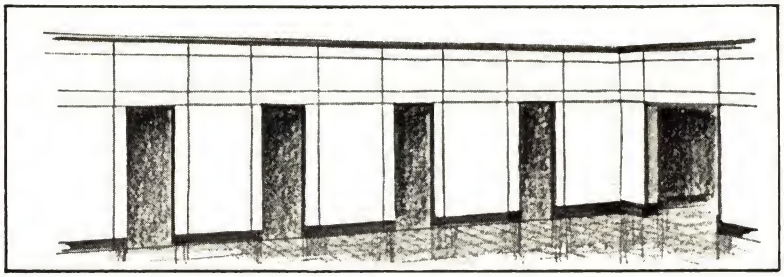


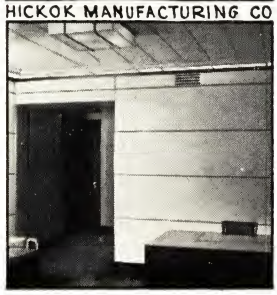
HICKOK MANUFACTURING CO



STANDARD SANITARY SHOW RM.

From a decorative standpoint, Transite Walls offer virtually unlimited possibilities. The ability of Transite to take practically any finish affords a wide latitude of treatment, while the interchangeability of the units permits a flexibility of panel arrangement equalled by no other form of wall construction. The above sketch shows how both the decorative finish and the panel scheme may be varied on opposite sides of the same wall.





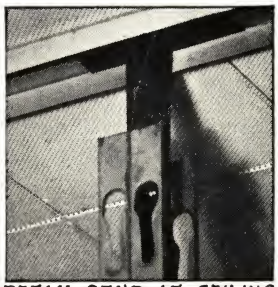


# TRANSITE WALLS *by* JOHNS-MANVILLE

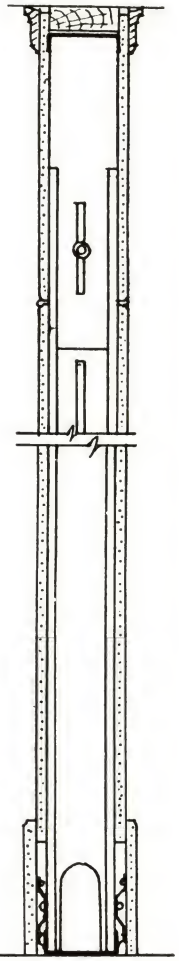


DETAIL CORNER AT CEILING

***Below:*** A typical ceiling-high Transite Wall installation in course of erection, with standard hollow metal door buck and borrowed light frame in position and the sheets on one face of the wall fastened to the steel studs by means of patented concealed holding devices.



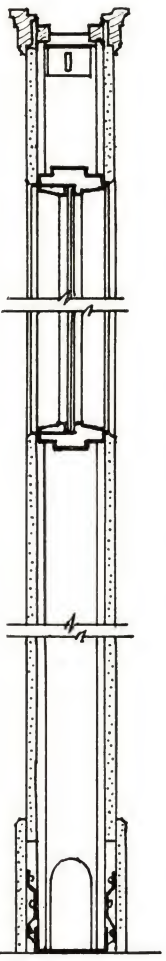
DETAIL STUD AT CEILING



SCALE SECTION
TRANSITE WALL

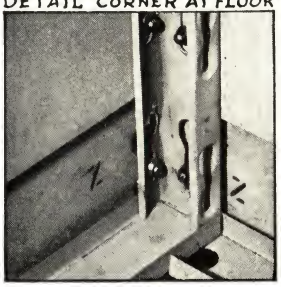






SCALE SECTION
TRANSITE-GLASS WALL

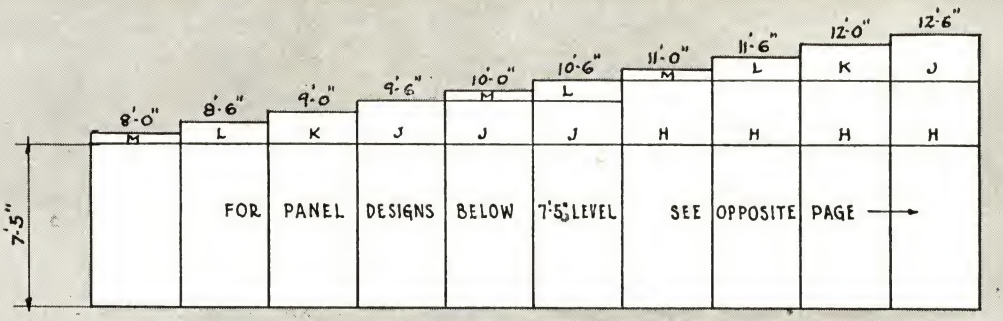
DETAIL CORNER AT FLOOR



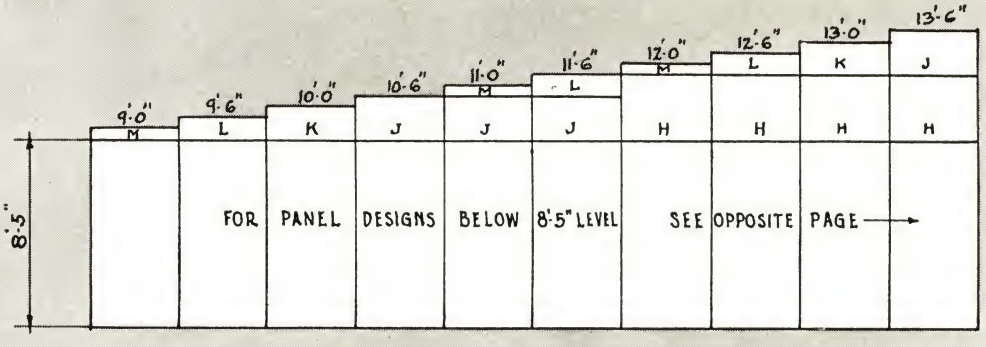
***Above:*** Completion of the installation shown in the upper photo. The Transite sheets have now been hung on both sides of the steel studs, the Transite base has been snapped into place, and the walls are ready for immediate painting or other decorative treatment.

DETAIL DOOR BUCK AT FLOOR

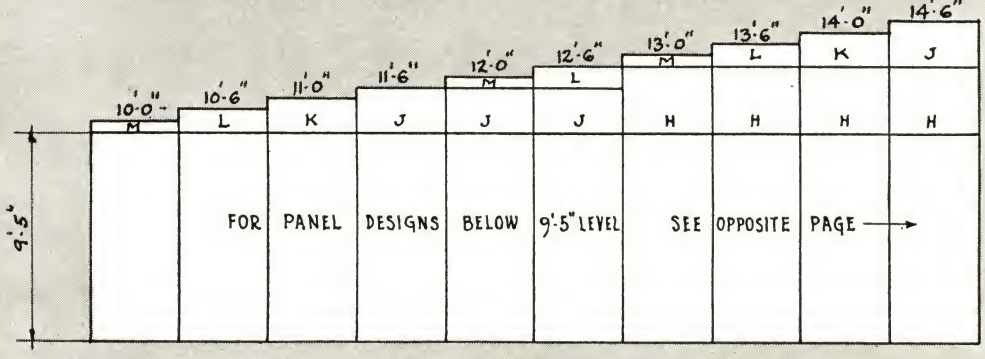




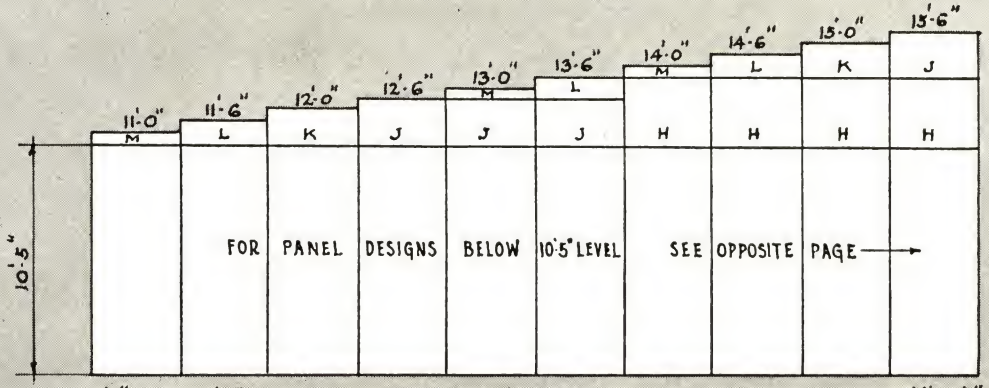

4'-0" WIDE x 7'-5" HIGH UNIT PANELS WITH TRANSITE TOP FILLERS CEILING HEIGHTS 8'-0" TO 12'-6"




4'-0" WIDE x 8'-5" HIGH UNIT PANELS WITH TRANSITE TOP FILLERS CEILING HEIGHTS 9'-0" TO 13'-6"

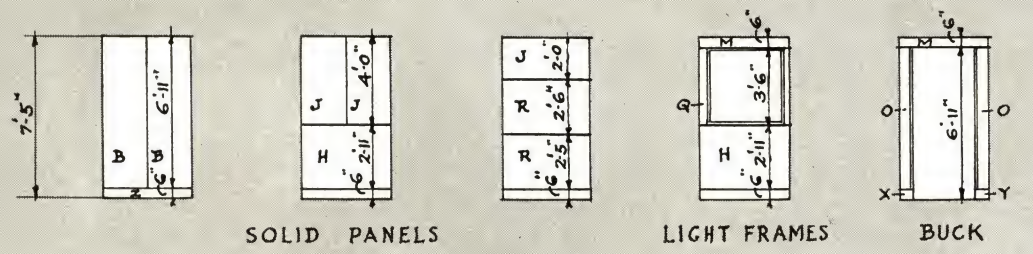



4'-0" WIDE x 9'-5" HIGH UNIT PANELS WITH TRANSITE TOP FILLERS CEILING HEIGHTS 10'-0" TO 14'-6"

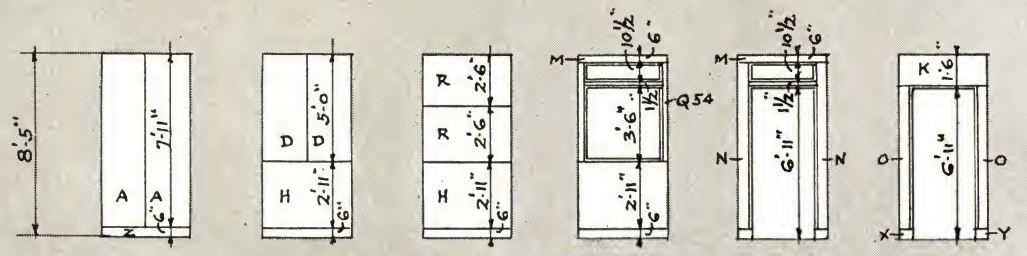



4'-0" WIDE x 10'-5" HIGH UNIT PANELS WITH TRANSITE TOP FILLERS CEILING HEIGHTS 11'-0" TO 15'-6"

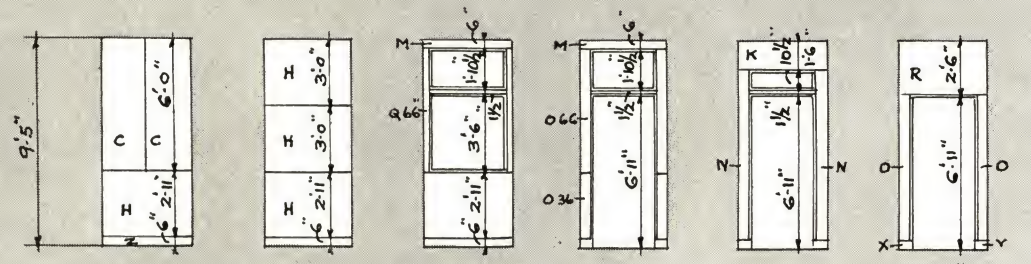
## STANDARD TRANSITE PANELS IN 4'-0" WIDE UNITS



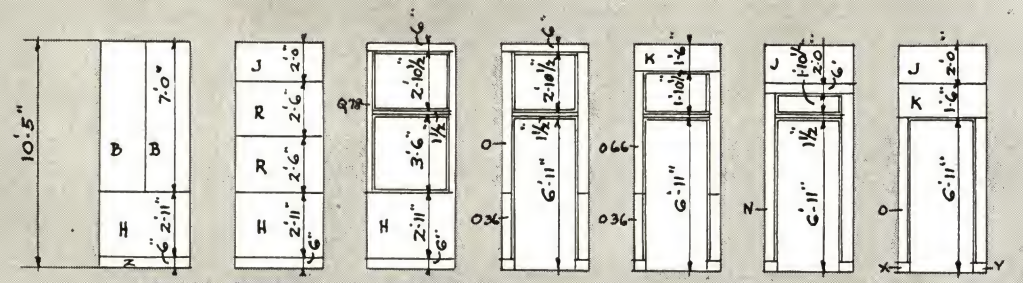

SOLID PANELS LIGHT FRAMES BUCK




SOLID PANELS LIGHT FRAMES BUCKS



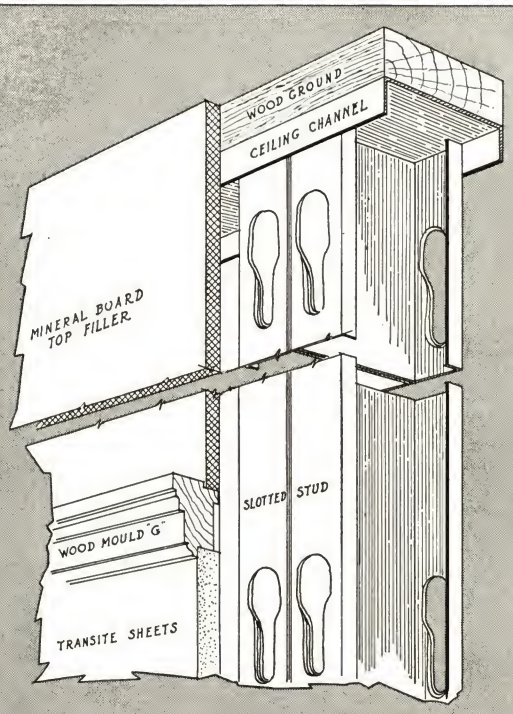

SOLID PANELS LIGHT FRAMES BUCKS



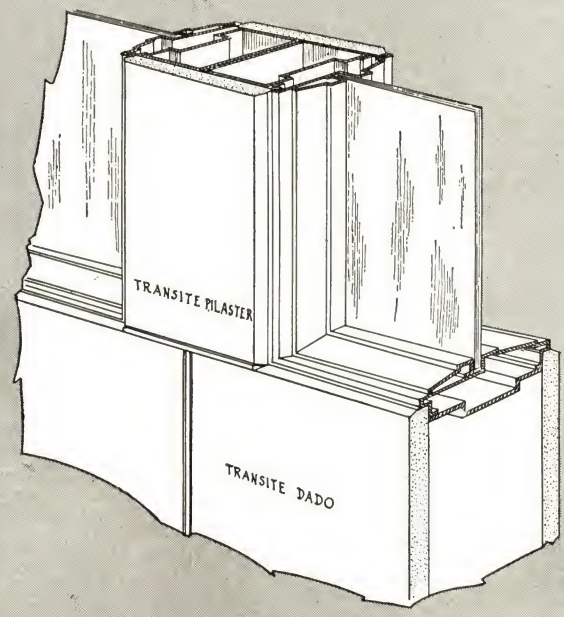

SOLID PANELS LIGHT FRAMES BUCKS

STANDARD TRANSITE PANELS-LIGHT FRAMES-BUCKS IN 4'-0" WIDE UNITS

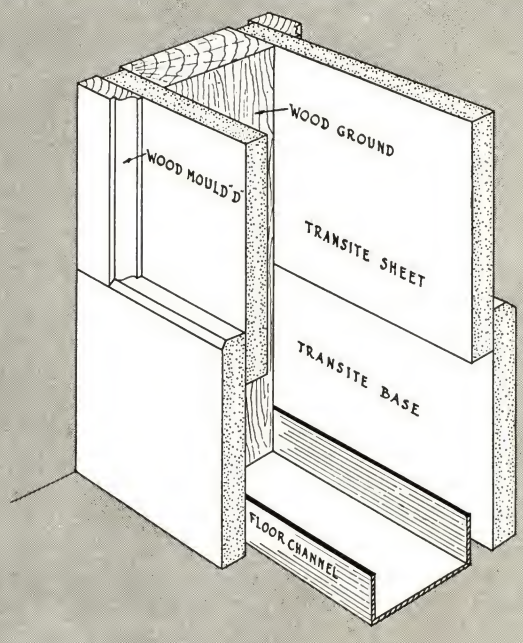
# TRANSITE WALLS *by* JOHNS-MANVILLE



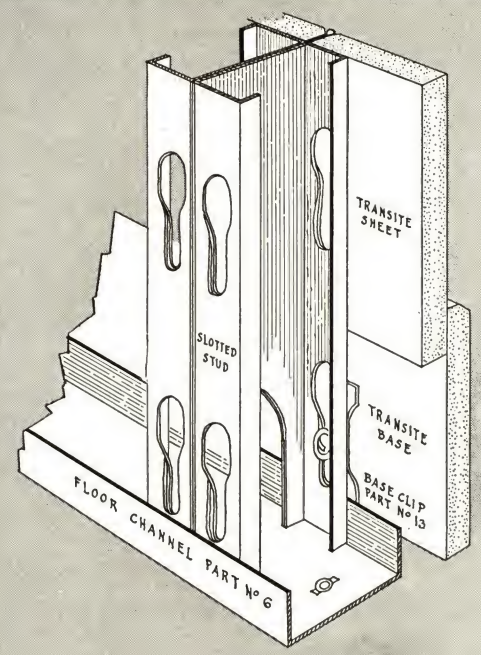

DETAIL OF CONSTRUCTION
MINERAL BOARD TOP FILLER OVER TRANSITE



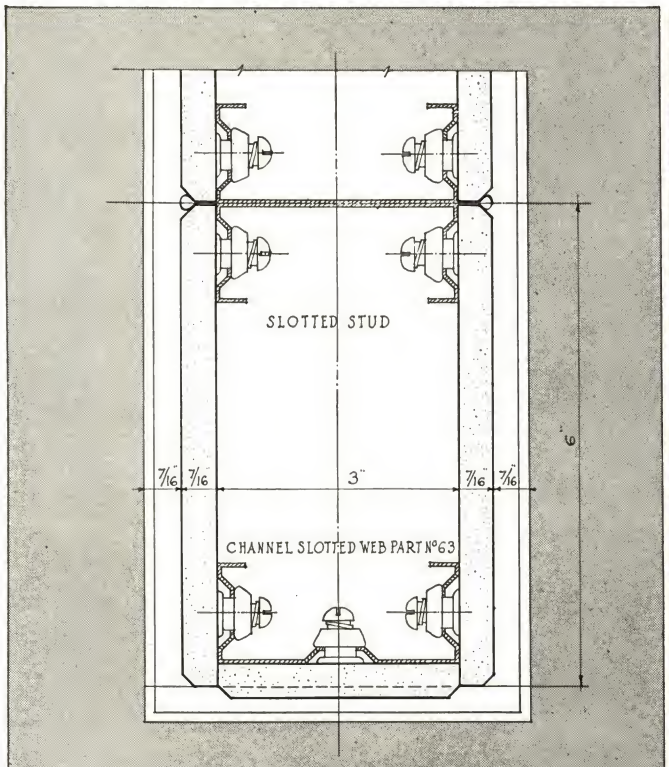

DETAIL OF CONSTRUCTION
BORROWED LIGHT FRAME



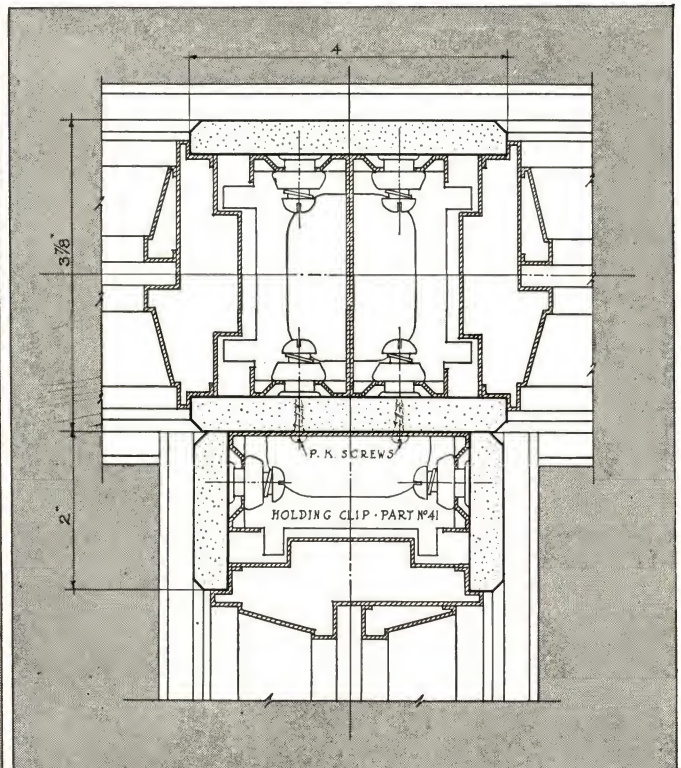

DETAIL OF CONSTRUCTION
END AT BUILDING WALL



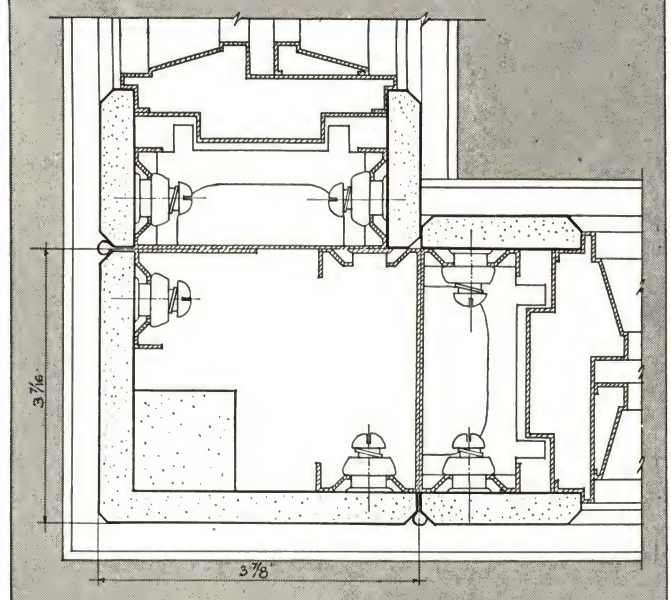

DETAIL OF CONSTRUCTION
TRANSITE WALL AT FLOOR




PLAN SECTION OF CLOSED WALL END

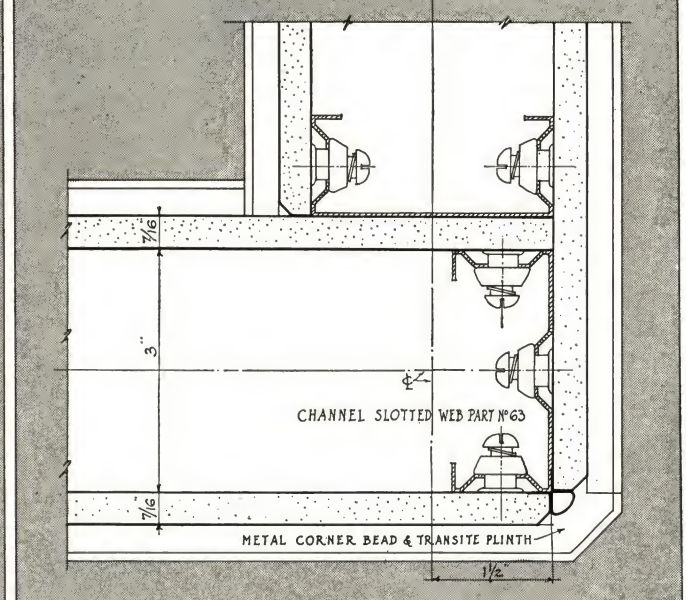



INTERSECTING WALL FORMING T




PLAN SECTION OF STANDARD CORNER

TRANSITE CORNER MARK "A.C. 96"

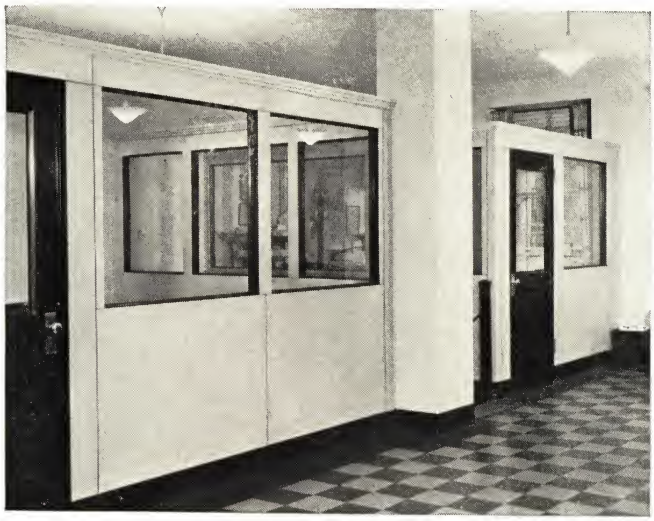



PLAN SECTION OF CORNER STANDARD DESIGN

CORNER FORMED BY STANDARD TRANSITE PANELS



*An interesting Transite Wall installation at the offices of Eli Lilly, Indianapolis, Indiana. The exterior building wall was furred with standard Transite construction, which also includes the matching radiator enclosure. The finish is oak veneer on Transite.*



*Where glass is required for borrowing light or to provide visual control, Transite Wall standards permit such construction in both free-standing and ceiling-high walls of varying heights. Above is a 7' 6" free-standing Transite and glass wall at the Union Dime Savings Bank, New York, N. Y.*

# Specification for J-M TRANSITE WALLS

## SHORT FORM

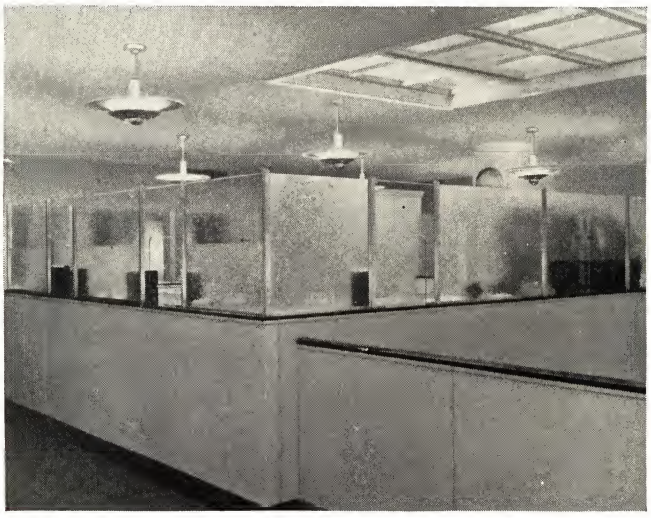
**GENERAL:** The work contemplated under this specification shall include all material, labor, equipment and services necessary for the installation of interchangeable type Johns-Manville movable Transite Walls, (state in detail work to be done) as shown on drawings herein specified.

**SHOP DRAWINGS:** Shop drawings showing details of construction, layout, standard hardware, fittings, anchors, etc., shall be submitted for approval.

**MATERIAL:** Concealed structural members shall be 20 gauge steel. All exposed Transite sheets shall be hung with concealed fastenings to permit the removal and replacement of sheets. Transite shall be 7/16" thick with smooth, true surfaces. Mineral Board, when specified for top fillers, shall be at least ¼" thick. All material shall be Transite Wall Standards including bucks, light frames, doors, and hardware.

**CONSTRUCTION:** Set embossed slotted studs, with stud extensions, ceiling channels and floor channels set and anchored to floor, ready to receive Transite sheets, all in accordance with Transite Wall standard details of methods of erection, with finish as required (state in detail finish desired).

**WORKMANSHIP:** The finished work shall be strong, rigid, neat in appearance, and free from defects or buckles. Walls or partitions shall be erected in a rigid, substantial manner, straight and plumb, and with horizontal lines level. Hardware shall be carefully adjusted, and entire work complete and left in perfect condition.



*The simplified construction principle of Transite Walls is readily adaptable to various heights and types of railings. Shown above is a conventional bank screen installation at the offices of Paine Webber, and Company, Boston, Mass.*

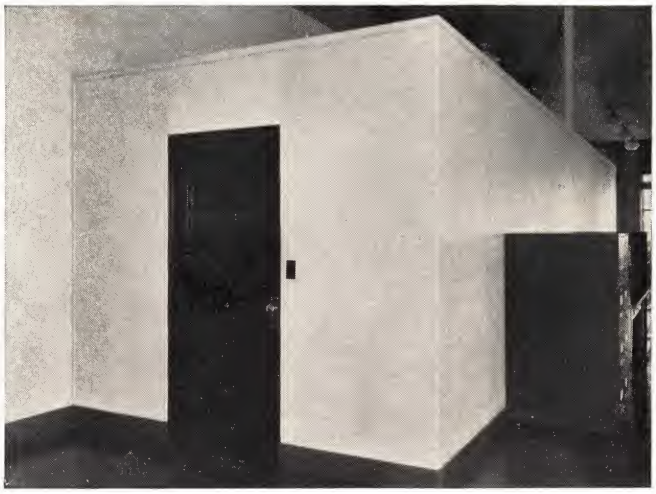


*The adaptability of Transite Walls to varying conditions is exemplified by this installation at Lehman Brothers, New York, N. Y. The ceiling-high wall, the low rail with gate and the arched opening all utilize standard Transite units.*

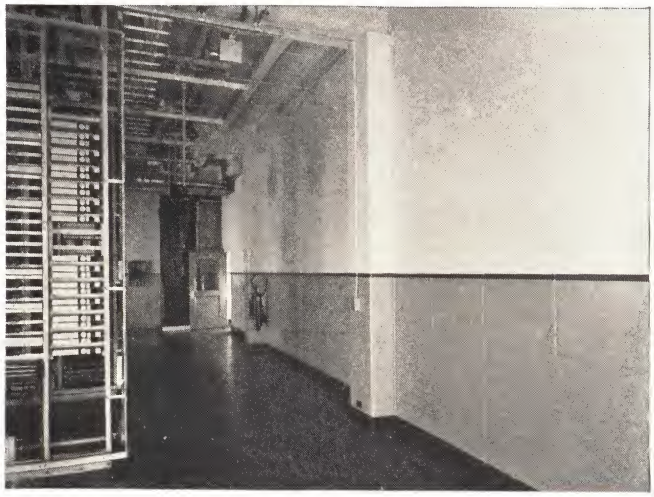
# TRANSITE WALLS *by* JOHNS-MANVILLE



*Transite Walls can be finished to exactly match conventional walls. In this installation in the Toledo Trust Company Building, Toledo, Ohio, the left half of the room is a tile and plaster wall, while the right half, an extension, is a Transite Wall, yet the two are identical in appearance.*



*A free-standing Transite Wall at the Northwestern Bell Telephone Company, Minneapolis, Minn. Because of its simplified design and interchangeability of units, such a wall is virtually 100% salvageable should re-location or other changes ever become necessary.*



*The delicate automatic equipment of telephone companies requires the selection of a partition which can be erected or dismantled with a minimum of dust and dirt. That is why the New England Telephone and Telegraph Company chose Transite Walls in the installation shown above.*



*In this modern office at the West Virginia Department of Unemployment Compensation, Charleston, W. Va., the principle of flexible unit construction embodied in Transite Walls has been extended to include floors of J-M Asphalt Tile and ceilings of J-M Sanacoustic Tile.*



*Only Transite Wall construction could provide the continuous flush surface necessary for such a transition from ceiling high walls to railing as shown above. Installation at The Wm. S. Merrell Co., Reading, Ohio.*



*This installation in the laboratory of a prominent medical research organization required the accommodation of six different services. All wiring and piping, while concealed within the walls, is easily accessible.*

SOME TYPICAL INSTALLATIONS OF

# TRANSITE WALLS by Johns-Manville

Aluminum Co. of America
American Sugar Refining Co.
Bakelite Corporation
Bankers Trust Co.
Barrett Company
Beechnut Packing Co.
Boston Consolidated Gas Co.
Brown University
Carbide & Carbon Chemical Corp.
Chamber of Commerce Bldg. (New Haven)
Chase Brass & Copper Co.
Chemical Bank & Trust Co.
Chrysler Building Corp.
Cincinnati Gas & Elec. Co.
Cities Service Co.
Colgate-Palmolive Peet Co.
Collegiate Church of St. Nicholas (New York)
Columbia Broadcasting System, Inc.
Commodore Hotel (New York)
Commonwealth Edison Co. (Chicago)
Consolidated Chemical Industries, Inc.
Consolidated Gas Co. (Baltimore)
Corn Products Refining Co.
Crown Can Co.
E. I. du Pont de Nemours & Co., Inc.
Eli Lilly & Co.
Federal Land Bank (Baltimore)
Federal Reserve Bank (New York)
Flintkote Company
Forstmann Woolen Co.
General Dyestuff Corp.
General Electric Co.
General Motors Corp.
H. J. Heinz Co.
Hercules Powder Co.
Hickok Manufacturing Co.
Hospital for Chronic Diseases (New York)
Hostess Cake Co.
International Business Machines Corp.
International Nickel Co.
International Printing Ink Co.
Intertype Corp.
S. H. Kress & Co.
Lehman Bros.
Lever Brothers Co.
Liberty Mutual Life Insurance Co.
Long Island Lighting Co.
Marshall Field Estate
Metropolitan Edison Co. (Reading, Pa.)
Metropolitan Life Ins. Co.
Monarch Life Insurance Co.
Morgan Stanley & Co., Inc.
Mutual Chemical Co.
National Broadcasting Co.
National City Realty Co.
National Electrotype Co.
New England Tel. & Tel. Co.
Norfolk Newspapers Inc.
Northwestern Bell Tel. Co.
New York Stock Exchange
New York Telephone Co.
Ohio Oil Co.
Paine Webber & Co.
Pittsburgh Post-Gazette
Porcelain Enamel and Mfg. Co.
Procter & Gamble Mfg. Co.
Radio Station WOR
Richmond Health Center (New York)
Rochester Telephone Co.
Rockefeller Center, Inc.
Jacob Ruppert (Brewery)
Schenley Distillers Corp.
Sealed Power Corp.
Second National Bank Bldg. (Toledo)
Shell Union Oil Corp.
Simmons Company
Southern New England Tel. Co.
Sperry Gyroscope Company, Inc.
Standard Oil Co. of New Jersey
Standard Sanitary Mfg. Co.
State of W. Va., Dept. of Unemployment Compensation
Stone & Webster Realty Co.
Standard Ultramarine Co.
Trenton Trust Co.
Underwriters' Laboratories, Inc.
Union Dime Savings Bank
United Drug Company
U. S. Envelope Co.
U. S. Industrial Alcohol Co.
U. S. Treasury Dept.
Waldorf-Astoria Hotel
Western Electric Co.
The Wm. S. Merrell Co.
Yardley & Co., Ltd.
Y. M. C. A. (Detroit)

## JOHNS-MANVILLE

**EXECUTIVE OFFICES: 22 EAST FORTIETH STREET, NEW YORK**

*There is a Transite Walls Representative at each of the J-M offices below:*

BALTIMORE, St. Paul and Franklin Streets
CINCINNATI, Central Parkway at Walnut Street
DETROIT, 832 Fisher Bldg.
KANSAS CITY, 2030 Walnut Street
MINNEAPOLIS, 732 Baker Bldg.
PHILADELPHIA, 1617 Pennsylvania Boulevard
BOSTON, 49 Federal Street
CHICAGO, 222 North Bank Drive
CLEVELAND, 45 Prospect Avenue, N.W.
INDIANAPOLIS, 1503 Merchants Bank Bldg.
MILWAUKEE, 757 North Broadway
NEW YORK, 22 East 40th Street
PITTSBURGH, Liberty Avenue and Seventh Street
ST. LOUIS, 1000 Market Street

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# KEASBEY & MATTISON COMPANY

AMBLER, PA.

DISTRICT OFFICES IN PRINCIPAL CITIES

For K&M Asbestos Roofing and Siding Shingles, Pipe, Sheet and Block Insulations, Asbestos Corrugated, Mineral Wool, Decorative Wallboards and Trafford Tile, see File Index

## AMBLER OLSEN SYSTEM

The Ambler Olsen System provides strong, lightweight ceilings, walls and partitions. This system consists of patented metal shapes, members, clips and hangers, together with K&M Monobestos, K&M Linabestos or Asbestos Millboard for use as a sheathing material.

**General**—The Ambler Olsen System is designed for residential, commercial or industrial use. Installations are rapidly assembled and give great strength and rigidity. Ceilings may be hung at heights to suit building construction.

**Recognized Product**—Ambler Olsen System has been thoroughly tried out and endorsed by many leading architects. No special experience is needed for installation.

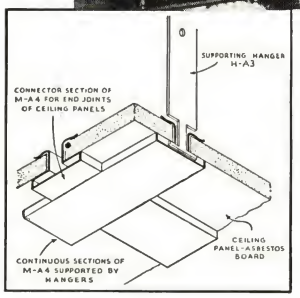
**Economical**—Because of the speed of installation there is a real saving in both time and labor.

**Debris Negligible**—Remodeling work may be carried on without interruption to business. Panels and mouldings can be cut before installation thus making a speedy, litter-free assembly.

**Fireproofing**—When asbestos panels are used, an ideal system is provided for fire-resisting construction at low cost.

**Salvage Value**—All materials—panels, mouldings, hangers, may be completely salvaged and reused.

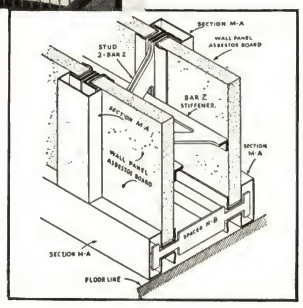





*Above: Ambler Olsen System Ceiling in the office and plant of the Carolina Aniline and Extract Co., Charlotte, N. C.*



*Illustration shows typical Type "V" Ambler Olsen System Partition in the office building of the Westvaco Chlorine Products Co., South Charleston, W. Va.*




### Ambler Olsen System Type "V" Double Partition

Used where a rigid partition with vertical paneling is desired. This type of construction prohibits use of horizontal paneling, such as is obtained with the Type "H" partition. Type "V" partitions can be furnished with ¼ or ⅜ in. thick asbestos board.

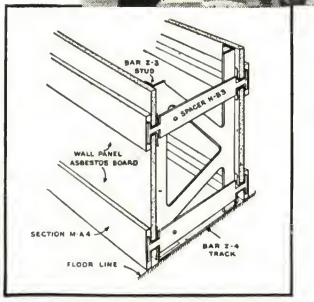
### Ambler Olsen Ceilings

Can be suspended at any desired level or applied direct to existing construction. When suspended ceilings are desired, rigidity and strength are obtained by using Ambler Olsen Bar Z members which are exceptionally light in weight and especially adapted for this purpose. Various designs of paneling can be obtained to form pleasing decorative effects. Ceilings can be furnished using either $\frac{3}{16}$, ¼, or ⅜ in. thick asbestos board.

### Ambler Olsen System Type "H" Double Partition

Used where a rigid partition with horizontal or ashler type paneling is desired. This partition is the least expensive of Ambler Olsen double partitions from both a material and an erection standpoint. It can be furnished for use with $\frac{3}{16}$, ¼ or ⅜ in. thick asbestos board.






*Above: Ambler Olsen System Type "H" partition applied by the West Virginia Steel Corp. in their office building at Charleston, W. Va.*

# DAVID KRAMER, INC.

Manufacturers of Cabinet Woodwork

420 Lexington Avenue, NEW YORK, N. Y.

## KRAMER TYPE D "CABINET MADE" PARTITIONS

Three basic units—Section, Post and Cornice. Partition assemblies can be taken down and re-erected at minimum cost. Kramer Construction provides maximum flexibility and its design can readily be changed to conform to architects' special requirements.

### Materials

First grade selected hardwoods, 1¼-in. stock, finished to 1⅛-in.—Mahogany, American Walnut, Oak and Birch, thoroughly seasoned and dried. Other woods on special order.

### Standard Units and Doors

"Cabinet Made" Partition is furnished in complete, one-piece paneled sections, 7 ft. 2 in. high, in standard width from 1 ft. 6 in. to a maximum of 4 ft. 9 in., *permitting evenly matched, symmetrical divisions* for any length. Doors are built up on a pine core, of veneers to match cabinet work; 1½-in. stock finished to 1⅜-in.

### Ceiling Heights and Transoms

Standard upper partition sections conform in all details, design, width and finish to 7 ft. 2 in. sections. Transoms are swung on concealed pivots top and bottom. Each upper unit is completely assembled at the factory. Heights are variable, as required.

### Railings and Screens

Railing—standard height 3 ft.; screen—standard height 5 ft.; sections similar to partitions. Gates include double action or single action hinges. All posts are securely fastened to floor with cast iron shoes and bolts running through entire length of posts, secured to sleeve sunk into floor.

### Built-up Cornices and Posts

All cornices are complete units, assembled and permanently glued together. They are grooved to receive upper and lower sections without use of hardware. Posts 3 in. square, individually built. Grooved to receive standard sections. The specially constructed Kramer Post can be made to any angle without increasing its bulk or doubling up. Paneled or plain faces.

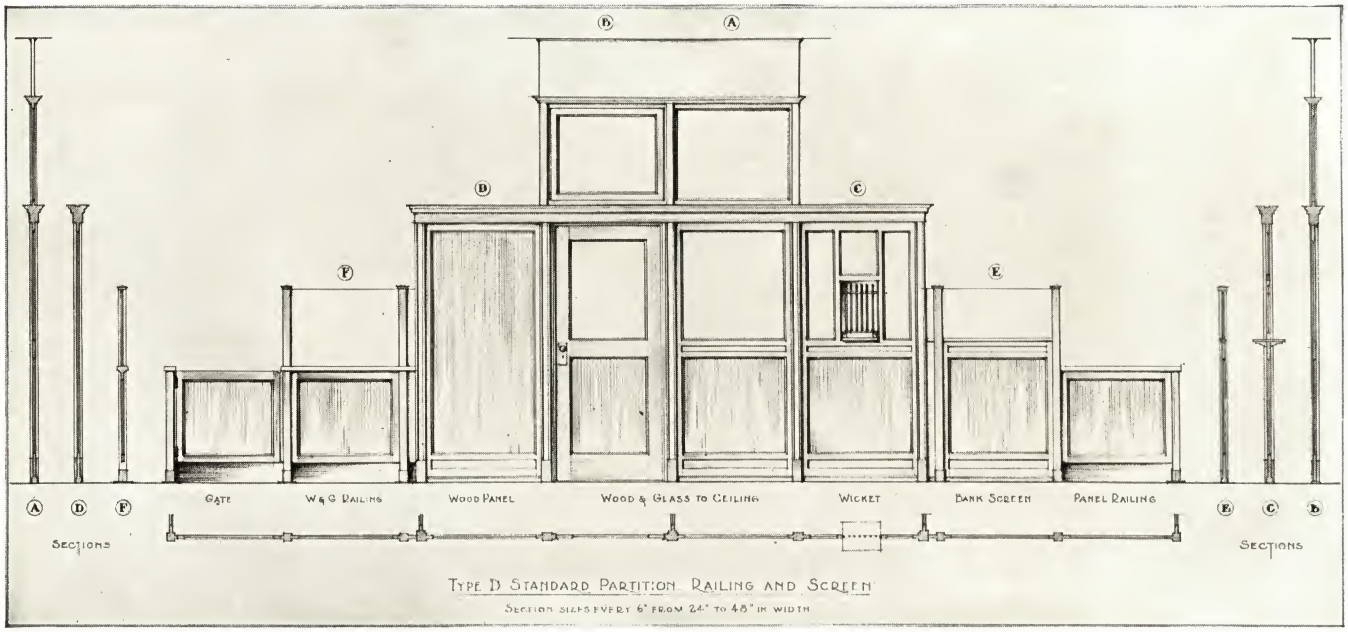
### Finish and Glass

All exposed surfaces are sanded, stained, filled, and finished with a special lacquer. Double thick clear, Synite or Silverite glass; other glass on special order. Wood panels may be had in place of glass for both upper and ceiling sections.

### Several Buildings in New York City Exclusively Equipped with Kramer Partitions

2 Wall Street
Graybar Building
1 Park Avenue
250 Park Avenue
International Tel. & Tel. Building
Bowery Savings Bank Building
Macy's Department Store
General Motors Building

Also, all wood and glass partitions in Rockefeller Centre




TYPE D STANDARD PARTITION RAILING AND SCREEN

SECTION SIZES EVERY 6" FROM 24" TO 48" IN WIDTH



## CABINET WOODWORK

In a separate specialized department, we manufacture a custom grade of interior woodwork for offices, banks and residences, which includes paneled rooms, libraries and special furniture. We co-operate with architects on particular specifications.

### Architects

Walker & Gillette
Sloan & Robertson
Block & Hesse
Clinton & Russell
Wallace K. Harrison
Ely Jacques Kahn
L. Reinhard and A. Hofmeister
James Gamble Rogers
Cross & Cross

### Clients in New York City

NBC Executive Offices, Rockefeller Centre
Radio Corporation of America, Executive Offices
Farmers Loan & Trust Co., Executive Offices
East River Savings Bank, Executive Offices
Consolidated Oil Corp., Rockefeller Centre
John D. Rockefeller, Jr., Executive Offices
International Music Hall Theatre, Rockefeller Centre
Commercial Investment Trust
New York Stock Exchange
Schrafft's Stores
Morgan, Stanley Co., Executive Offices
Batten, Barton, Durstine & Osborne, Offices

20
10

"A MILLS METAL PARTITION FOR EVERY PURPOSE"

# MILLS

## METAL PARTITIONS

**OFFICES**
FLUSH PILASTER
SINGL-INE
SYNCROFIT
EXECUTIVE

**FACTORIES**
COMMERCIAL

**HOSPITALS**
CUBICLES

**TOILETS**
CHALLENGER
METAL FLUSH

**UNIT SHOWERS**

THE MILLS COMPANY · CLEVELAND, OHIO

A-1

# FLUSH PILASTER PARTITIONS



Three-inch Flush Type Partition Installation, U. S. Department of Interior Building, Washington, D. C.

**DISTINCTIVE FEATURES**—Wide acceptance by architects, contractors and buyers has been accorded this most distinctive and original line of partitions because of the beauty and permanent appearance of its flush, plaster-like walls, the perfection with which it lends itself to any layout, its quick easy assembly, and its high salvage value. These Flush Pilaster partitions are 3 inches thick, double insulated, and are absolutely flush and permanently flat with a double hair-line joint between panels and ends with no protruding parts to collect dirt—an exclusive and unique design.

**APPLICATIONS**—In Mills Flush Pilaster Partitions we have the economical answer to all problems of space division. Many miles of these partitions now lend quiet dignity to executive offices and increase efficiency in general offices. Their high sound-resisting construction is contributing greatly to the advancement of ideal conditions in class rooms and broadcasting studios. Hospitals, clinics and laboratories are being assured of positive sanitary conditions. In fact, they have been applied in every instance where the need for a high quality, movable dividing wall has been paramount.

**SIZES**—Mills Flush Pilaster Partitions are stocked in flush panels of either all-steel or steel and glass construction, in multiple 6 inch widths (to 42 inches for all steel and 60 inches for steel and glass) for all standard cornice heights of 7′4⅞″, 8′9⅞″, 9′2″ and 10′1½″ (partitions above this height are not considered standard but can be fabricated).

With glazed panels the glass width is determined by the width of the panel used, but the height of the lower light is 42 in. and that of each upper light varies with the cornice height—15¾, 20¼ and 31⅜ in. The 7 ft., 4⅞ in. panel has a full light. The 10 ft., 1½ in. panel has full lights above and below, separated by a 2¼ in. transom bar. The panels between these heights have a full light below and a half light above.

Door sections are interchangeable with 42 inch panel sections. Other sections are also interchangeable—an 18 inch and 24 inch section for a 42 inch section, etc.—to permit of any desired arrangement and *practically* 100% *salvage for rearrangement.*

## CONSTRUCTION

Mills Flush Pilaster Walls are 3 inches thick. Each panel section is assembled from two sheets of high grade cold rolled furniture steel, first formed on the edges, and then welded to rigid vertical channels of the internal core. Slabs of ½ inch thick, low density insulating board, are cleated on the studs attached to the vertical channels and cemented against back of the sheets under pressure. The panel sheets, while under pressure, are welded to the core around its entire perimeter, thus holding the insulation tightly against the steel and assuring a permanently flat rigid panel. No wind or weave is possible. While the standard panels have very great sound resisting qualities, holes are provided in the vertical channel members to permit the 2-inch dead air space to be filled (when additional sound deadening is required) with blown rock wool, or other sound-proofing material. The base and post caps may also be felt lined and filled for further sound resistance.

The two lower corners of each panel are fitted with legs that rest on and lock into Mills Patented Floor leveling devices. In combination steel and glass panels the construction described above is used to a height of 42 inches with the glass above. The glass is held securely with modern moldings, without requiring the use of exposed screws or fasteners. The moldings do not protrude beyond the face of the panel and maintain therefore the modern, flat, and up-to-date appearance, (characteristic of this partition) so much desired.



Fig. 392. Flush Pilaster Partition with All Steel and Steel and Glass Adjoining.

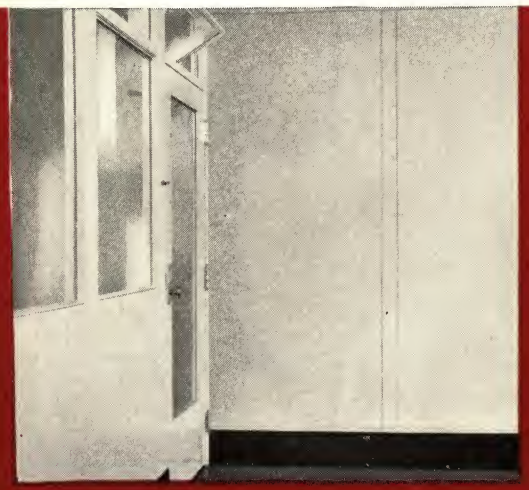


Fig. 393. Flush Pilaster Partition with Glass.



Fig. 394. Flush Pilaster Partition Lends Itself to Any Desired Arrangement.



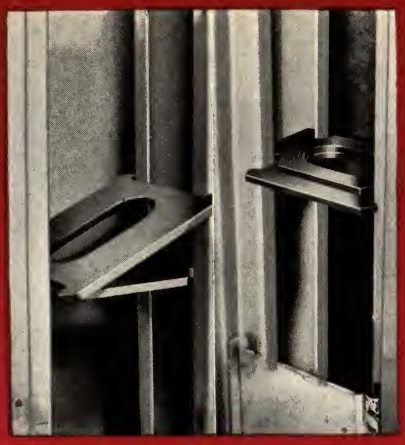


Fig. 389. Post Clip—Open and Closed.



Fig. 390. Cornice to Panel Attachment

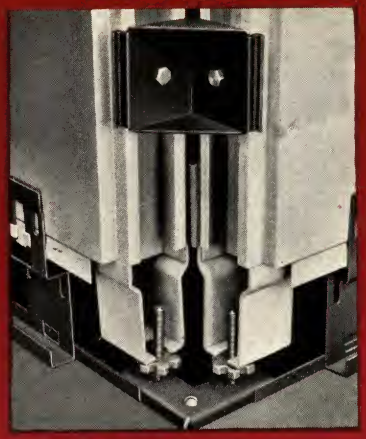


Fig. 383. Corner Post Clip and Spacer

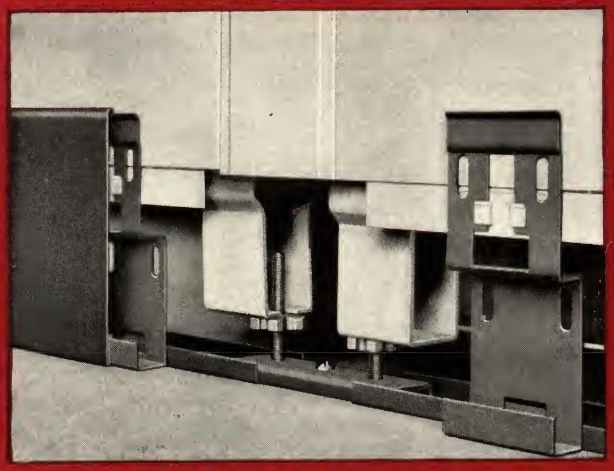


Fig. 387. Standard Complete Floor Assembly at a Pilaster.

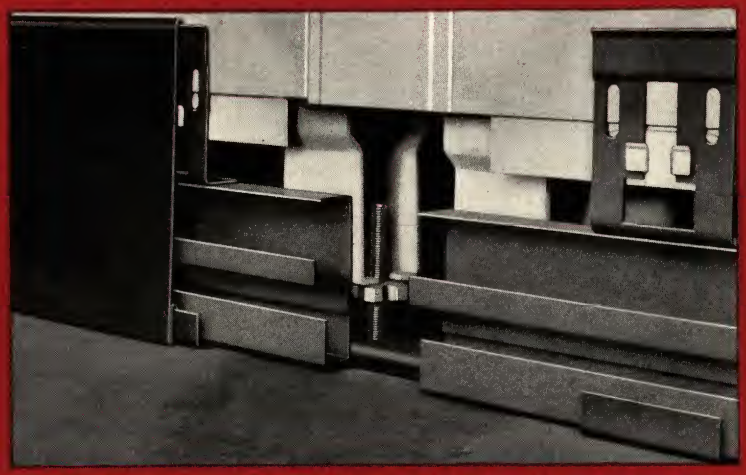


Fig. 385. Standard Assembly at a Pilaster with High and Low Tension Conduit.

# FEATURES OF THE MILLS FLUSH PILASTER PARTITION

**FLOOR CONNECTIONS**—Mills Flush Pilaster partition floor connections assure perfect alignment on uneven floors. The patented leveling device (Fig. 387) rests on the floor, and in turn holds the floor channel in perfect alignment from pilaster to pilaster. For door sections, the leveling device is fitted with a lug and clip which eliminates the possibility of the door frame turning or twisting.

**BASE**—Mills Flush Pilaster Base is continuous across the panels, as with any masonry or plaster wall. This assembly permits installation of this base on other types of walls which frequently form part of the room. "Base Clips" of the "floating type" (Fig. 385) are first secured in place and the base is then hooked securely to the clips (Fig. 385). This construction affords pleasing appearance, sanitation, easy removal to permit the installation of wires, by laying in without the nuisance of fishing or threading and insures a tight clamping fit and easy adjustment up or down to meet any floor covering.

**PILASTER CAPS**—(Fig. 389). They connect the individual panel sections to form a strong and rigid wall. The combination tension and compression members of the post clip positively prevent any tendency of the wall to get out of plumb. They can be located at any desired position and will hold the pilaster cap rigidly in place. They also permit the cap to be removed easily for vertical wiring and for the installation of switches, etc. Pilaster caps are purposely designed to inlay. They snap on to the post connections and extend up under the cornice trim and below the top of the base to give a pleasing and modern appearance not found in other types of construction. "T" and corner connections are easily made, see (Fig. 383, and Diagram III on following page).

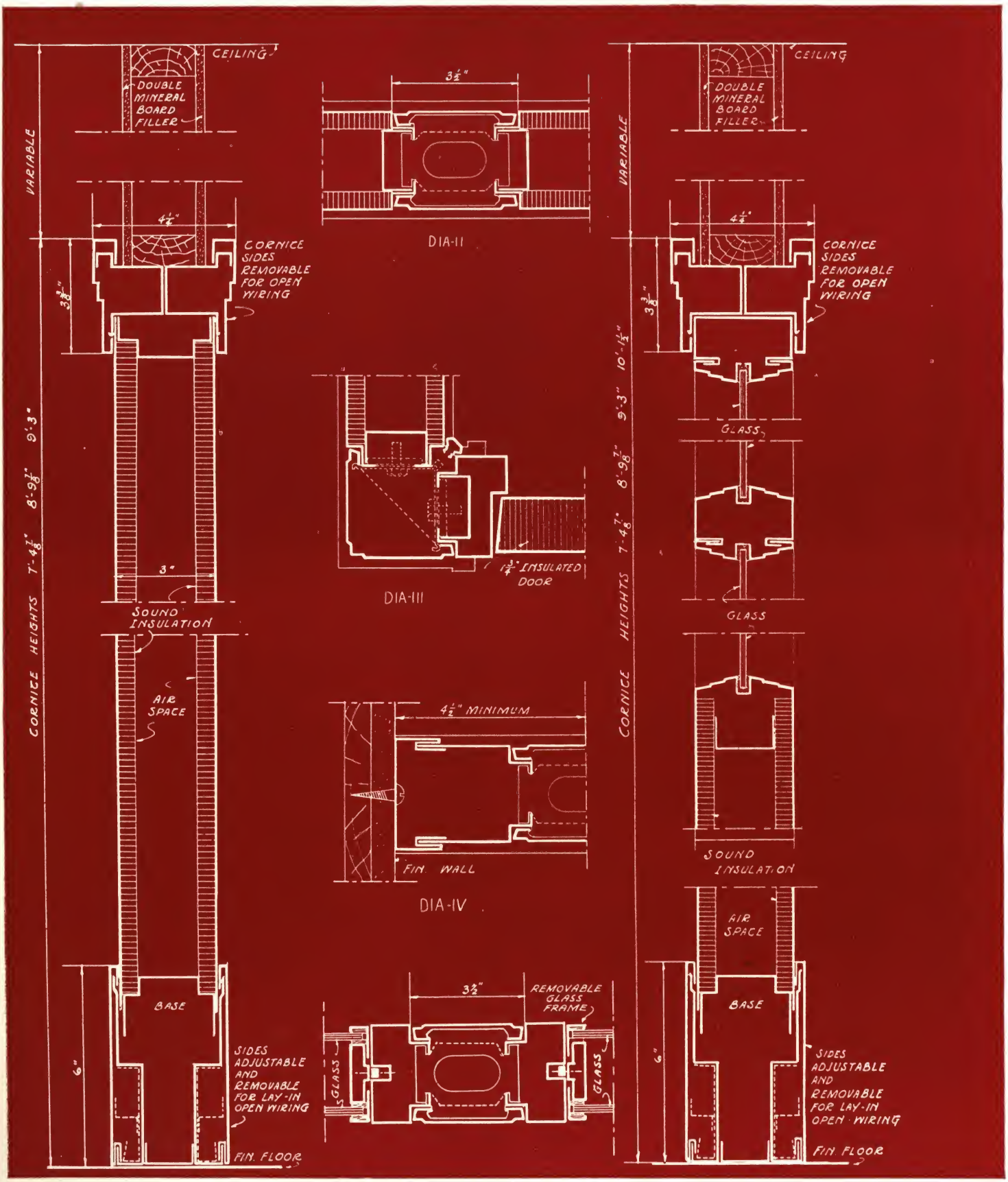
**CORNICE**—Mills Flush Pilaster Partitions are held in perfect alignment at the top with a rigid, double channel, structural cornice. This structural cornice is held tightly at each post point with a cotter pin key wedge which is quickly and easily locked (Fig. 390). It is covered with a distinctive cornice trim which is removable to give access separately to the layin-wiring conduit from either side of the wall.

Door frames are 3 inches thick and flush with the panels. Doors are also insulated and are 1¾ inches thick, being of rigid construction and modern design.

**ERECTION**—Mills customers who have watched the erection of our Flush Pilaster Partitions have marveled at the speed with which the work is accomplished. There is an entire absence of exposed nuts, bolts or screws.

**FINISH**—Flush Pilaster partitions are available in any flat color of egg shell or satin finish and can be furnished to match any particular decorative scheme. Careful reproductions of fine wood grains are also furnished at a slightly increased cost.

# MILLS FLUSH PILASTER PARTITION DETAILS




Dia. I. Vertical Section—All Steel

Dia. V. Detail of Double Glazing

Dia. VI. Vertical Section—Steel and Glass

**DISTINCTIVE FEATURES**—The Mills Commercial Partition is an established line with many years of satisfactory service behind it. Extreme durability, quick, easy erection and re-erection with minimum maintenance; ability to be expanded in either a horizontal or vertical direction, make Mills Commercial Partitions ideal for industrial installation. Floor channels, adjustable to 2½ inches, permit the partition to adhere tightly to uneven floors, and provides ample space for running wires, air lines, etc. Glass, wire mesh, grilles and ventilators are interchangeable in standard panels, to facilitate easy erection and rearrangement.

**APPLICATIONS**—Mills Commercial Partitions are used to define departmental divisions, production and superintendents offices, stock rooms, warehouses, tool cribs, etc., and can be nicely adapted for office use. This is accomplished by simply replacing the narrow lights of glass with wide lights, and the standard box cornice with an ornamental cornice.

**SIZES, CONSTRUCTION AND FINISH**—Mills Commercial Partitions are fabricated of cold rolled furniture steel and are furnished in standard panel widths of 20, 30, 40, 50, 60, 80 and 100 inches, with standard cornice heights of 7′4½″, 9′2¾″ and 11′1″. Horizontal connections are made with tightly interlocking "I" sections to form a rigid wall which may be built to extreme heights. Vertical connections between units are made with 3 inch posts to which all units are blind bolted. Mills Metal Door Frames are hollow, with eight angle bends which insures exceptional strength. Standard doors are 35 x 83 inches and the top of the center rail is 42 inches off the floor, corresponding with the panel height. All of this is accomplished without the use of screws or any exposed fastenings.

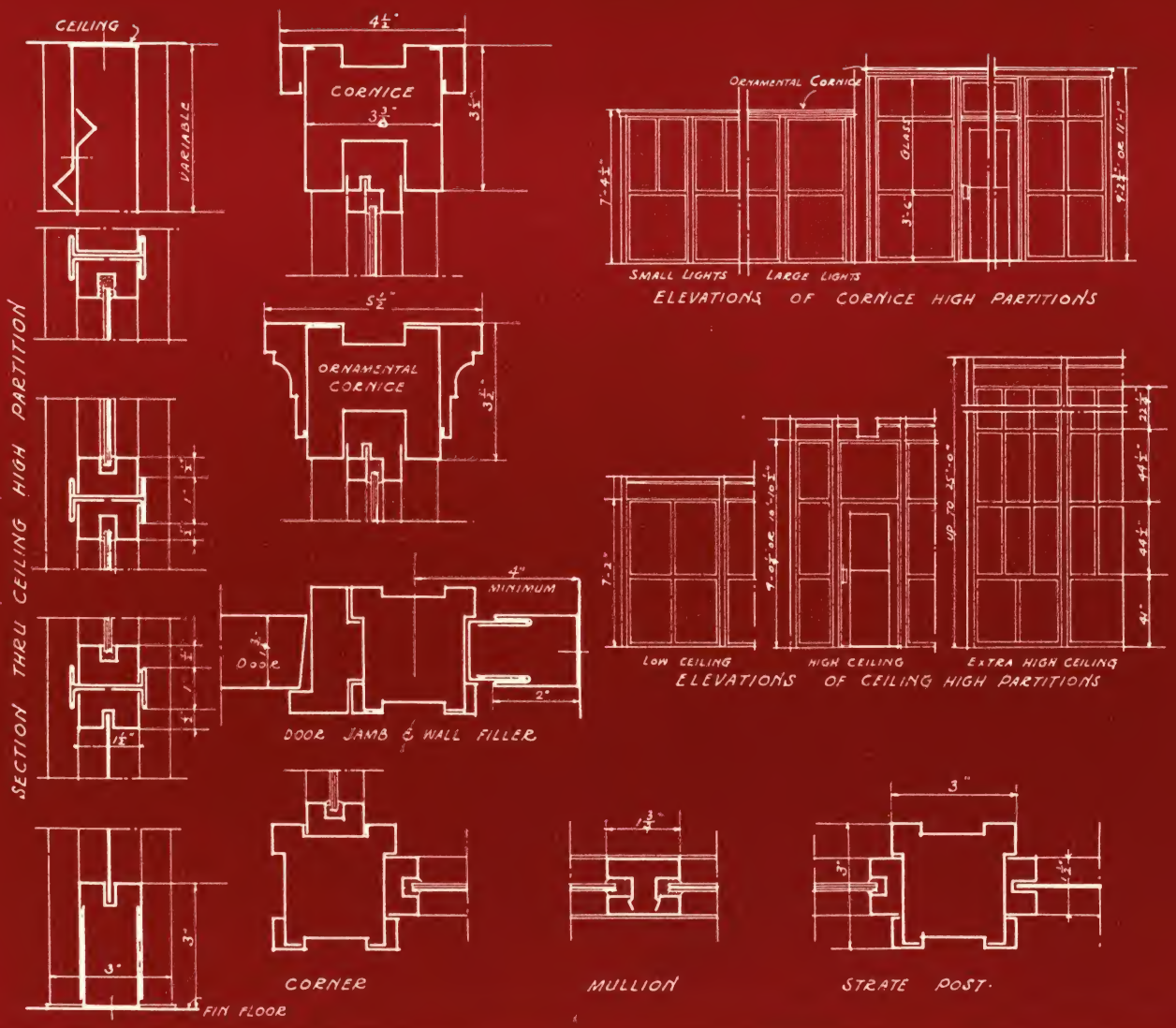
Standard finish of Mills Commercial Partitions is either olive green or gray in durable baked enamel. Any other color or finish may be had at a slightly increased cost.





Fig. 157. Showing Height of Mills Commercial Partition.

Dia. VII. Detail of Mills Commercial Partitions.



# MILLS EXECUTIVE PARTITIONS



This Mills Executive Partition Installation Provides a Long Run and Extraordinary Height with Two-Cornice Superstructure.

**DISTINCTIVE FEATURES**—Exceptional rigidity, beautiful mouldings in both the vertical or horizontal directions and permanent appearance, together with ease of erection and low cost of re-arrangement are but a few of the features that give The Mills Executive Partition such universal popularity and acceptance.

The Executive Office Partition is truly a pioneer line. It is one of the original types pioneered by The Mills Company "Partitioneers" and is designed to meet the demand for beauty and quiet dignity, as well as durability and interchangeability.

**APPLICATIONS**—Mills Executive Partitions provide dignified and attractive surroundings for many of our country's busiest executives. Great corridors of this partition form the general offices of many leading American business institutions. Mills Executive Partitions have solved the problem of speeding erection, pleasing appearance and economical re-adjustment for hundreds of architects, contractors and owners. They stand ready to solve your problem with equal and complete satisfaction.

**SIZES**—Mills Executive Partitions are furnished in standard panel widths of 20, 25, 30, 35, 40, 45, 50, 55 and 60 inches, and in standard cornice heights of 7′-4″, 8′-8″, 9′-2″ and 10′-4″ (Any partition above the 10′-4″ height is not considered standard but can be fabricated) of either all-steel or steel and glass construction.



Fig. 206. Office Built Entirely of Standard Units—Mills Executive Partitions.



Fig. 207. An Attractive Installation of Mills Executive Railings.



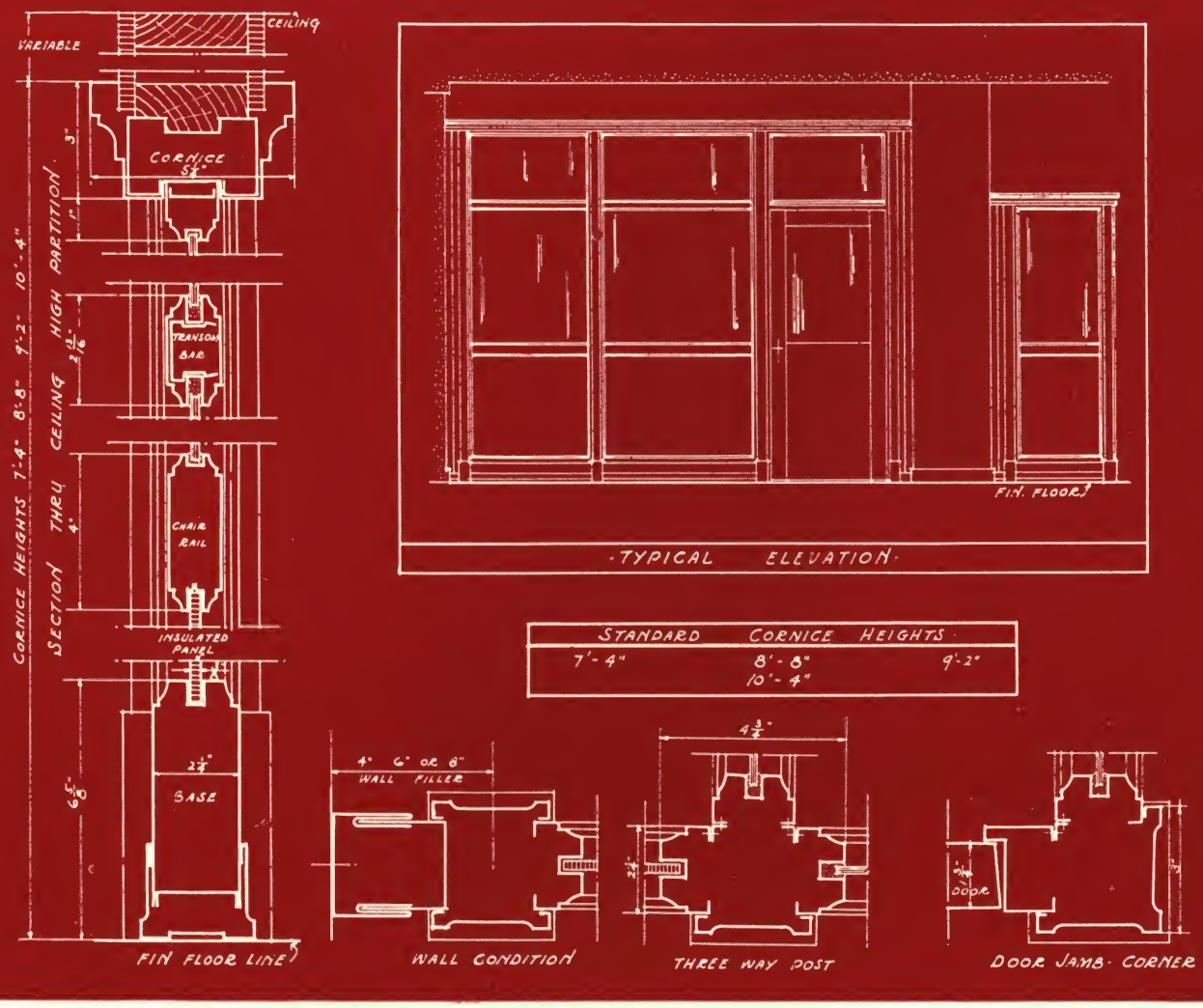
# MILLS EXECUTIVE PARTITIONS

**CONSTRUCTION AND FINISH**—Mills Executive Partitions are fabricated from cold rolled furniture steel in the form of double sheet steel panels, insulated between sheets with sound deadening material ⅜ of an inch thick. They are also designed to accommodate any type and thickness of glass. Glass is inserted without the use of loose mouldings or screws. At each post connection, where units are held together, a run of partition can be connected either in an "L" connection or four-way connection. All units are entirely interchangeable. For example, a 20 inch and a 30 inch section replaces one 50 inch unit, etc. The door and door section is interchangeable with any 40 inch unit. Plinth blocks are beautifully designed to make possible easy access to all wiring and floor connections without removing post caps. The base of the panel nests in the floor channel, which is anchored to the floor by a new arrangement and is easily adjustable to assure perfect alignment on uneven floors.

Each unit is securely clamped together with our specially designed friction clip, thus forming a strong and rigid connection and prevents any tendency of the panels to get out of plumb. With this arrangement, ample space is provided between the units for concealment of wires or placing of outlets or switches. Mills Executive Partitions and railing will be furnished in any standard flat color baked enamel. Beautiful reproductions of carefully selected wood grains will be furnished at a slight additional cost.



Dia. VIII. Details of Mills Executive Partitions.



# MILLS METAL-FLUSH TOILET PARTITIONS



Typical Installation of
Mills Metal-Flush Partitions

**FEATURES**—Mills Metal Flush Partitions for toilets, showers, cubicles and dressing rooms are the product of wide experience and research. In reality, a splendid quality product which embraces all of the fine features of sanitation, ease of cleaning and flush, attractive appearance. Double cold rolled furniture steel sheets are used, insulated between securely welded seams and posts. The Mills Metal Flush odor proof partition defies camparison.

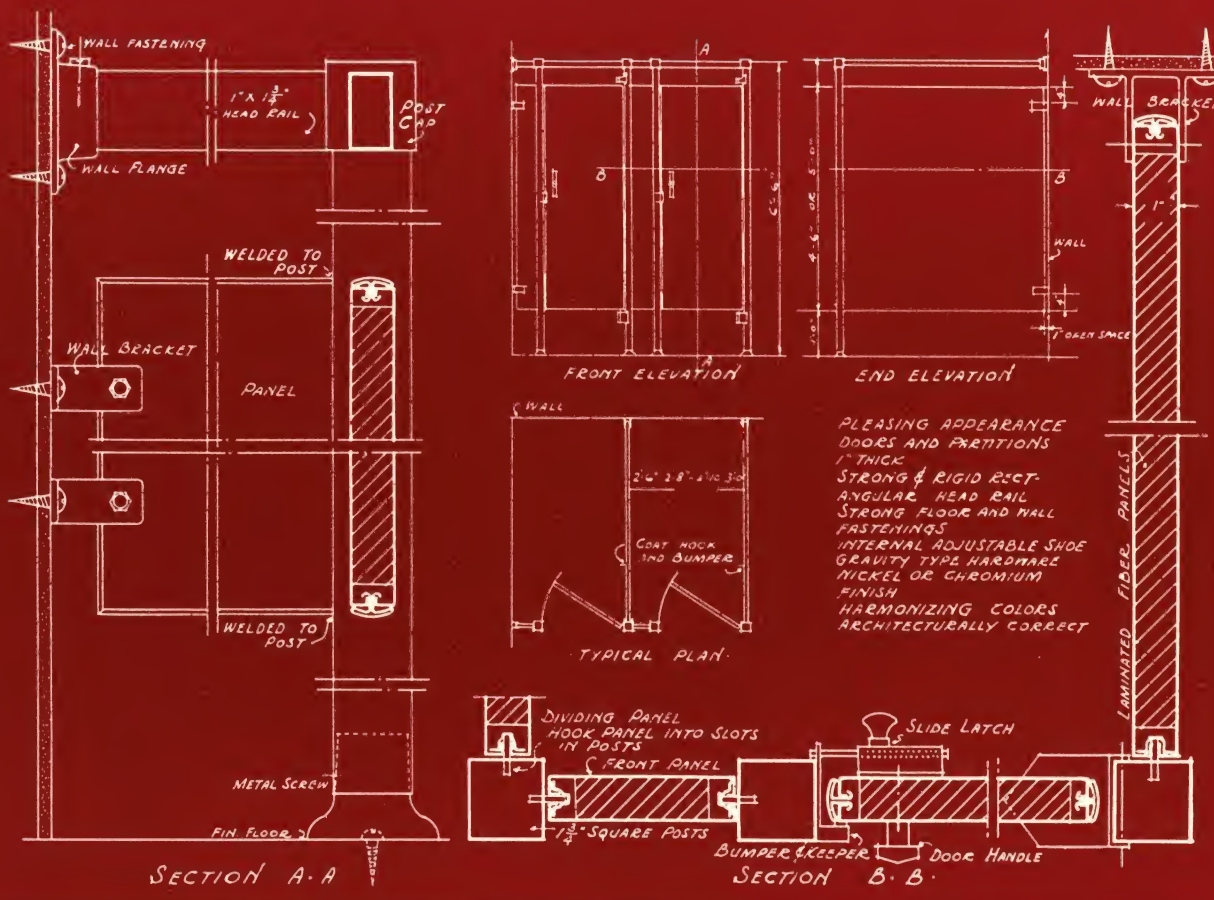
**SIZE**—Metal Flush panels are in multiples of 6 inches in depth and either 54 or 60 inch heights. However, we will furnish greater height partitions upon request. Doors are in multiples of 2 inches in width and of heights to correspond with the panels.

**CONSTRUCTION AND FINISH**—Metal Flush is extremely strong, and consists of two sheets of 20-gauge steel formed at the edges and cemented under pressure to a laminated fibre core. This is bound with an interlocking mould, welded at all four corners and interlocked to each post with concealed hooks. Posts are 1¾ inch square tubing and are welded top and bottom to partition panel. Doors are of the same construction as panels, and are further re-inforced for the attractive modernistic hardware. The design of all hardware is in complete harmony. Metal Flush Compartments are available in other non-ferrous metals, such as aluminum, at increased cost. This material is also manufactured to special specifications for Federal work.

Finishes for Mills Metal Flush Partitions are olive green or gray baked enamel. A wide range of colors may be had at a slight additional cost.



Dia. IX. Details of Mills Metal-Flush Partitions.



# MILLS CHALLENGER TOILET PARTITIONS

## PANEL TYPE

**FEATURES**—The "Challenger" construction has met with immediate approval everywhere. It offers, in addition to its attractive appearance, permanence, sanitary features of construction, wide adaptability to all conditions and incomparable dollar value. An attractive, unbreakable modernistic bakelite door pull is supplied and all hardware is of nickel-plated brass in attractive modern patterns.

**SIZES**—Mills Challenger Partitions are furnished in standard multiples of 6 in. deep and 54 or 60 in. standard heights. Higher partitions supplied on request. Doors are in multiples of 2 in. in width and height to correspond to the panels.

**CONSTRUCTION**—Will meet practically any space requirement. Doors swing in or out. Partitions are securely braced by 1 x 1¾ in. head rail rigidly attached to each post by means of a post cap. Posts are of 1¾ in. square steel tubing. The front 1¾ in. square sanitary post extends to the floor at approximately 12 in. below the bottom panel rail and above the top panel rail to the head rail bracings approximately 6 ft. 6 in. from the floor. Rear 1¾ in. square sanitary post extends just above and below the top and bottom panel rails. No open joints to catch dirt. Panels and doors are made from 16 and 18 gauge cold rolled furniture steel in strict accordance with Simplified Practice Recommendations R101 of the Department of Commerce Bureau of Standards.

Panel sheets extend and are flanged and welded into posts. Top and bottom rails are wedged between front and back posts and held in place by welding to hold the panel sheet in tension and eliminate rattle.

An exclusive feature is the white metal cadmium plated sanitary post shoe that fits inside the post, elevating it from the floor and protecting it from moisture and rusting.

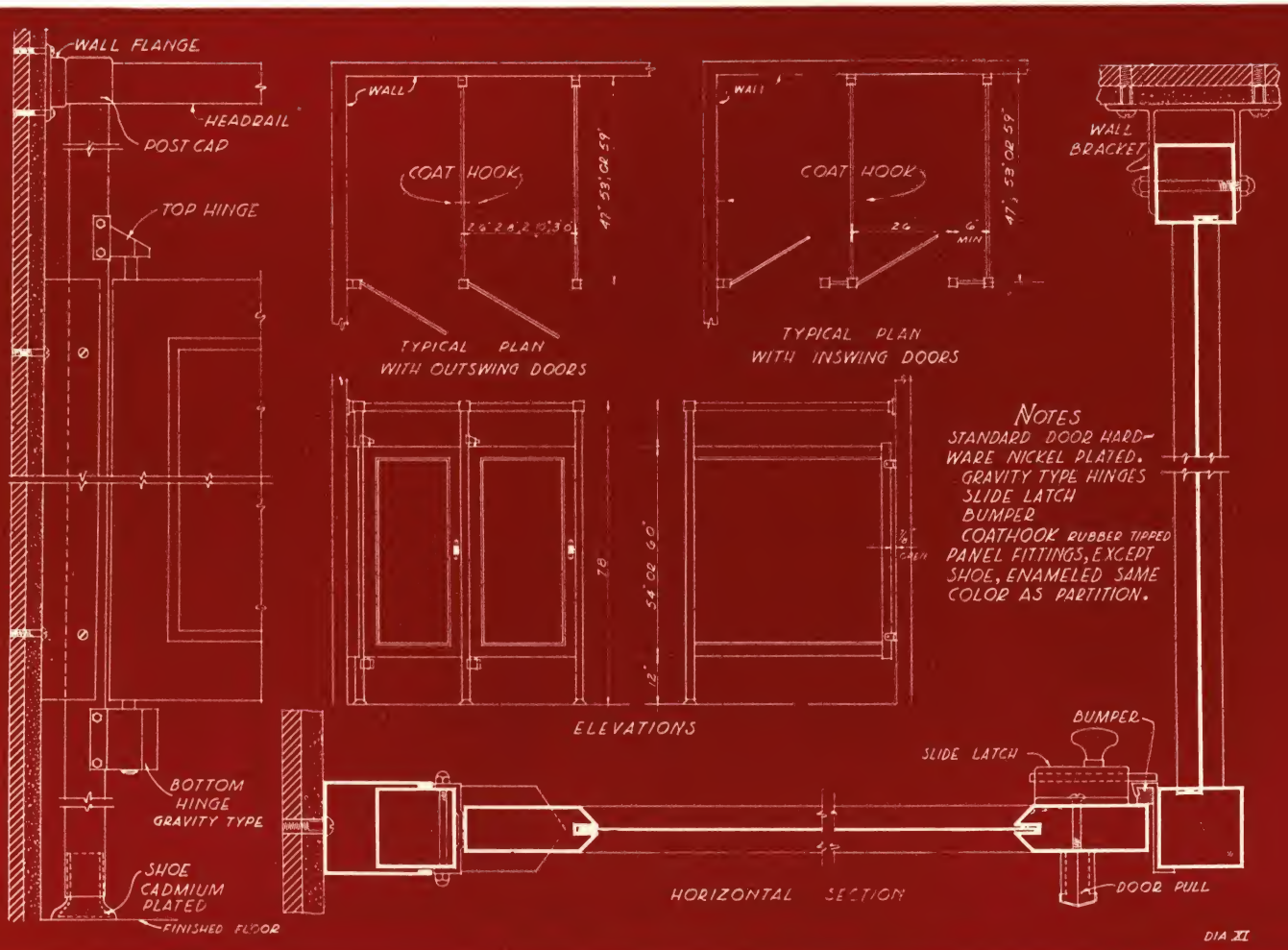
**FINISH**—Prime coat baked on inside and out with finished coat of olive green or gray baked-on enamel. Other colors at additional cost.

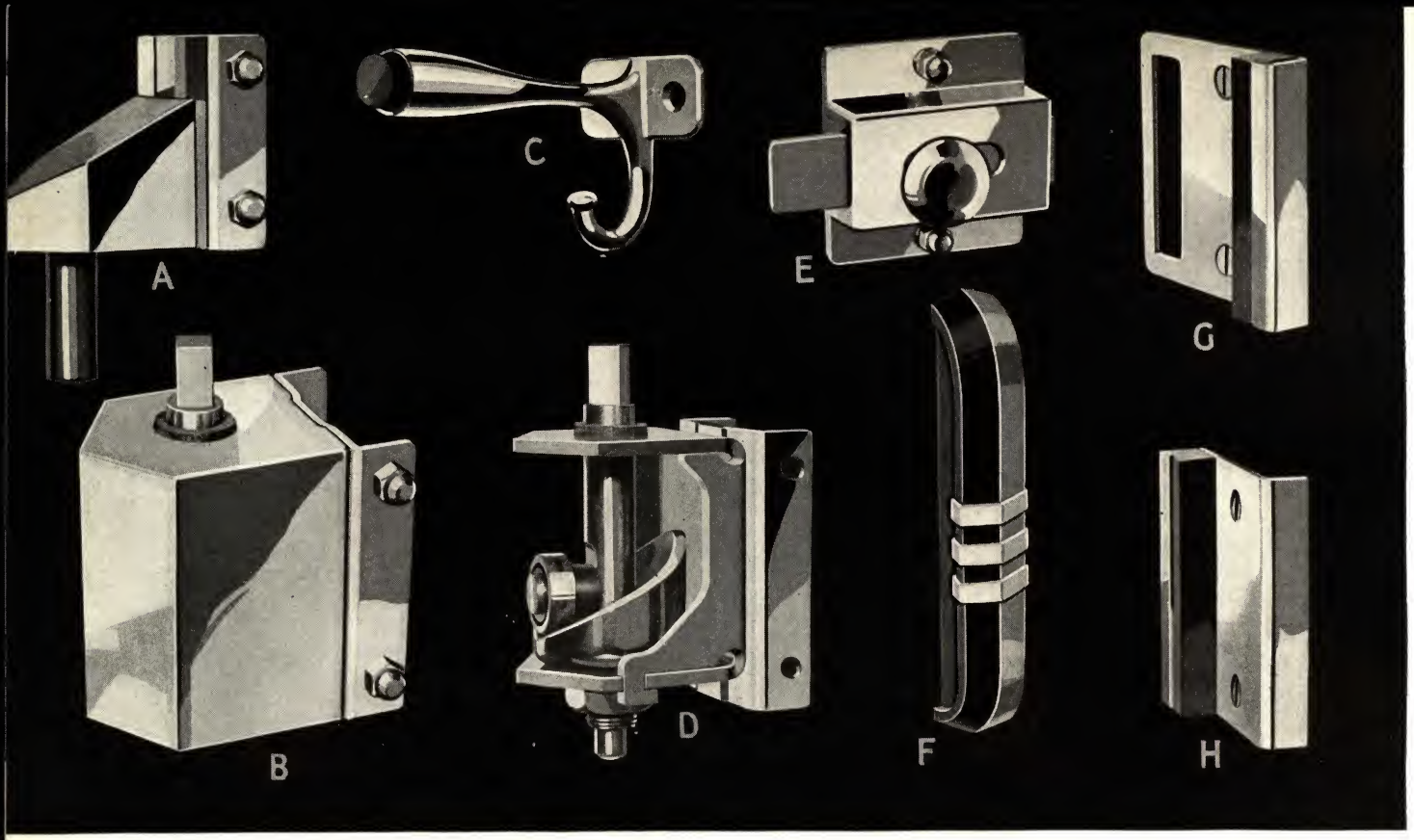


Typical Installation of "Challenger" Partitions



Dia. X. Details of Mills Panel Type Toilet Partitions.






A—The upper hinge has spindle locked rigidly in place and is attractively housed.

B—The lower hinge is ball bearing roller, gravity operated and adjustable to close at any angle.

C—Coat hangers are fitted with rubber door bumpers and shaped to prevent tearing apparel.

D—Lower hinge with cover removed to show adjustable cam and ball bearing mounted, hardened steel roller.

E—Latches of sliding bar type and fitted with anti-rattle springs, and are through-bolted.

F—Modernistic door handles are convenient to operate.

G—Door bumper for in-swinging doors with keeper and rubber cushion.

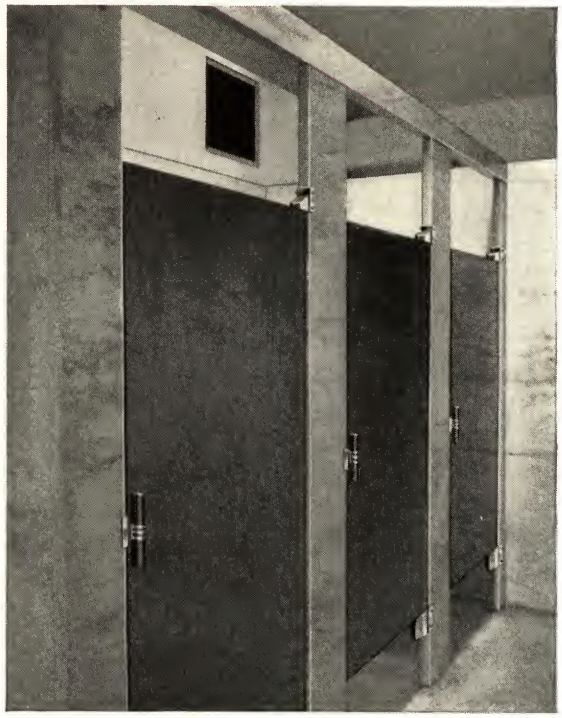
H—Bumper used with out-swinging doors.

# MILLS METAL-FLUSH DOORS FOR MARBLE PARTITIONS

Mills Metal-Flush Doors and Mills Hardware for marble toilet compartments enable architects to carry out to the most minute detail, in public and semi-public, institutional and ornamental buildings, the beauty, strength and distinctive appearance they have imparted to other parts of the structure. Doors are fabricated from two sheets of steel, cemented to a laminated fibre core and surrounded with an interlocking moulding which is welded at the corners for additional strength. The doors are rigid, extremely light in weight, and non-porous. They will absorb no odors. Metal-Flush Doors are available in any desired finish; in glistening black enamel; in beautifully grained walnut or mahogany, or may be fabricated in aluminum or other special metals, if desired.

## NEW MODERN HARDWARE

The new Modern Hardware for Mills Metal-Flush Doors is of the latest improved design. It must be seen to be fully appreciated. All exposed parts are fabricated in brass and nickel or chromium plated. In the bottom hinge, a hardened ball-bearing wheel rotates on a steel pin and runs on a hardened steel cam. A hidden locknut permits adjustment to bring the door to rest in any desired position. Post brackets can be adapted to any thickness of marble. The hardened pin of the top hinge works in a graphite impregnated bushing. The modern handle or pull is of new material which will never tarnish nor lose its lustre, with brass, nickel or chromium plated trim through bolted to the slide-bar door latch. The combination coat hook and bumper eliminates banging. All hardware is through-bolted with bonnet head bolts and nuts (see illustrations). In beauty and strength Mills Hardware leads the entire field.



Typical Mills Metal-Flush Doors on Marble.

# MILLS HOSPITAL CUBICLES



Flush Type Cubicle Installation

### METAL-FLUSH OR SINGLE PANEL TYPES

Mills *Hospital* Cubicles are manufactured in either metal-flush or panel-type design.

Cubicles with or without glass are built in multiple widths of 6 in., from 30 to 120 in. in depth. When the depth of the cubicle exceeds 60 in., an intermediate post is always placed in the center of the partition. When glass is used it may be either clear or translucent and either type may be wire reinforced.

### SIZES

Mills Cubicles are 66 in. high—lower panel is placed 12 in. off the floor—glass line is 42 in. off the floor—the glass extending upwards for 30 in. or within 6 in. of the headrail. Erected overall height, 78 in.

### PROTECTION

Mills adjustable internal post shoes a e cadmium or chromium plated to prevent rust. Post caps and wall fittings are furnished with baked enamel to match the panels. If required they may be chromium plated at slight additional cost.

### FINISH

Baked enamel in a range of desirable colors to harmonize with any hospital scheme is available.



Panel Type Cubicle Installation.

# MILLS ALL-METAL UNIT SHOWERS

### DISTINCTIVE FEATURES OF CONSTRUCTION

The Mills *All-Metal* Unit Shower is an absolutely water-tight and leakproof, self-contained unit with its own rustproof receptor. The All-Metal Shower will not chip, sag or crack due to vibration or settling of the building or from other causes. Mills showers will not absorb odors . . . they are absolutely sanitary and are easy to keep clean.

### SIZES AND INSTALLATION DETAILS

Standard wall height is 84 inches to extend beyond the usual shower head height. Stock showers are 36x36 inches in cross-section. Showers 30, 32, 34 or 36 inches deep or wide are available in any combination. Corners are of an interlocking water-tight construction. Water pipes leading to the shower head are brought over the top, through the back, or from either side. The 4-inch removable brass drain is secured with water-tight gaskets.

Mills All-Metal Unit Showers are shipped knocked down—with curtain rod and fasteners—complete with instructions for their erection in minimum space. Specially prepared marble, terrazzo, concrete tile, or waterproof wood floors are not required. An ordinary, un-waterproofed floor furnishes sufficient support.

### FINISH

All-Metal Shower Receptors are cadmium plated by the Udylite process (Navy Specifications) for permanent rustproofing. Walls are finished in Mills standard grey or olive green, or in other colors at slight extra cost—also furnished in aluminum or other special metals. Shower head, valve controls, soap dishes and curtains can be furnished, if desired, at slight extra cost.



Fig. 255. Mills All-Metal Unit Shower.

20
10

"A MILLS METAL PARTITION FOR EVERY PURPOSE"

# MILLS

## METAL PARTITIONS

**OFFICES**
FLUSH PILASTER
SINGL-INE
SYNCROFIT
EXECUTIVE

**FACTORIES**
COMMERCIAL

**HOSPITALS**
CUBICLES

**TOILETS**
CHALLENGER
METAL FLUSH

**UNIT SHOWERS**

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**THE MILLS COMPANY · CLEVELAND, OHIO**

**BRANCH OFFICES**

NEW YORK DETROIT CHICAGO PITTSBURGH BUFFALO

Representatives in all principal locations

# NIEDRINGHAUS, INC.

ST. LOUIS, MO.

REPRESENTATIVES IN ALL PRINCIPAL CITIES

### Products

Interchangeable Movable Metal and Glass Partition, Office, Flush and Factory Types; Hollow Metal Doors, Frames, Trim, Base, Chair Rail, Picture Moulds; Hollow Metal Elevator Entrances; Air Conditioning and Heating Radiator Enclosures.

### Location

Centrally located.

### Plant

Fully and modernly equipped.

### Engineering

Competent engineering services free to architects, engineers, building managers and builders.

### Service

Our organization fully appreciates the importance of the reliability and delivery of products.

### Underwriter's Labels

Complete Underwriter's Service for Class A, B, C, D, and E requirements.

### Details

We will gladly furnish complete full size drawings of profiles and standards upon request.

### Finishes

Complete facilities for prime, baked enamel, graining, stipples, lacquers.

Samples upon request.

## INSTALLATIONS

Kansas City Auditorium, Kansas City, Mo.
Gentry, Voskamp & Neville, Archts.
U. S. Supreme Court, Washington, D. C.
Cass Gilbert, Archt.
New Fisher Building, Detroit, Mich.
Albert Kahn, Archt.
Department of Justice Building, Washington, D. C.
Zantzinger, Borie & Medary, Archts.
U. S. Post Office, Chicago, Ill.
Graham, Anderson, Probst & White, Archts.
Federal Office Building, San Francisco, Calif.
Arthur K. Brown, Archt.
Republic National Bank Building, Dallas, Tex.
Coburn & Fowler, Archts.
Biltmore Hotel, Oklahoma City, Okla.
Hawk & Parr, Archts.
Municipal City Hall Building, Oklahoma City, Okla.
City of Oklahoma, Allied Archts.
North Dakota State Capitol, Bismark, N. D.
DeRemer, Kurke, Holabird & Root, Archts.
Humble Oil Building, Houston, Tex.
John F. Staub, Kenneth Franzheim, Archts.
Department of Interior Building, Washington, D. C.
Treasury Department, Archts.
Meharry Medical College, Nashville, Tenn.
Gordon & Kaelber, Archts.
Holy Angel's Academy, Minneapolis, Minn.
J. H. Wheeler, Archt.
Monsanto Chemical Company, St. Louis, Mo.
Mauran, Russell & Crowell, Archts.
Apex Building, Washington, D. C.
Bennett-Parsons & Frost, Archts.



# W. & J. SLOANE

PARTITION AND CONTRACT DIVISION

575 Fifth Avenue, NEW YORK, N. Y.

REPRESENTATIVES IN PRINCIPAL CITIES

## SLOANE MOVABLE PARTITIONS

W. & J. SLOANE has set the standard for interior furnishings since 1843. Because of our extensive facilities and the experience acquired in the manufacture of fine furniture, we are able to make partitions at competitive prices which have the added distinction and care found in all Sloane products.



**Conference Room in the Traditional Manner**

This attractive room shows what can be accomplished by using Sloane stock partitions, Sloane-made and Sloane-designed furniture

### Partitions

Whether your office is in a bank or in a factory—you will find everything you need for an appropriate business setting . . . partitions, bank screens, wall paneling, office furniture, draperies, carpets, linoleum, special woodwork. . . .

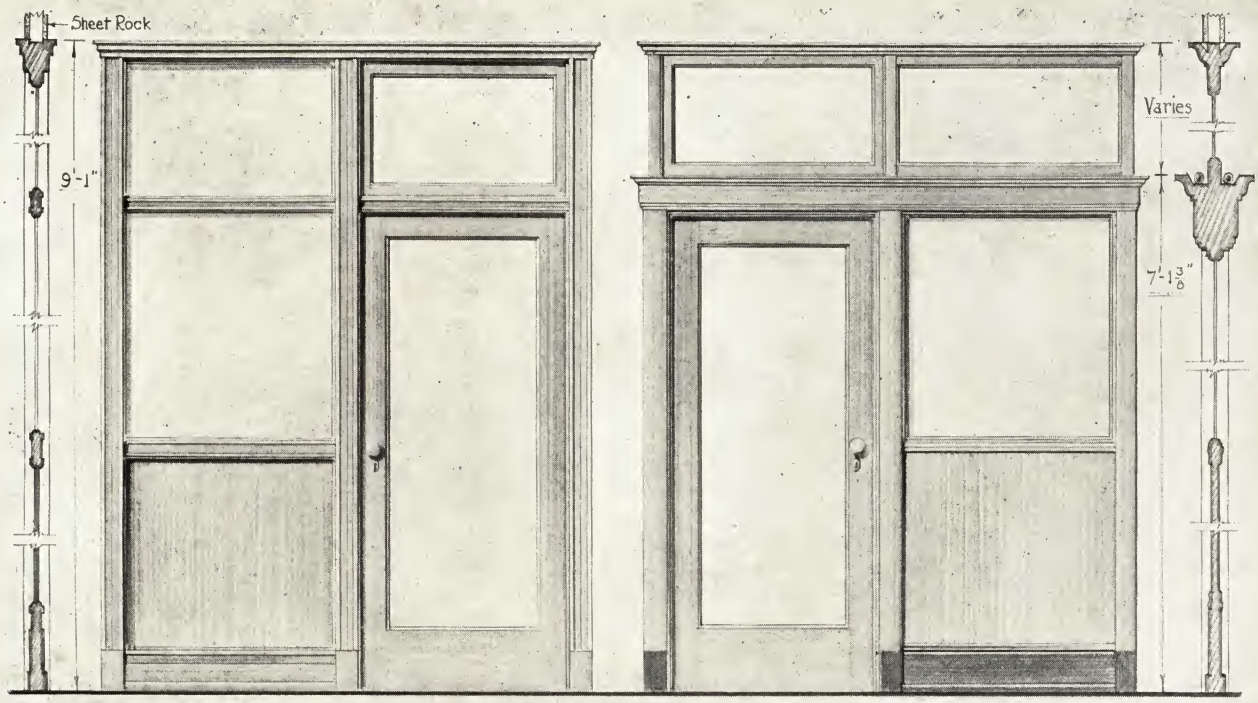
Our experienced engineers and decorators are always glad to co-operate with you in solving office division problems. The chances are that such sub-dividing problems can be solved with our movable partitions.

### Contract Service

Our Contract Service eliminates duplication of efforts . . . avoids conflicts . . . effects considerable savings for you. All because we can give you the benefit of our numerous orders and contracts . . . our direct dealing with the source of manufacture . . . and our centralized consulting and buying service. In short, there isn't anything we can't do to facilitate the furnishing of an office you would like to have.

For further information, address W. & J. Sloane Contract Division.

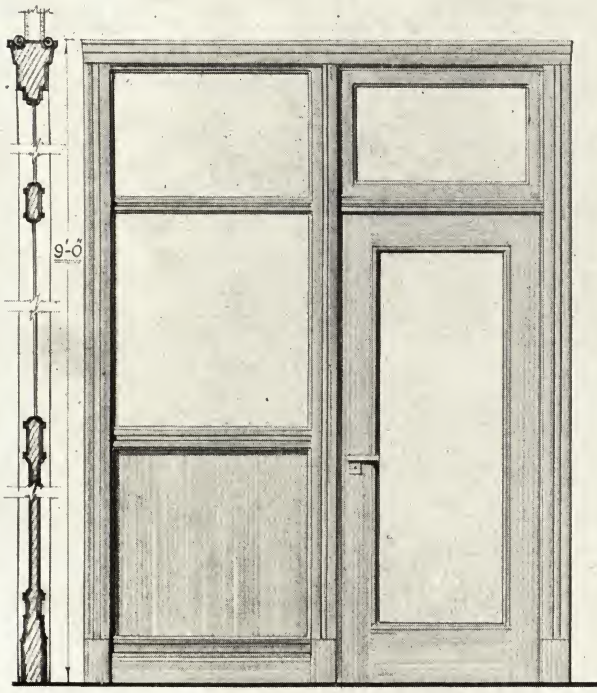
*For further information, address W. & J. Sloane Contract Division*



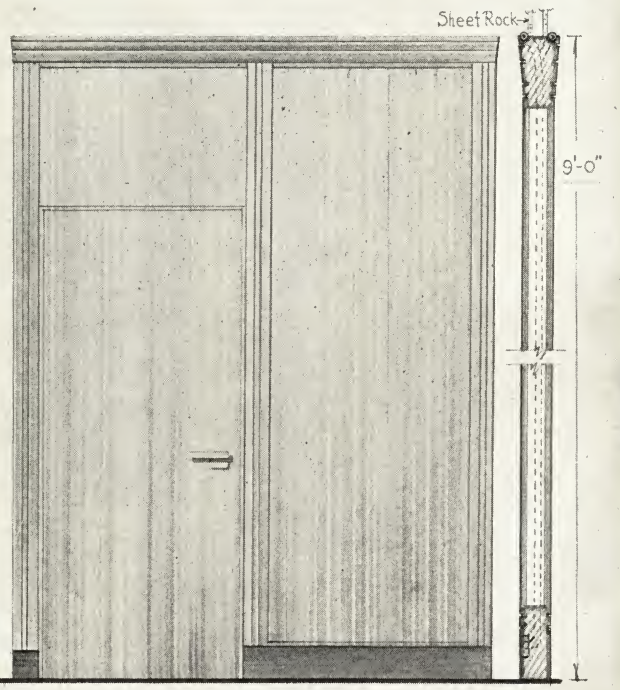

TYPE 4




TYPE 6




TYPE 10




TYPE 12 (Flush Type)

| | | |
|---|---|---|
| All types are available in Standard Veneers and various Finishes . . . . | Wood Panels can be had in place of Glass . . . . . Panel widths run from 12" to 54" | Scale Elevation 3/8" = 1'-0" Sections & Plans 3/4" = 1'-0" |

MEMORANDA



# SNEAD DYNAMIC WALLS

MOVABLE PARTITIONS

## IN METAL & GLASS

SOUNDPROOF AND
SOUND ABSORBING

# Snead Dynamic Walls

Sound insulated and sound proofed.
New, modern architectural lines.
Easy to erect, alter, move.
Adaptable to any space.
Decrease maintenance.
& repay owners
Continually
On cost.

FOUNDED
1849

## PLANNING SERVICE

**Without obligation, Snead & Company's engineers, trained in office layout and arrangement, will co-operate in solving your problems and assist you with considerable saving of time to you.**

**The most practical office layout will be submitted for your approval, illustrating the best arrangement of partitions, railings, closets, radiator covers, etc.**

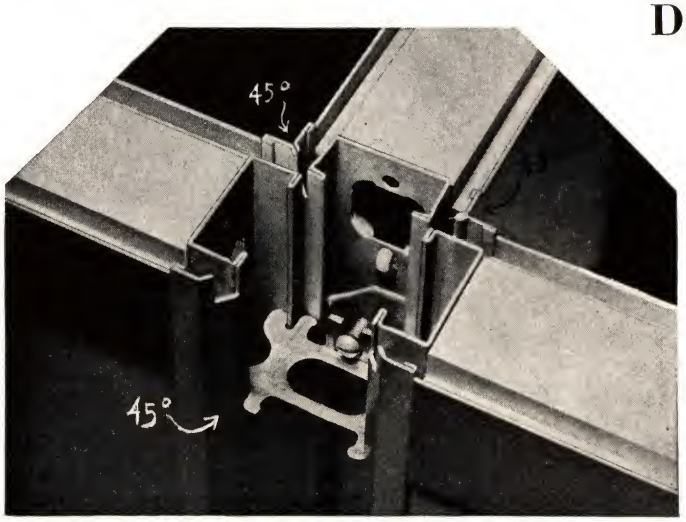



*Fig. 1. Three-Way Intersection, Type "SF" and "RF". Note 45° angle of posts and single link plate connection*

## SNEAD DYNAMIC WALLS CLASSIFICATION

***All are unit built, flexible, 100% reusable and wireable***

| | |
|---|---|
| 1. TYPE "MF" Page 12 | Single steel panel. Hollow metal, universal and integral post and rail construction. For industrial offices, warehouses, etc. |
| 2. TYPE "M" Pages 12, 13 | ½ in. thick. DOUBLE insulated. universal and integral post and rail construction. For general use. |
| 3. TYPE "SF" Pages 4, 5, 6, 7 | 3 in. thick. Two insulated panels separated by dead air space. Semi-flush with ¼-in. post projection. Full moulded glass panel. Removable panels for double glazing. Universal and integral post. Wire way base. For use in general offices, corridors and wainscoting. |
| 4. TYPE "SFS" Pages 4, 5, 6, 7 | 3 in. thick. Same as "SF" but with sound proof panel, rail post, door, top filler and periphery. For use in executive offices, corridors, schools, hospitals, and to replace masonry walls. |
| 5. TYPE "RF" Page 8 | 3 in. thick. Two insulated panels. Flush surface. For use in executive offices, corridors, wainscoting, etc. |
| 6. TYPE "RFS" Page 8 | 3 in. thick. Same as "RF" but with sound proof treatment as in "SFS". For general replacement of masonry walls, for use in finest executive offices, and general application described above for Type "SFS". |
| 7. TYPE "FF" Page 6 | 3 in. thick solid insulated and sound proofed flush wall. For general use in replacing interior masonry walls. |
| 8. BANK SCREENS RAILS Page 9 | For all types of semi-private, low enclosures. |
| 9. ACCESSORIES Page 14 | Special accessory items, hardware, wickets, counters, closets, etc. |
| 10. HOLLOW METAL WORK Page 15 | Doors and bucks for masonry walls. For hospitals, schools, apartments, etc. |
| 11. SPECIAL PARTITIONS | Snead engineers are available for the solution of any special problem. |


## MAIN OFFICE AND FACTORY

JERSEY CITY, N. J.—Telephone, Delaware 3-3500
NEW YORK—205 East 42nd Street, Murray Hill 4-0986-7-8
BOSTON—234 Clarendon Street, Commonwealth 4736

## FOREIGN OFFICES

BERLIN, GERMANY—Bibliostahl, Wolf Netter & Jacobi Werke
LONDON, E.C. 2—Snead Library System, Luxfer Ltd., 16 Hill St.
PARIS, FRANCE—Snead Library System Societe Anonyme des Forges de Strasbourg, 160 Rue Montmarte
SARONNO, ITALY—Parma, Antonia & Figli
TORONTO, CANADA—Snead Iron Works Ltd.

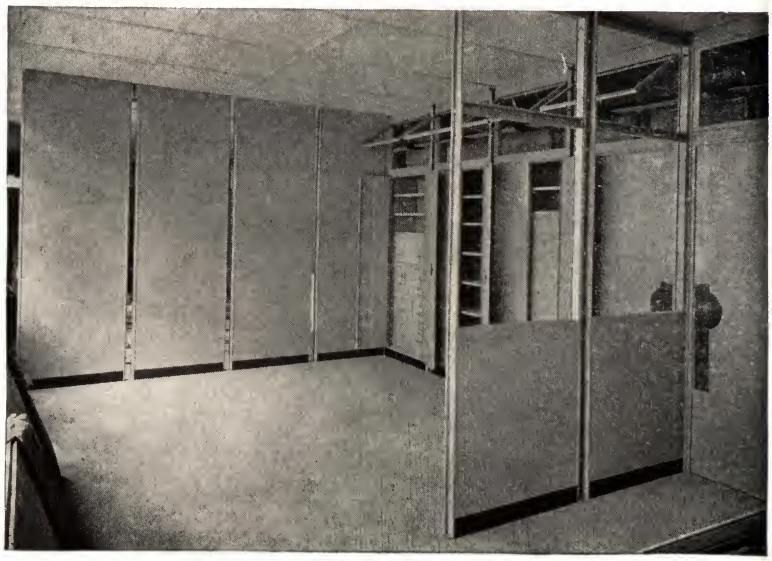



*Fig. 2. Unit panels in course of erection, all steel type and steel and glass type, with pilasters not yet in place. Note no muss, no rubbish*



SNEAD MOVABLE WALLS AVAILABLE IN ANY TYPE FINISH

# For 89 years

BUILT INTO Snead Dynamic Walls is the accumulated experience of 89 years of specializing in architectural metal products.

The finished product asks no odds of fine cabinet work either as to design or execution. In architectural appearance Snead walls, bank screens and railings are of outstanding merit.

Snead designers have set a new mark in structural ingenuity with many important patented features. These inventions have increased rigidity, made wiring changes easy, achieved greater simplicity in construction and reduced the number of loose parts for field handling. Only by seeing the ease and speed of erecting and taking down a wall can these be appreciated.

No finer movable wall, either in construction or appearance, can be obtained.



*Fig. 3. Soundproof "SFS" corridor. Unusually distinctive and modern in door design and use of glass*

# 6 NEW IDEAS

**In Architectural Design**—Snead movable walls are designed on straight, simple lines. They are modern, with every part functional. The absence of paneling, moulding, etc., allows this partition to harmonize in appearance with any type of equipment. Where an office has a plaster wall on one or more sides there is no noticeable architectural conflict with this type of paneled wall on the other sides.

**In Sound Proofing**—Snead made possible for the first time the use of demountable walls that meet exacting requirements. Types S.F. and R.F. are double wall partitions 3 in. thick, doubly insulated with cemented-on linings of sound absorbing fiber board. To attain absolute quiet and privacy these walls may be packed solidly with mineral wool as in Types S.F.S. and R.F.S. These walls, acoustical laboratory measurements show, are more sound deadening and sound absorbing than an ordinary masonry wall. Lawyers, doctors, and others demanding the soundproofness of masonry are now using these Snead Dynamic Walls.

**In Finishes**—The former use of masonry walls with abutting movable partitions invariably produced an office in two colors. Snead partitions are available in various light pastel tones of buff, antique ivory, tan, green and gray, which will match the standard finishes on plastered wall surfaces. These lighter and scientifically matched finishes make a more cheerful office, and add greatly to the lighting of the space by reason of their greater light reflection. They may also be obtained in natural wood grain, covered with fabrics or wood veneer of various kinds. Any decorative finish is now available.

**Over Night Alterations**—Owing to their ingenious, demountable units, it is easy to adapt, alter and rearrange these walls, whether they are all steel or steel and glass. Changes can be made over night without slowing up or interfering with the operation of your office. The dust, mess, rubbish and uproar of tearing out plaster block walls, and building new ones, will never again worry you when you want to change the arrangement of your space. With Snead Dynamic Walls there is no loss in your investment.

**Self-Seating 45 Degree Angle**—The simplicity of the Snead assembly is due to the vertical edges of the panels and pilaster covers being beveled on a 45 degree angle. Pilaster covers, both flush and semi-flush, fit snugly into the 45 degree angles of the posts. Two, three and four-way connections and outside corners are made without the use of adapters or other mouldings because of this self-seating feature.

**Concealed Wiring**—All wires, high and low tension, are carried in concealed vertical and horizontal raceways. Switches and receptacles may be set flush with the partition wherever desired. Fish type wire base or lay-in wireway, optional.

# *Snead Dynamic*

## SOUND PROOF
## SOUND ABSORBING WALLS
## SEMI-FLUSH

### Type "SF"—Sound Absorbing

SEMI-FLUSH design with 1/8 in. projection at posts only. 3 in. thick double insulated walls.

All members of best furniture grade steel, roller die processed, giving uniformity, sharp definition of arises, and snug fit cabinet work appearance.

Full moulded glass panels. Maximum fire-resisting quality.

All wiring concealed in vertical and horizontal members. Lay-in wire way base.

Panels interchangeable without disturbing adjacent units or top filler. All connections made with interior clips.

Tie-rod assembly for easy cut-down. No welds, rivets or screws in assembly. Minimum of small parts, with posts integral with panel. Panels are locked together and aligned by a patented one-piece internal clip which also locks on both pilaster covers, and furnishes the connection for three and four-way extensions. *No other movable wall has this feature.* 100% salvagable and reusable.

This is the standard type of office partition, affording all the soundproofness and privacy normally necessary for comfort and production efficiency.

### Type "SFS"—Maximum Sound Proof

*(See also pages 6 and 7)*

Exactly similar in design to Type "SF," but having the interior of the panel, post, rail and top filler solidly packed with mineral wool, and the periphery sealed with non-hardening mastic.

Single or double-glazed panels. When double-glazing is desired, the panels are removable for ease in cleaning. Different thicknesses of glass prevent tuned frequencies.

With either the all-steel or the double-glazed "SFS" Dynamic Wall, accounting, stenographic, business machine or other noisy rooms are completely isolated. Type "SFS" Dynamic Walls are more sound proof than a five inch thick masonry wall.

## OF SPECIAL INTEREST TO EVERY ARCHITECT, BUILDING OPERATOR AND OWNER

*(See table on opposite page)*

The cost of altering your offices, showrooms and corridors is a matter of prime importance to you. Snead Dynamic Movable Walls have many refinements of construction to save you money. With the tie-rod assembly, panels can easily be cut down in width in the field. Snead panels may be taken apart, cut down, reassembled and reglazed in less than an hour, with no danger of marring the finish, as *all connections are made by means of interior fastenings.*

The Snead Dynamic wall is the only partition with a single internal clip designed to assure positive locking and alignment of panels, and snug fit of both pilasters. Snead construction permits the easy removal of panels without disturbing adjacent units or top filler.



*Fig. 4. Here Type "SFS" double-glazed separates reception room from general office space. Note harmony of appearance with other equipment*



*Fig. 5. Simple straight lines in panels and doors harmonize with any interior architectural treatment. Note transom, with concealed operator and switch on door post. Type "SF"*

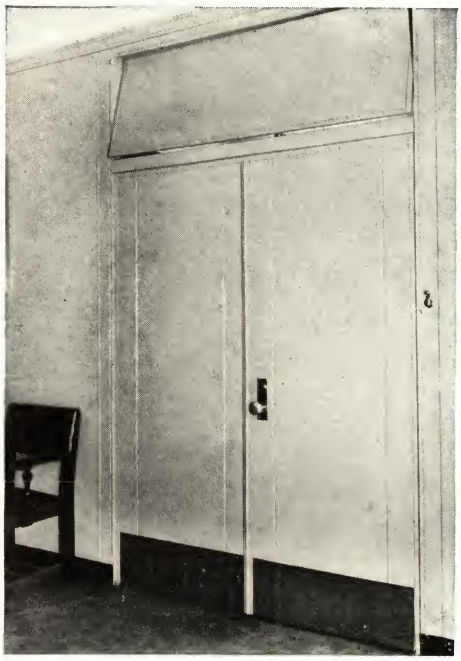


*Fig. 6. Double doors, single swing, one active and one inactive (with head and foot bolts), are inconspicuous in "SF" design*



*Above: Fig. 7. Attractive in its light warm gray finish, this executive office, with corridor wall of obscure glass and dividing wall of Type "SFS", gives the utmost in privacy*



*Left: Fig. 8. Simplicity of detail is predominant in this reception room information window. Type "SFS"*

*Below: Fig. 9. Finished in beautifully grained walnut, this reception room of Type "SFS" unit wall is more sound proof than a masonry wall*



## *Snead Dynamic*

## OF SPECIAL INTEREST INVESTMENT VALUE AND SAVINGS

Simplicity of construction—eliminating the multitude of small parts—is another factor for saving. Many loose parts not only increase erection costs but lead to inevitable losses. Snead has eliminated the old style inside corner moulds by means of the 45 degree angle design of the integral panel posts, assuring perfect fit and cabinet-work appearance. Cleaning costs are cut to a minimum as there are no dust-catching projections or ledges.

Snead Partitions are modern, but not modernistic. They are designed and built on simple, straight functional lines, to harmonize with masonry walls. They will not be out-moded in a few years, having been designed for permanence—a true investment value.

Snead Dynamic Walls cost less in the end. Where masonry walls are torn down and rebuilt the cost is far greater than the money actually spent for labor and material. The cost includes: (1) the loss of the square foot space while the alteration is in progress; (2) the loss resulting from the disturbance to your employees; (3) the cleaning expense and the wear on your typewriters and other costly business machines caused by the dust and dirt, and (4) that other unknown cost—the loss occasioned by not making the changes when they were first known to be necessary because of the general upsetting condition and muss attending the altering of space sub-divided by plaster walls.

Compare with this the removal and altering of Snead Dynamic Walls. In a few hours, over night if necessary, Snead Walls are erected or altered to suit the then present needs of your business. And because of this ease in altering, you will not temporize when you know you must change your layout to meet your requirements of economy and speed in business.

There are no maintenance costs with Snead Dynamic Walls. The durable finishes in baked on enamels, are practically indestructable. This finish is not marred in alterations. No parts are injured in alterations.

### COSTS
### SNEAD DYNAMIC WALLS vs. MASONRY

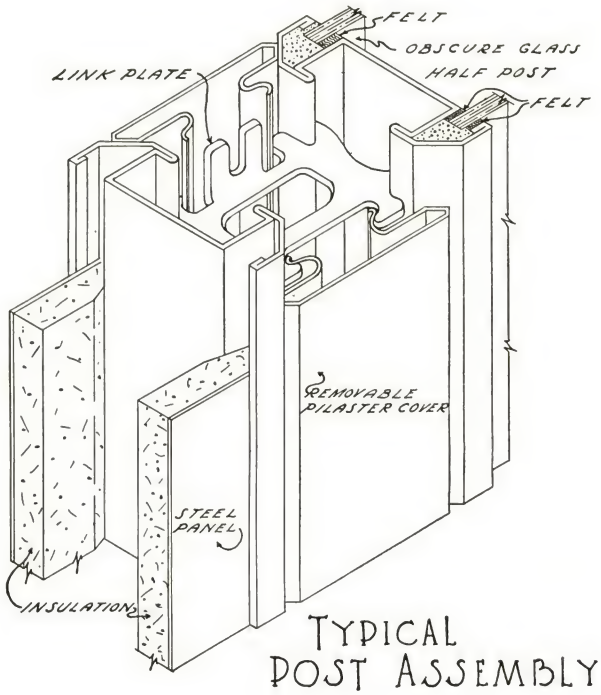
The following is based on typical installations with a door, transom, glass, and hardware.

| | MASONRY WALL | SNEAD "SFS" WALL |
|---|---|---|
| When you install a partition you pay... | 201.00 | 310.00 |
| To take down the wall it costs you..... | 29.00 | 11.00 |
| To re-erect the wall in a new location the new material, labor and finish costs you..... | 125.00 | 38.00 |
| After this first change you have invested in walls..... | 355.00 | 359.00 |
| Allowing, after this first change, for the value of usable material remaining, your cost has been..... | 279.00 | 59.00 |
| The salvage value at this point is therefore ..... | 76.00 | 300.00 |

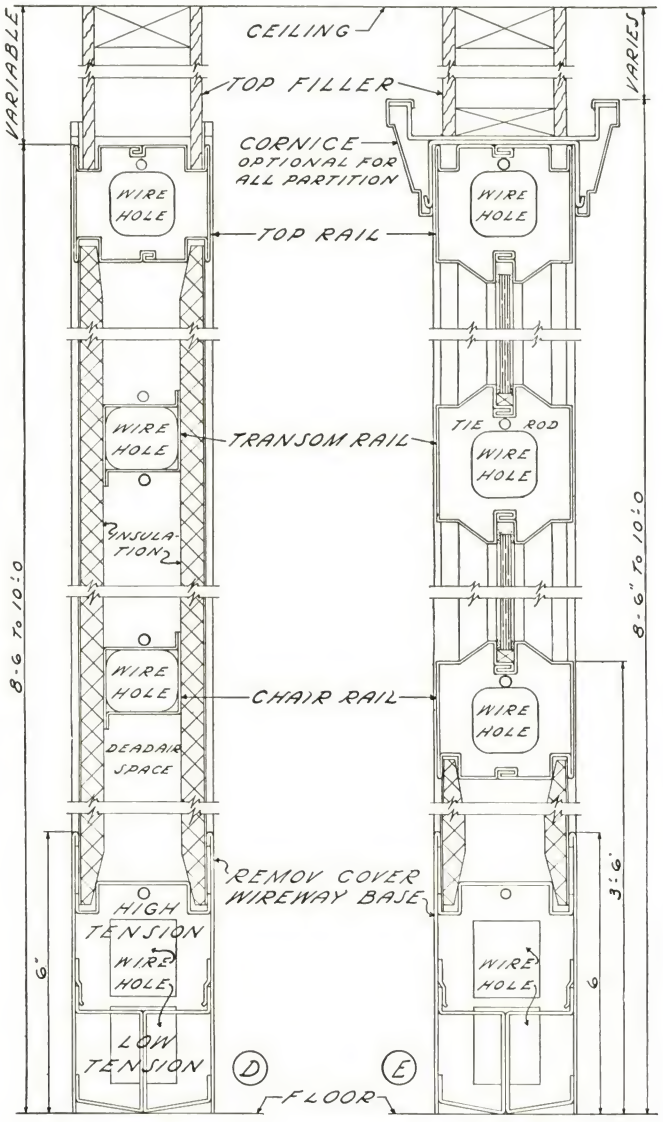
How many times will *you* change your office arrangement? Snead Dynamic Walls pay for themselves after the first alteration, and still retain their original investment value.

*Snead Dynamic*

# TYPE "SF" SOUND ABSORBING
# TYPE "SFS" SOUND PROOFED (Similar in construction to "SF" but solidly packed with mineral wool)

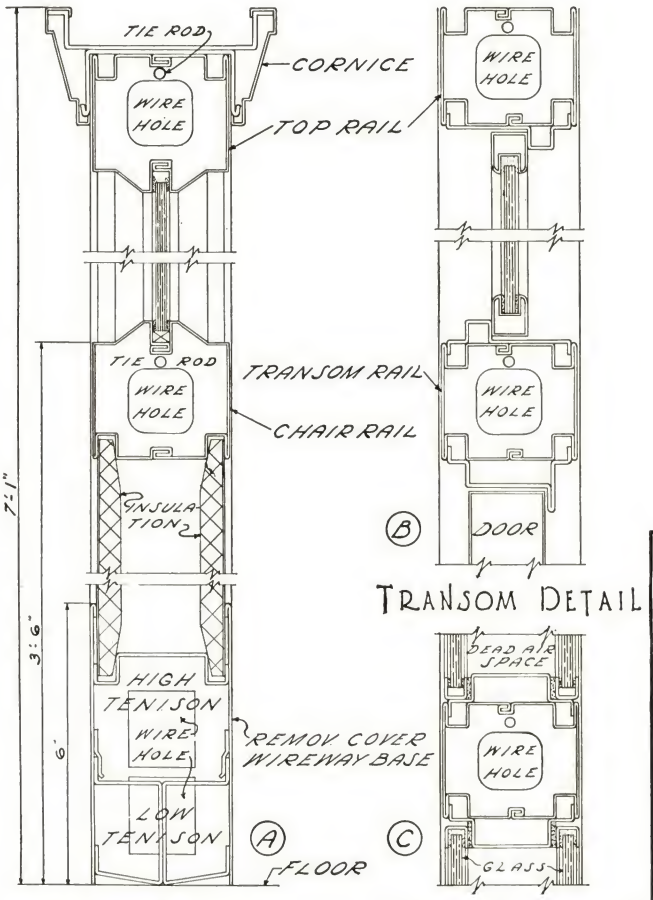



TYPICAL POST ASSEMBLY




ALL STEEL — STEEL & GLASS

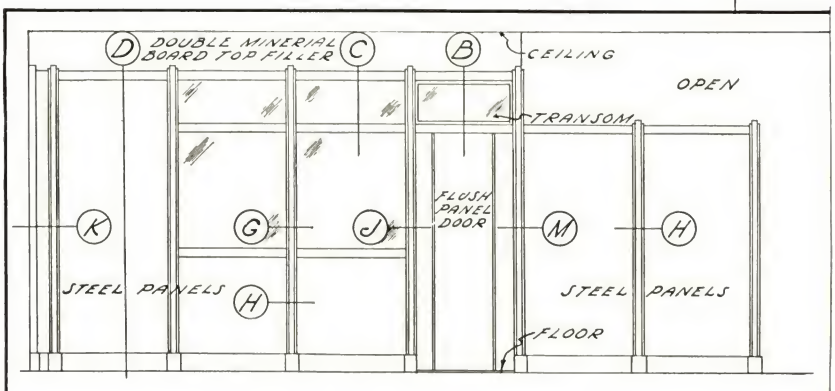
8'-6" TO 10'-0" HIGH – MINERAL BOARD TOP FILLER TO CEILING




TRANSOM DETAIL

STEEL & GLASS
7'-1" HIGH STANDARD

DOUBLE GLAZED
TRANSOM RAIL




TYPICAL ELEVATION

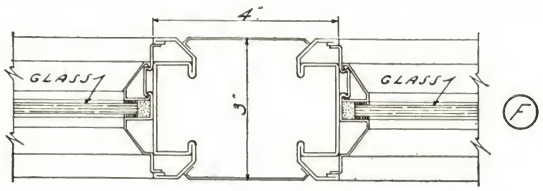
PANEL SIZES 1'-6" TO 5'-0" IN 6" MULTIPLES

# SNEAD MOVABLE WALL DETAILS

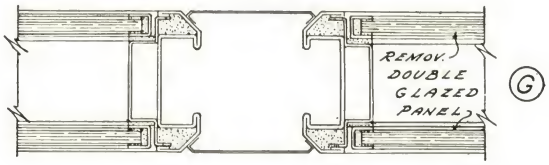
*Snead Dynamic*

# TYPE "SF" SOUND ABSORBING
# TYPE "SFS" SOUND PROOFED

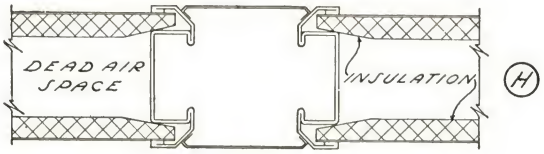
(Similar in construction to "SF" but solidly packed with mineral wool)



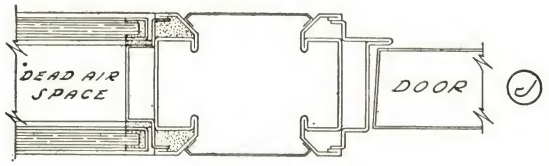

SINGLE GLAZED



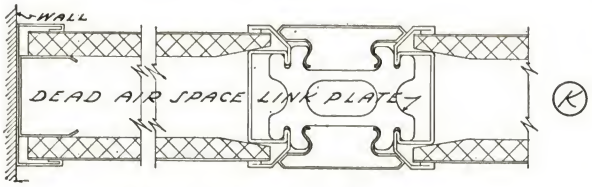

DOUBLE GLAZED



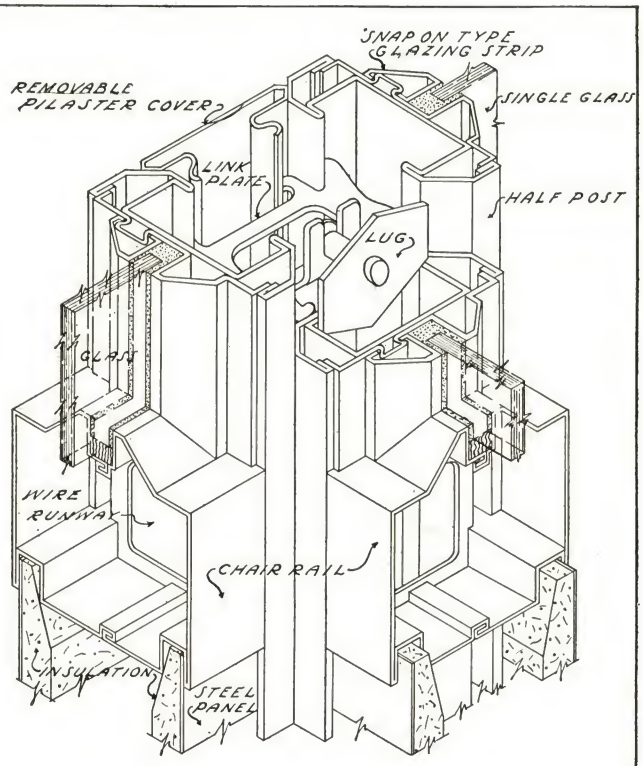

ALL STEEL



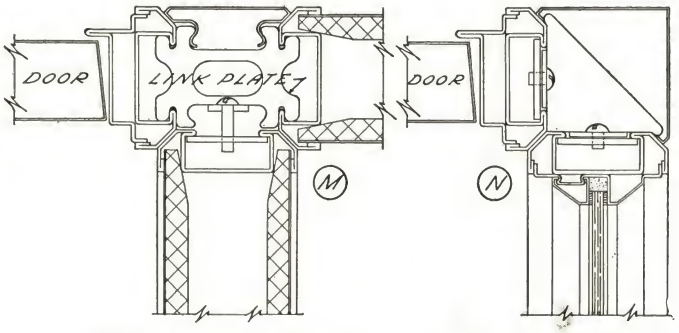

DOOR JAMB




END FILLER & POST

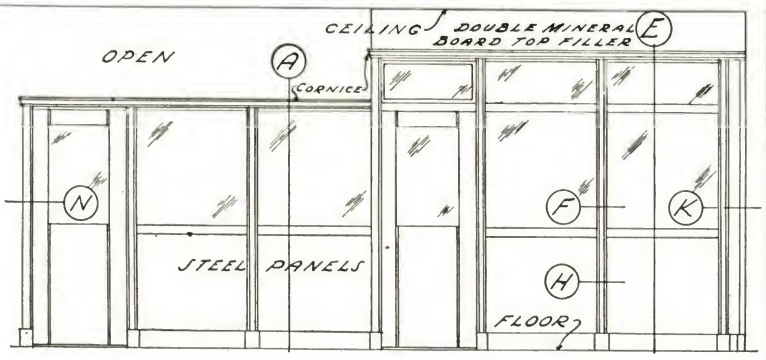



TYPICAL POST ASSEMBLY

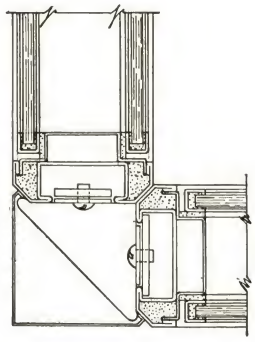



THREE WAY POST
WITH DOOR JAMB

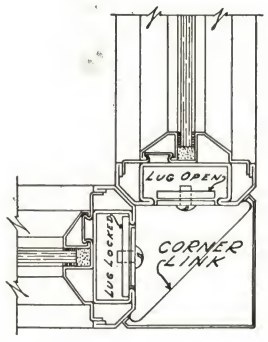
CORNER POST
WITH DOOR JAMB




TYPICAL ELEVATION
PANEL SIZES 1'-6" TO 5'-0" IN 6" MULTIPLES



CORNER POST
DOUBLE GLAZED




CORNER POST
SINGLE GLAZED



# SNEAD MOVABLE WALL DETAILS



*Fig. 10. Here a "RFS" flush sound proof wall divides general secretarial department from public space. Air conditioning ducts are readily installed in the top filler*

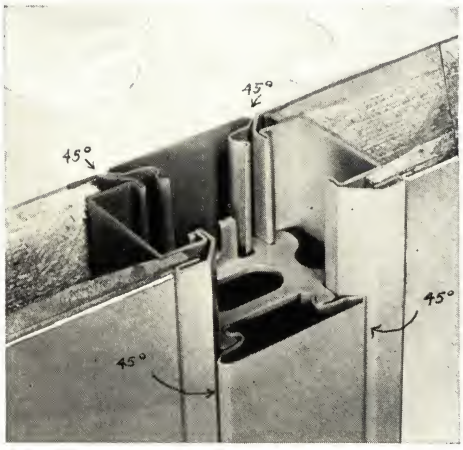


*Fig. 11. Executive's office using Type "FF". Sound proof, single line, permanent in appearance, yet readily movable and reusable*



*Left: Fig. 12. A wardrobe and personal cabinet using standard parts are incorporated in this private office of "RFS" grained walnut panels*

*Right: Fig. 13. Section through "RF" panels and posts. Note the link plate in one piece, which locks and aligns panels, and to which both post covers are clipped. No other partition has a one-piece clip nor the 45° angle on integral posts*




# *Snead Dynamic*

## TYPES "RF", "RFS" AND "FF"
## "Absolutely Flush Walls"

### Sound Proofed and Sound Deadening

TYPES "RF" and "RFS" have no projecting members. They retain generally all the details of construction and all the flexibility and reusability of Type "SF". It presents a perfectly flush surface save for the two small "V" relief lines at panel joints. This partition offers the architect and building owner new possibilities where dignity of appearance and conformity to masonry is desired in corridors and offices.

Type "RFS" differs only from "RF" in that the interior is solidly packed with mineral wool, resulting in soundproofness much greater than a plaster wall. For executive offices, there is no finer wall.

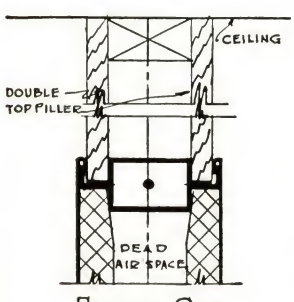
Type "FF"—A structurally rigid, partition built of 3 in. thick solid packed units. Absolutely flush, with single hairline joints, it has the appearance of a solid wall, and is as sound proof as "SFS" and "RFS".

### Transforms Old Premises

Never before have customers been so loath to transact business in a partitioned or walled off space indicative of make shift penuriousness, and with the dinginess of the back room of the old saloon. Architects are solving this condition in factories, real estate offices, professional offices, business offices, etc., by using suitable Snead Dynamic Walls.

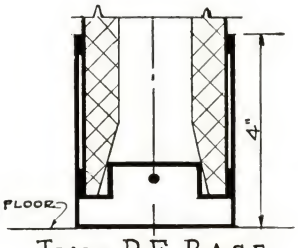
This bit of modernization transforms the atmosphere as if by magic, restores waning prestige, holds trade and keeps tenants from seeking more sightly quarters.



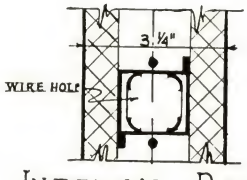



FLUSH CAP

Wire way base optional

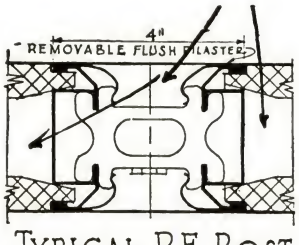



TYPE RF BASE

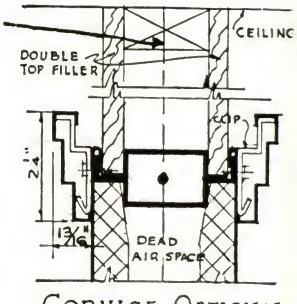



INTERNAL RAIL

Type "RFS" solidly packed with mineral wool




TYPICAL RF POST




CORNICE OPTIONAL

# *Snead Dynamic*

## BANK SCREENS AND RAILINGS HARMONIZE WITH WALLS AND JUNIOR PARTITIONS

THE construction and architectural details of Snead Bank Screens are the same, type for type, as those of the partitions. Surfaces are flush and the units are made in the same widths as the partition units. They connect to the partition wall without fillers or adapters.

The height over-all may be from 5 to 6 ft., with the steel panel from 3 to 5 ft., high and the balance glass. At all heights the Snead design of anchorage to the floor gives absolute rigidity. Screens are especially suitable for semi-private offices where ventilation and interior lighting are factors. Glass is either ¼ in. plate or ¼ in. obscure. Its top edge is ground smooth.



*Fig. 15. Snead Bank Screens form this long line of semi-private offices, yet shut out no light or air from outside windows*



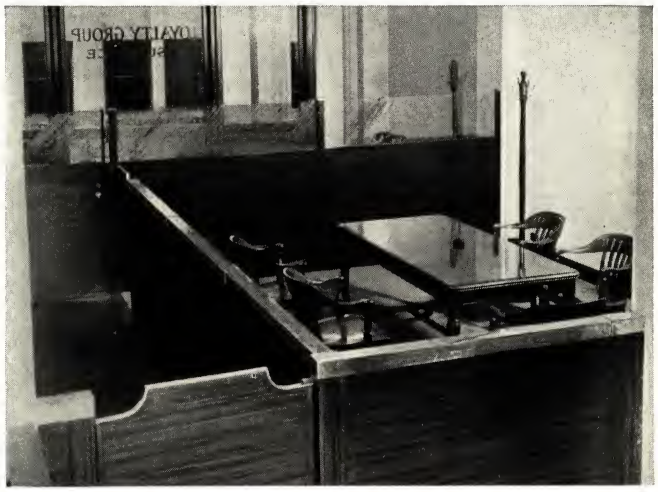
*Fig. 16. Secretaries' offices of Snead "SF" Bank Screens also provide foyers here for departmental executives. Note two-tone finish*

The railing is also uniform in construction with partitions and screens, and is available in either 36 or 42 in. in height. Gates are hung on non-sag pivots and may be located where desired. Single acting and double acting gates are optional. Gate posts remain absolutely rigid. There are no angle braces in Snead Bank Screens and Railings to obstruct floor space or to trip over.

The materials and workmanship are of the same high quality as the partitions. The finish may be in plain baked-on enamels or in beautifully grained walnut and brown or red mahogany.

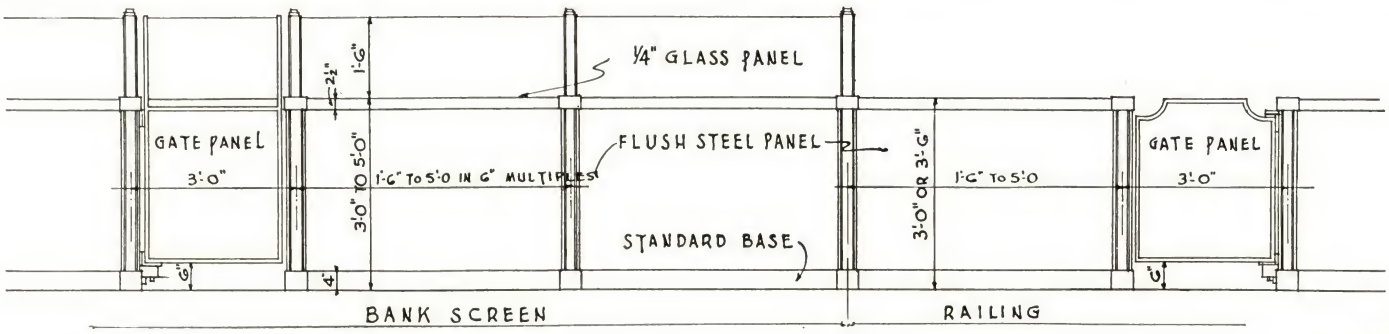



*Left:*
*Fig. 14. Showing the simple, yet positive method of corner construction before snapping on corner pilaster cover. Due to the 45° angle feature, no trim is necessary for the inside corner*



*Right:*
*Fig. 17. Type "SF" Bank Screen forms the main corridors in this large insurance company's office, while standard "SF" Railing is used to enclose salesmen's offices and consultation rooms. Note finish in horizontal mahogany and stainless steel top rail*





*Snead Dynamic*

# PARIS BUILDING CONTAINS 14 MILES OF SNEAD DYNAMIC WALLS

## Chosen After Making Sound Transmission Tests



*Fig. 19. A view of one of the main corridors of the C.P.D.E. building, showing Snead Type "SFS" all steel to 7 ft. with glass above to ceiling*

THE OFFICE building constructed by the Compagnie Parisienne Distribution d'Electricite, has a total floor area exceeding 200,000 sq. ft. The architect, M. Urban Cassan, specified that all interior walls, partitions, closets and other enclosures should be double-panel insulated steel.

This decision was reached after careful studies of steel walls in comparison with masonry from all angles—floor-load, maintenance expense, fire hazards, fire retardance, flexibility for alteration, cost of changes, heat insulation, sound proofing, etc.

As a result of these studies and tests all corridors and offices in this building were constructed with standard interchangeable and reusable panel units of Type "SF" and "SFS." Window embrasures, radiator covers, were built of these units.

Outer walls were lined with standard Snead Dynamic "SF" Walls to obtain not merely uniform appearance, but to gain the other advantages of Snead Walls over painted plaster.

### Sound Proof and Reverberation Tests

Acoustical tests were made in a series of systematic laboratory studies of various types of sound insulated steel walls to determine which construction rated best. The only one that proved to be better than masonry was the Snead's Dynamic Wall.

Where sound proof offices were specified Type "SFS" was used. Tests showed this type of wall to be more efficient than plaster block walls weighing 110 kilograms per square meter. Over a range of pitch limits from 100 cycles per second to 6,900, Snead Walls gave better sound insulation than 4 in. tile-and-plaster walls by a ratio of 22.9 to 20.5 and the ratio over the competing insulated steel wall was 22.9 to 9.3.

Reverberation, resonance from percussion and other practical acoustical factors were measured, as well as sound absorption. The official report published in the "Science In Industry" edition of Travaux particularly stressed two features of Snead construction:

(1) The snug fit in assembly of all parts without special adjustment.

(2) The soundproofness of Snead doors.

A continuous series of closets were built of standard stock units in the corridor partitions, opening on the room side. There are over 200 of these integral wall closets on each floor for the storage of supplies, books, files, and clothing. Wash rooms with all plumbing concealed within partition walls were likewise built of standard units.





*Fig. 18. Interior of C.P.D.E. office showing closets of stock standard units integral with corridor walls. Type "SFS"*

## QUIETNESS EARNS MONEY EVERY WORKING DAY

No person can truthfully claim that he can work as well under noisy conditions as he can where there is quiet. Let him try cotton or patented silencers in his ears for three days to learn the difference in his comfort and efficiency.

That quietness earns money can be easily proven in offices where the amount and quality of the work produced is readily measurable in dollars and cents. Wherever the human brain is required to concentrate, or to focus the attention of another mind, or even to do habitual office routine work, quietness will pay rich dividends on the investment in Snead Dynamic Walls.

**SNEAD AND COMPANY**

# Snead Dynamic

## SOUND ABATEMENT WITH SOUNDPROOFED MOVABLE WALLS

### GLOSSARY

**NOISE: Any undesired sound.**

**RESIDUAL NOISE: All noise within an enclosure, as direct result *only* of street noise, building, etc.**

**TONE AND PITCH: Frequency of vibrations in cycles per second.**

**DECIBEL: Unit of sound intensity.**

TABLE OF FAMILIAR NOISES WITH THEIR INTENSITY SHOWN IN DECIBELS

| | DECIBELS | SOURCE OF NOISE |
|---|---|---|
| Deafening Noise Range | 120 | Threshold of Painful Feeling |
| | 110 | Artillery Firing<br>Airplane Motor |
| | 100 | Subway Train |
| | 90 | Elevated Train from Street |
| SNEAD "SFS" & "RFS" WALLS Reduce Noise in This Range Down to This LEVEL — Distracting Office Noise Range | 85 | Business and Tabulating Machines |
| | 80 | |
| | 75 | Stenographic Room |
| | 70 | |
| | 65 | Office of 4 to 6 People |
| | 60 | |
| Very Quiet Comfortable Range, Also Range of Residual Noise | 55 | Average Private Office<br>Ordinary Conversation 3 Feet from Source |
| | 50 | Very Quiet Private Office |
| | 45 | |
| | 40 | |
| | 35 | |
| | 30 | |
| Extreme Quiet Not Commercially Practical for Offices | 25 | Broadcasting Studio |
| | 20 | Whisper 4 Feet from Source |
| | 15 | Ordinary Breathing |
| | 10 | |
| | 5 | |
| | 0 | Threshold of Audibility |

11

COMFORTABLE quiet (40 to 55 decibels) is necessary for efficient work. Distracting noise is always present. Snead "SFS" and "RFS" Soundproofed Movable Walls, used to isolate a noise source, will prevent passage of 40 to 50 decibels of such noise. THIS REDUCTION IS GREATER THAN IS OBTAINED WITH A TILE AND PLASTER WALL 4½ TO 5″ IN THICKNESS.

We are principally concerned with the isolation of distracting office noises (business machine and typewriter operation, buzz of conversation, the use of miscellaneous equipment, such as files, etc.), or their reduction to the Quiet Comfortable Range. See table opposite. This "quiet range," however, approximates most closely the range of room "residual noise" always present to the extent of 40 to 45 decibels. To reduce this residual or room noise level, sound absorbing material within the room is used. This latter treatment is unnecessary except in connection with rooms used for scientific sound tests and experiments.

Snead Types "SFS" and "RFS", in all cases, will lower the outside office sound level to that of the "residual" or room noise. No other wall can do more. See this change in noise levels in "Table of Familiar Sounds" opposite as made possible by Snead Dynamic Walls. Note especially the intensity of sound of "breathing" and "whispering," and that in a "broadcasting studio" as compared with the average level of the quiet bracket.

For clerks and executives a reduction of noise *throughout an eight hour day* by as little as *five decibels* is a very profitable investment. One's best work cannot be done when ill temper and nerve strain are due to outside disturbances.

Actual records have shown that with noise source isolated, office errors have been reduced by as much as fifty percent, thereby increasing the all around efficiency of the organization.

Snead "SFS" and "RFS" Movable Walls feature:

PACKED PANELS, POSTS, RAILS AND TOP. SEALED PERIPHERY.

DOOR JAMBS WITH FELT STRIKES AND AUTOMATIC COMPRESSION FELT SEAL AT FLOOR.

ACOUSTIC TREATMENT FOR INTERIORS. DOUBLE GLAZING WHERE GLASS IS USED.

To give you
Any degree of soundproofing desired.



*Fig. 20. This sound proof all-steel wall separates recreation room from general office space. Partitions finished to match building interior. Type "SFS"*

*Right:*
*Fig. 21. Both light and sound proofness are obtained here with a double-glazed wall of Type "SFS"*



**ALL TYPES IN STOCK**

# *Snead Dynamic*

## TYPE "M" WALL

### ½ in. Thick—Insulated Panel



*Fig. 23. Typical installation of Type "M" partitions in large mercantile office. Type "M" railing forms salesmen's and secretaries' space outside of executives' offices, opening on entrance foyer*

SNEAD Type "M" Partition is the standard panel type with all the Dynamic flexible and reusable features. The panels are ½ in. thick, with a single instead of double insulation. The posts have a thickness of 2 in. plus ½ in. for each of the two removable pilaster covers.

The panels are joined to each other by means of positive and self-aligning link plates to which the covers are clipped. The partition is assembled by means of horizontal tie-rods, readily permitting the cutting down of a panel in the field.

Any combination of steel and glass is available. Changes from steel to glass or vice versa are easily accomplished. Panels of same size are interchangeable. All mouldings are simple in contour with minimum of dust-catching ledges. All horizontal and vertical members can carry concealed wiring, switches and receptacle boxes. Sturdy cornice member insures great rigidity. Double mineral board above the cornice is neatly scribed around beams and to the ceiling.

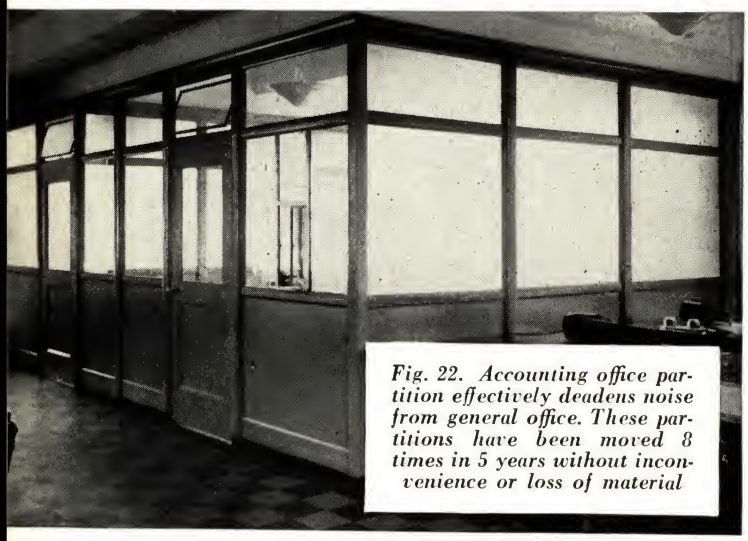


*Fig. 22. Accounting office partition effectively deadens noise from general office. These partitions have been moved 8 times in 5 years without inconvenience or loss of material*

## TYPE "MF"—Single Panel

Identical in appearance with Type "M" but constructed with a single steel panel. It is important to note that Type "MF" partitions are interchangeable and reusable with Type "M" partitions.

## Short Specifications (All Types)

Furnish and erect complete Snead movable wall as manufactured by SNEAD & COMPANY, Jersey City. Type (insert type) as shown and called for on drawings.

**Material**—All materials to be of the best of their respective kinds, steel to be first quality, patent stretcher level furniture stock. Posts of 16 gauge, horizontal rails 20 gauge, cornice trim 18 gauge and cornice reinforcement 10 gauge, panel sheets 20 gauge, cemented to ½ in. thick sound-deadening fibre board.

## Short Specifications (Continued)

**Construction**—Panel widths to be of standard sizes with tie-rod assembly and integral posts. Panels to be so arranged as to permit removal of any unit without disturbing adjacent units or top filler. Provision to be made for future additions in any direction without removing adjacent work. Panels to be locked with one piece positive, self-aligning link plates to which is clipped final pilaster trim. Top filler to be double mineral board.

**Doors**—1¾ in. thick hollow metal packed solid with sound-deadening fiber board, clearances at head and jambs not over 3/32 of an inch. Reinforcement to be provided for all hardware.

**Transoms**—To be of center horizontal bronze friction pivot type with concealed operator (or pole operation).

**Hardware**—To be manufacturers' standard with one pair 5 x 4 butts and bit key lock (cylinder lock, door closer, door stop).

**Finish**—All parts to be thoroughly cleaned of grease and oil. Prime coat of all surfaces to be of rust-resisting enamel baked on. Flat color finish in two coats of high-grade enamel baked on. The final coat to be in egg-shell gloss.

**Glass and Glazing**—Complete by this manufacturer. Glass to be as shown and called for on drawings; all glass to be set with best quality steel partition putty, of color to match partitions, free from sags, holes or blisters. Glazing stops to be of snap-on construction. No exposed screws permitted.

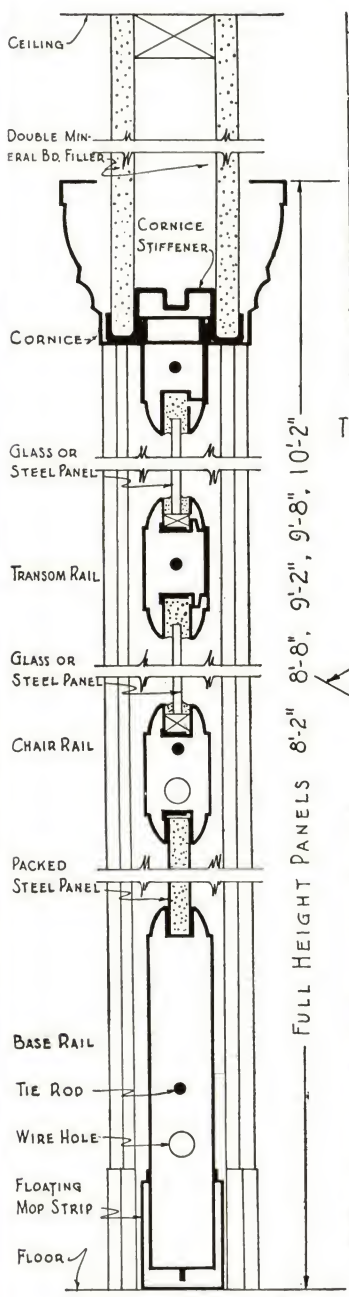
**Erection**—Manufacturer shall set plumb and level all partitions in a rigid and substantial manner. All anchors to be of concealed type yet permitting easy removal of any section. All hardware to be fitted and left in perfect working order. Top filler to be taped, pointed and field painted after erection and partitions rubbed down and left free of all dust and smudges.



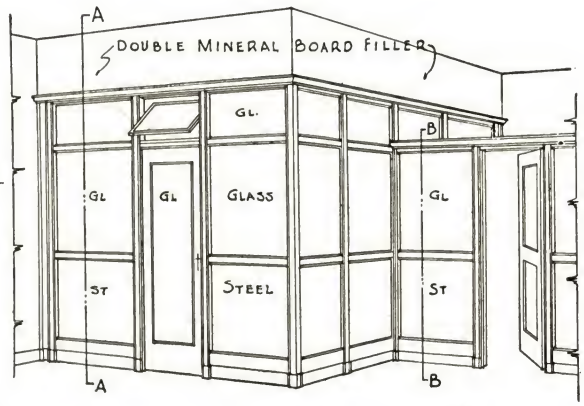
*Fig. 24. Another typical Type "M" installation. Note center horizontal friction pivot, ventilators and full glass panel door*

# DETAILS OF SNEAD TYPE "M" OFFICE PARTITION

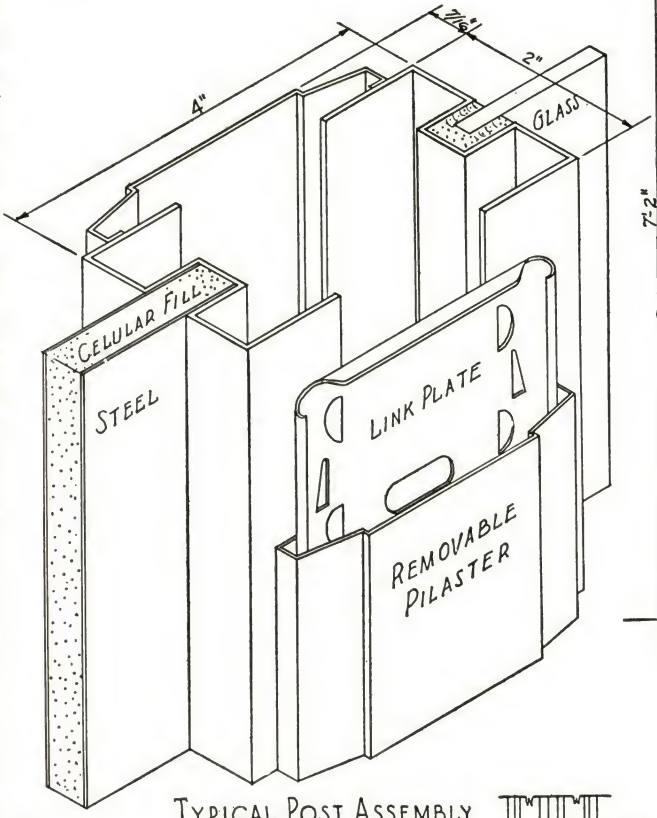
## INSULATED PANEL



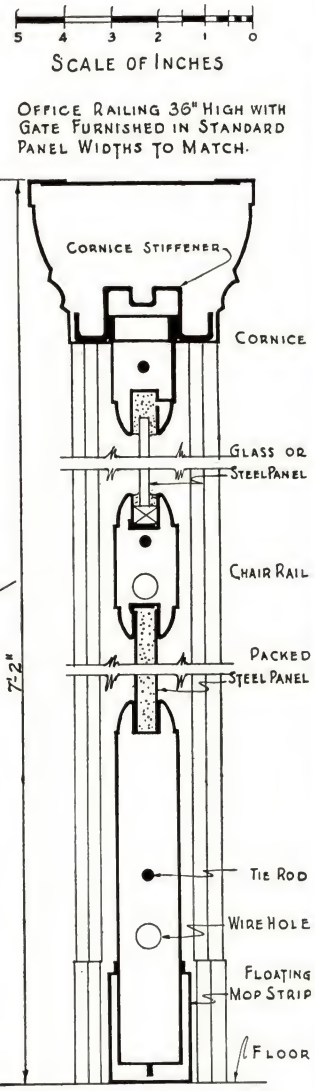

VERTICAL SECTION A-A




TYPICAL INSTALLATION OF FULL HEIGHT & 7'2" PARTITION



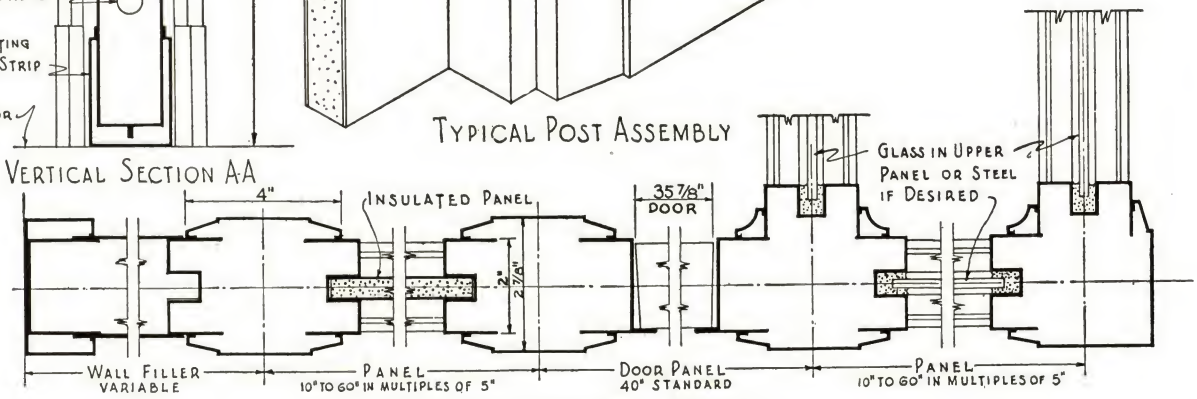

TYPICAL POST ASSEMBLY




OFFICE RAILING 36" HIGH WITH GATE FURNISHED IN STANDARD PANEL WIDTHS TO MATCH.



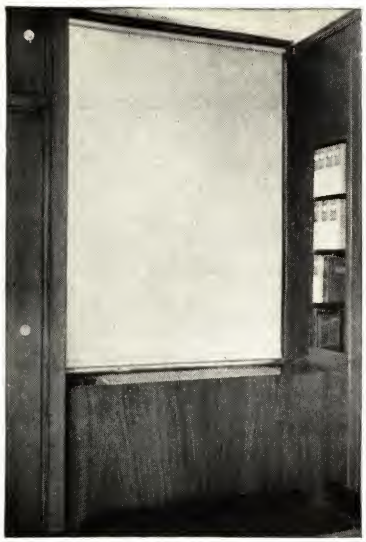

VERTICAL SECTION B-B




TYPICAL HORIZONTAL SECTION



MODERNIZE OLD BUILDINGS WITH SNEAD MOVABLE WALLS



*Window embrasure, radiator cover, built-in closets and book shelves*



*Integrally built-in counter with slide doors and shelves in rear. Linoleum top with white metal edging*



*Bank Type bronze fixed grille and carrara glass deal plate, Type "SF", without conventional cornice mold*

# *Snead Dynamic*

## WALL ACCESSORIES

### SPECIAL, YET STANDARD INSTALLATIONS

Illustrated are only a few of the not unusual types of work and accessories that, due to the extreme flexibility of Snead Dynamic Walls, are made every day. Any special arrangement of panels, or special accessories for your individual purpose or need, may be easily and economically incorporated in Snead Dynamic Walls, giving a built-in, permanent custom-made appearance, and will not appear as an afterthought.

Snead engineers will solve any of your special needs.

*For list of nationally known users of Snead Dynamic Walls, see back cover.*

*Built-in wardrobe with or without washstands, with private cabinet above. See standard parts*

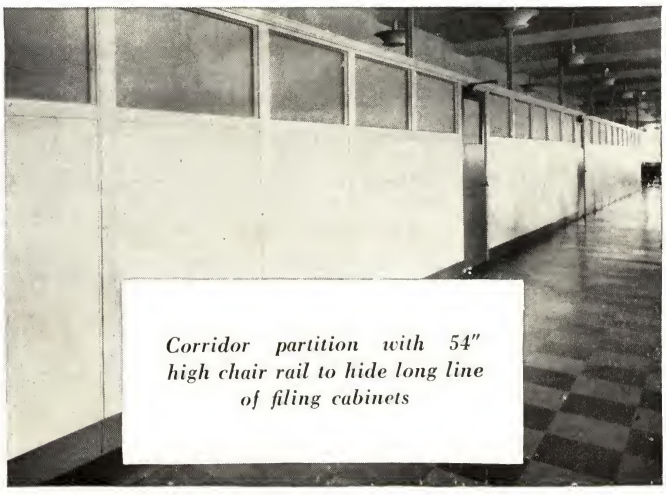


*Below:*
*All steel to 7′ 0″ with transom lights above is standard. Note built-in information window*





*Left:*
*Wickets or information windows to any specifications, easily incorporated in all types of walls*

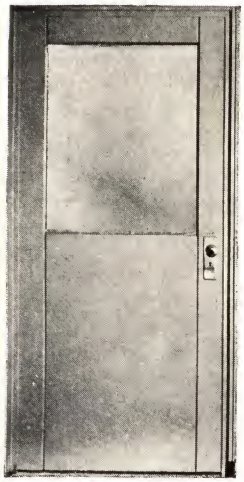


*Corridor partition with 54″ high chair rail to hide long line of filing cabinets*

*Below:*
*A built-in store window in a large advertising firm for national window styling. Note slide doors to cupboards under*





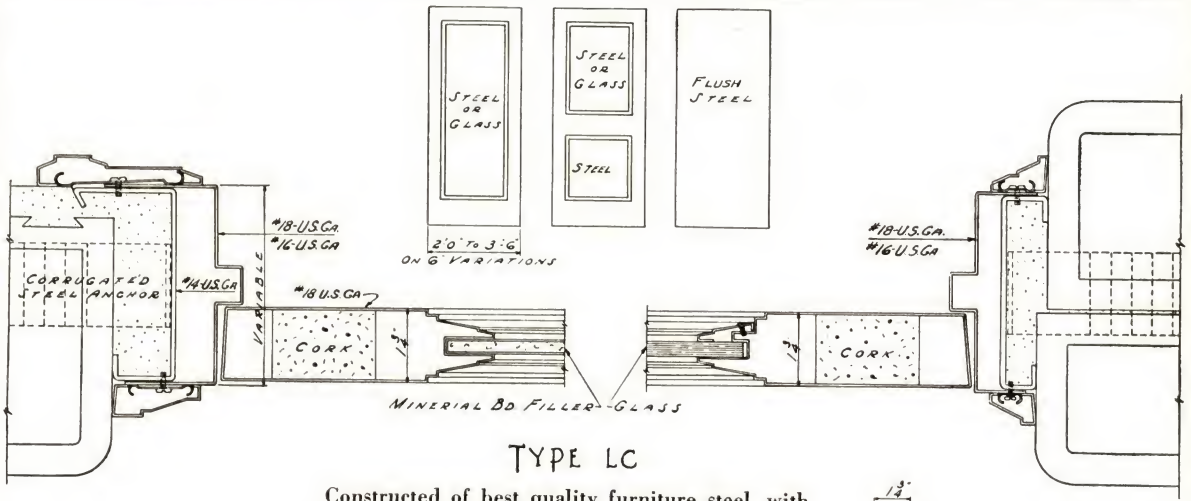






# *Snead Dynamic*

## HOLLOW METAL DOORS AND TRIM

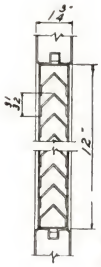



TYPE LC

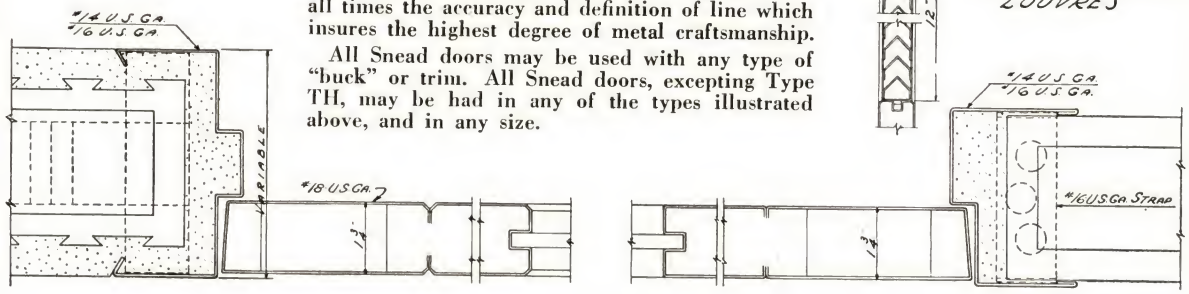
Constructed of best quality furniture steel, with craftsmanship born of almost ninety years of manufacturing experience of metal products, Snead offers a wide range of hollow metal doors and trim.

The Snead cold strip rolling process provides at all times the accuracy and definition of line which insures the highest degree of metal craftsmanship.

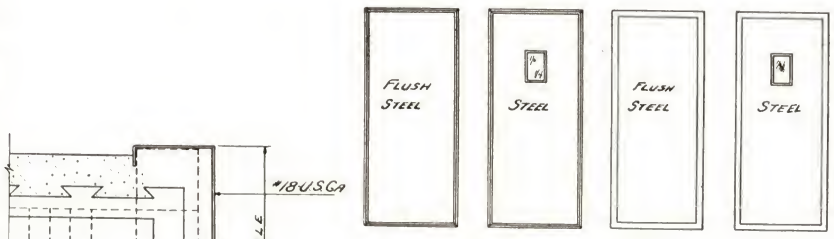
All Snead doors may be used with any type of "buck" or trim. All Snead doors, excepting Type TH, may be had in any of the types illustrated above, and in any size.

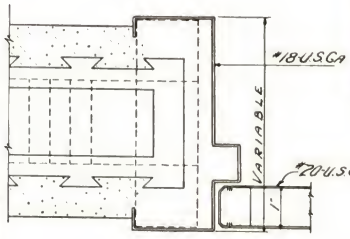


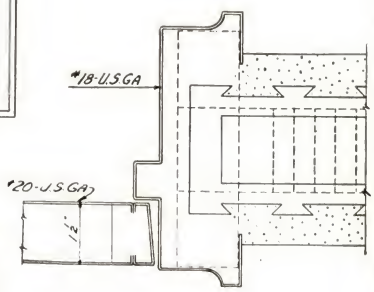

SECTION THRU LOUVRES




TYPE HD




TYPE TH

### HOLLOW METAL TRIM

Picture mold, wire way base or plain base, and chair rail are also available in many different types, to harmonize with door and door trim.

### Illustrated Are a Few Typical Hollow Metal Doors

**Type LC**—The highest grade hollow metal door. This door is made in 7 different models of two different types. The "buck" or trim may be had in a variety of designs or types. For highest grade installations.

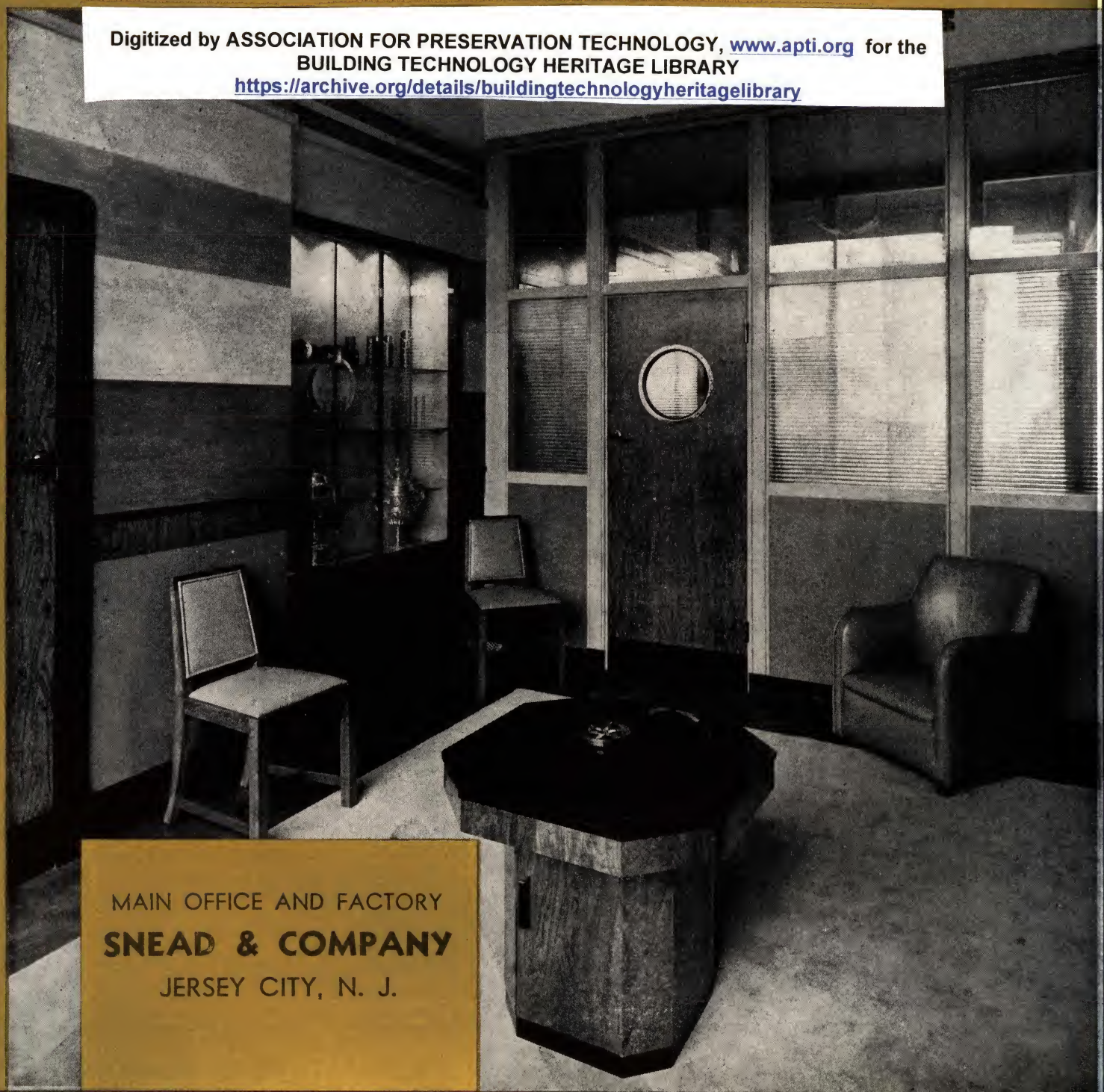
**Type, HP** — Of simple, modern, flush design, yet most rugged, this type is especially adapted for and has been used in many of the newer hospital buildings. See photographs of four styles at left.

**Type TH**—This type was designed to fulfill the requirements of a low cost door for housing and industrial work. It can be had in either 1 or 1½ in. thickness. Furnished in all steel only, with or without vision panels.

# SOME NATIONALLY KNOWN USERS

Acacia Mutual Life Ins. Co.
American Can Company
American Home Products Corp.
Bakelite Corporation
Bankers Trust Company
Bayer Company
Bell Telephone Laboratories
Benton & Bowles Advertising Company
Bigelow Sanford Carpet Company
Boston Edison
Boston Public Works Building
Bowery Savings Bank
Carnegie Institute of Technology
Charleston Telephone Company
Chesapeake & Potomac Company
Columbia University
Columbia Presbyterian Hospital Group
Cornell Medical Center
Dartmouth University
Distiller's Limited
Electrolux Incorporated
Fireman's Insurance Company
Fidelity & Deposit Company of Maryland
Insurance Company of North America
International Printing Ink Corporation
Intertype Corporation
Library of Congress Annex
Macy, R. H. & Company
Medical College of Virginia
Mumm, G. H. Company
National Broadcasting Company
New York Academy of Medicine
New York Curb Exchange
New York Dock Company
New York Edison Company
New York, New Haven & Hartford RR. Company
New York Stock Exchange
Newell Emmett Company
Pennsylvania RR. Company
Port of New York Authority
Prudential Insurance Company
Public National Bank & Trust Company
Regal Shoe
Rex Cole, Inc.
R.K.O. Pathe
Sears-Roebuck Building, N. Y. C.
Southern Railway Company
Standard Brands Company
Standard Oil of New Jersey
Standard Oil of New York
Twentieth Century Fox Film Co.
Union Carbide and Carbon Company
U. S. Rubber Company
Western Union Company
W.O.R. Broadcasting Company
Yale University

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MAIN OFFICE AND FACTORY

**SNEAD & COMPANY**

JERSEY CITY, N. J.

# TAKAPART PRODUCTS COMPANY

## Manufacturers of Takapart Portable Partitions

114 East 32nd Street
NEW YORK, N. Y.

### Products

PATENTED TAKAPART OFFICE PARTITIONS and RAILINGS in *Steel*, *Wood* and *Asbestos*.

### What Takapart Is

A high grade portable partition consisting of standard interchangeable units to take care of any layout both horizontally and vertically, and designed so that absolute rigidity is obtained irrespective of the length of the partition involved. No long continuous cornices or bracing are required, for each section unit is complete in itself—complete cornice, chair rail, panel, and base. Section units and section door units are of standard widths and are interchangeable with each other.

Complete details and working specifications sent on request.

### Recent Installations

Stone & Webster Building Corporation
New York Telephone Company
New Amsterdam Casualty Company
Underwood Typewriter Co.
Mt. Sinai Hospital
New York Curb Exchange
Central Hudson Gas & Electric Corporation
Public Service Electric and Gas Company
Colgate-Palmolive-Peet Company
Westchester Lighting Company



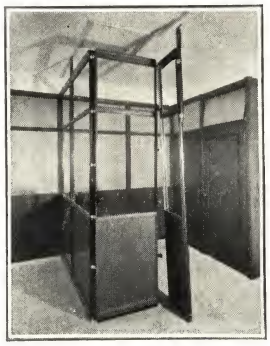
**General View of Executive Offices of a Prominent Shipbuilding Corporation**

This unusually long installation illustrates that irrespective of the length involved, *Takapart* is always as straight as a die

### One or a Thousand Sections Equally Rigid

*Takapart* units are joined together and held in a rigid upright position by a structural steel member provided at every unit. This structural steel member is adjustable to various ceiling or beam heights and serves as an invisible support for the finished ceiling filler above the cornice line





### Units Added in Any Direction with No Corners, Right Angles or Splices to Cut or Fit

Reducing or enlarging an office with *Takapart* means just adding or deducting units without cutting of any part whatsoever, as the individual strength members for each unit make continuous longitudinal cornices unnecessary

### Soundproof and Lightproof—Adjustable Wall Connection Members

Adjustable to any regular or irregular wall without cutting and fitting. Loose wall connection members are eliminated because the metal tongues force the rubber channel to adapt itself to the contour of the wall. The flexible rubber channel leaves no openings between the wall and partition. This construction eliminates the necessity of taking dead accurate dimensions for partition layouts



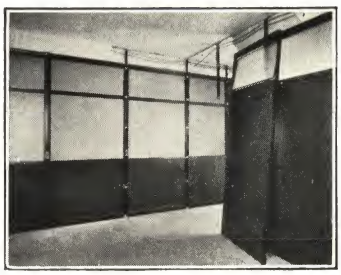


### Puttyless Glass Moulding

Watch any glazier remove a light of glass that has been puttied in place and you will appreciate what an advantage it is to remove and install glass without putty. Clear glass changed to obscure or vice versa, when desired, is a simple matter when *Takapart* is used

### Electric Wires Do Not Interfere with Flexibility of Units

There are three holes in the structural steel members that serve as a runway above cornice line for electric cables. They are carried along to the location for desired switch or outlet, where they do not interfere with interchangeability of door and section units. The partition retains complete flexibility while the electric cables are always accessible. The usual method is to draw cable through section rails or base, thus destroying the interchangeability of units



# ALL-METAL PARTITION CO., INC.

TELEPHONE
CHelsea 2-4020-1

FACTORY AND OFFICE
144-150 West 18th Street, NEW YORK, N. Y.

SALES AGENTS
JERSEY CITY, N. J., Atlas Steel Products Co., 19-21 Tuers Avenue
PHILADELPHIA, PA., Kelly Building Products, 1418 Walnut Street
WASHINGTON, D. C., Capitol Products Co., 1222 Connecticut Avenue
BOSTON, MASS., J. G. Waxman, 72 Granite Street

For "All-Metal" Office Partitions, see File Index

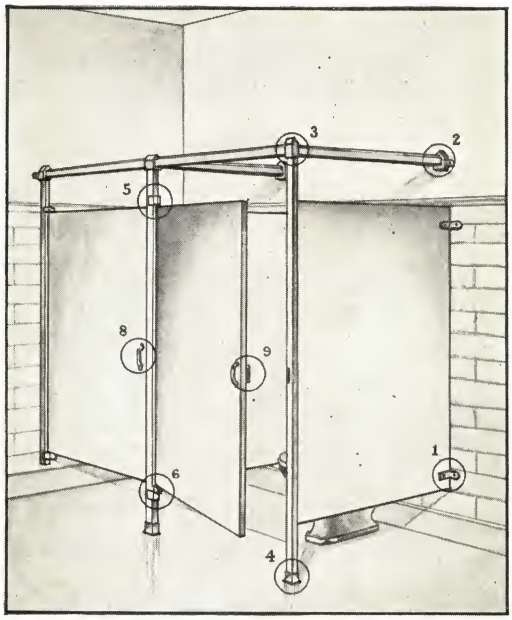
## "ALL-METAL" TOILET, DRESSING ROOM AND CUBICLE PARTITIONS
## Flush and Panel Types

"ALL-METAL" partitions are the product of years of experience in the partition line. They combine neatness and beauty in appearance, ruggedness and durability in design and a low initial cost. They are built to meet every demand for sanitation. "ALL-METAL" partitions are adaptable for office and public buildings, schools, churches, factories, hospitals and private homes.

### Flush Type

"ALL-METAL" Flush Partitions and Doors are formed of two sheets of full pickled cold rolled stretcher level furniture sheets (20-gauge for large panels, 22-gauge for small ones) cemented at high pressure to a sound deadening fibrous core and reinforced with a square tubular member of heavy gauge. All joints are permanently interlocked and sealed against moisture and condensation.

Partition slabs are then interlocked and welded to 2-in. square 16-gauge posts forming a sturdy, rigid and indestructible unit.




### Construction Features (Both Types)

**Headrails**—Seamless tubing 1½x2½-in. 16-gauge, sanitary shape.

**Partition Wall Connector (1) Headrail Wall Connector (2) and Headrail Post Caps (3)**—Heavy cast design. Bronze or mallable iron.

**Post Shoe (4)**—Heavy cast bronze chromium plated; iron, enameled or cast aluminum polished.

**Upper and Lower Door Bracket (5 and 6)**—Made of heavy cast bronze or malleable iron and fastened to post by through bolts and cap nuts. Standard finishes are enameled or chromium plated.

**Gravity or Spring Hinges (6)**—Standard with doors and designed for quiet closing or to remain open at any angle.

**Door Strikes (7)**—Heavy brass and resilient rubber specially designed to take the shock of the closing door.

**Door Pull (8)**—Made of cast bronze, chromium plated.

**Sliding Bar Latch (9)**—Solid bronze chromium plated made extra heavy to eliminate bending and twisting of slide bar.

Door pull and bar latch are fastened to door by through bolts and cap nuts.

**Coat Hooks**—Two-prong, and are made of cast bronze, chromium plated. Compartments with inswinging door have rubber tipped coat hooks to act as bumpers.

**Finish**— All partitions, either flush or panel, are first carefully sanded and washed with benzine, then filled and primed with a gray primer baked on.

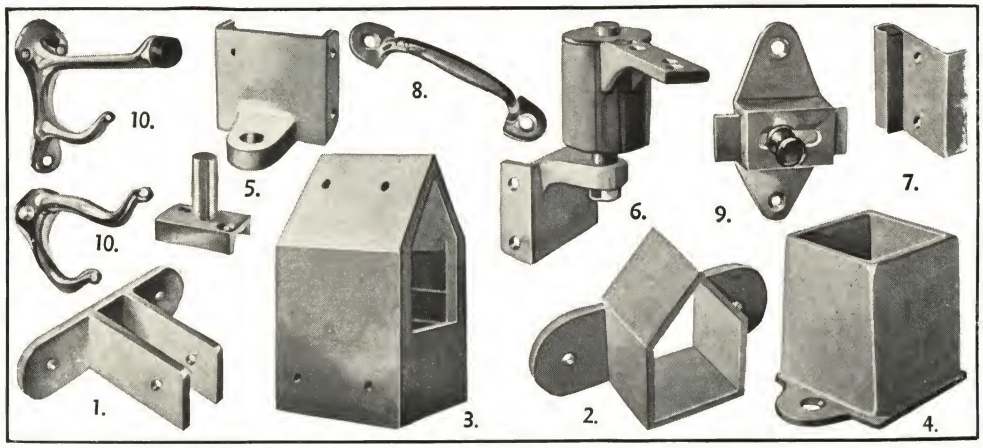
Partition can also be had in any standard finish or special finish (either lacquer or baked-on enamel) at a slight additional cost.

### Consultation Service

The "All-Metal" Service Department will always co-operate and advise on partition problems and gladly submit estimates. Catalog sent on request.

### Panel Type

"ALL-METAL" Panel Partitions are built with top and bottom rails of sanitary shaped tubing and 2-in. square tubular front and back posts. Panel is formed of a single sheet of stretcher level, cold rolled, furniture steel inserted into all members for their entire depth. They are then interlocked and welded to form one solid unit.



# AMERICAN SANITARY PARTITION COMPANY

Metal Partitions and Doors, Shower Compartments, Hospital Cubicles
37-16 22 St., LONG ISLAND CITY, NEW YORK, N. Y.

TELEPHONE
STillwell 4-5987-8

NEW JERSEY REPRESENTATIVE: William A. Cawley, 135 Cedar St., NUTLEY, N. J.
MASSACHUSETTS REPRESENTATIVE: Alvin B. Cash, 143 Federal St., BOSTON, MASS.
PENNSYLVANIA AGENT: N. R. Guilbert, Jr., 1722 Sansom St., PHILADELPHIA, PA.
WESTERN N. Y. AGENT: Lakewood Supply, Inc., P.O. Box 755, JAMESTOWN, N. Y.

## SANITARY PARTITIONS AND DOORS FOR TOILET ENCLOSURES

Thoroughly modern in construction, sanitary in every respect, American Sanitary Toilet Partitions and Doors are designed for installation in every type of building. They are especially recommended for office and public buildings, schools, factories, hospitals, churches and similar locations where durability year after year, initial cost and ease of installation are important factors.

All enclosures are finished with a heavy gray or red oxide prime coat or one coat of enamel selected from our standard colors. Additional coats or special colors furnished at slight additional cost.

Standard hardware, designed to meet the requirements of each type partition, includes gravity hinge, handle or push plate, latch, bumper and catch combination, and two-prong coat or bumper hook.

In order to meet the requirements of various installations, our partition and door units are made in three different designs and qualities:

### Headless Type Partition and Door Enclosure

This, we feel, is the most recent development in metal toilet enclosures. It is highly recommended for modern buildings requiring the finest equipment.

The panels and doors are built 7/8 in. thick of 20-gauge furniture steel or any other metal desired. The metal is formed Z-shape around the edge, spaced properly and cemented to a shock and



sound-deadening core. An interlocking moulding, of 20-gauge steel, is forced around the edge and welded on all corners. This insures a firm, uniform tension grip.

Partition and stile wall brackets are of heavy malleable iron castings. Bases are heavy bronze castings, chromium plated, with two concealed floor fastenings. Three tension grip hooks are provided for hook-up to front stile. Hardware of modern design is heavy bronze, chromium plated.

In addition, our Headless Type Partition is built with a front stile 1¼ inches thick. This stile is provided with a channel spacer—thus leaving sufficient space for 1-inch reinforcing bars which fasten to the floor and ascend approximately 30 inches into stile. This construction gives the necessary strong floor connection. Three openings, suitably reinforced, are provided to receive the tension grip hooks.

### Flush Interlocked Type Enclosure

This style is a strong, durable and absolutely sanitary enclosure recommended for schools, churches, bathhouses and public buildings.

The panels and doors are 7/8 inch thick and built the same as the panels and doors of our Headless Type. The panels, however, are supported by posts made of 16-gauge tubing 1¾ inches square. This tubing is forced into a special continuous locked joint provided in the partition. All corners are welded. The headrail is likewise 16-gauge tubing, 1¾ inches square.



Headrail connectors and wall brackets are either 12-gauge heavy pressed steel or malleable iron castings. Post bases are made of heavy bronze castings with double floor fastenings or single concealed fastening — enameled to match partition or chromium plated. Hardware of modern design is heavy bronze, chromium plated.

### Panel Type Partition and Door Enclosures

This popular type is widely used where a strong, economical construction is required. The partitions are built of 16-gauge furniture steel inserted in a tubing frame consisting of two uprights 1¾ inches square and two vertical V-shaped members (known as sanitary tubing) 1⅛x2⅜ inches. Both the metal sheets and the sanitary tubing are forced full depth into horizontal members locked and welded on all four corners — thereby making a single, rigid unit. The doors on this type enclosure are flush.



Headrail connectors and wall brackets are either 12-gauge heavy pressed steel or malleable iron castings. Post bases are made of heavy bronze castings with double floor fastenings or single concealed fastenings — enameled to match partition or chromium plated. Hardware enameled to match partition or chromium plated.

# AMERICAN STEEL FURNITURE CO.

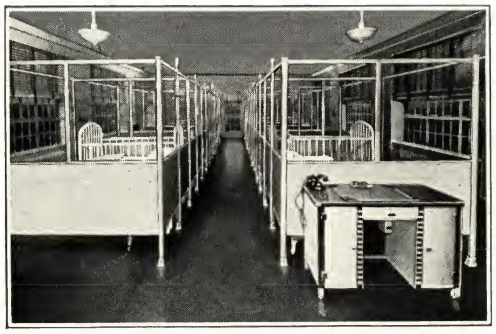
SUBSIDIARY OF THE NEW YORK MACHINERY CO., INC.

## Toilet Partitions, Hospital Cubicle Screen, Cubicle Curtain Rod Equipment, Coin Pay Locks

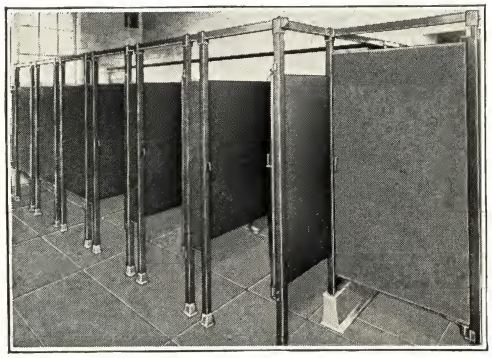
TELEPHONE
CHelsea 3-1236, 3-1237

FACTORY AND SALES OFFICE
27 West 24th Street, NEW YORK, N. Y.

Representatives in Principal Cities and Territories Available



American Flush Interlock Type, Glass and Steel Hospital Screen



Typical Toilet Partition Installation

This modern method of construction avoids spot welds and insures a permanent shockproof door and panel. Panels are interlocked full length to 2 in. square post, forming a sturdy and indestructible unit. By this method of construction, use of solder is avoided as the acid used tends to encourage rust.

### PANELED TYPE

Super-SteeL Panels are assembled by inserting the panel sheet into sanitary tubing section which forms top and bottom rail. This unit is then forced into front and rear posts and welded in place, making a rigid and durable panel. Doors are furnished as described for "FLUSH TYPE" construction.

### SOUND-DEADENED AMERICAN FLUSH INTERLOCK TYPE STEEL HOSPITAL SCREENS

Advantage of semi-privacy, or definite need of protection against spread of contagion, has brought about a wide use of so-called ward partitions, or screens, in hospital work.

In no phase of AMERICAN FLUSH INTERLOCK Service do the unusual qualities of its construction find better application. Quiet being a requisite in hospital routine, the need of sound-deadened panels is obvious.

Sanitation is equally important—absence of unnecessary mouldings insures this and makes AMERICAN FLUSH INTERLOCK Steel especially easy to clean and keep clean. Adjustable rear connectors are employed to keep back edge away from wall. This also facilitates cleaning.

Foot castings, 3 in. high, are made of solid brass, chromium plated.

Ward screens are usually 7 ft. high over all and as deep as conditions require. Large screens require headrail bracing at the front. Curtains will be furnished where desired. In the case of screens in children's wards a 5-ft. over-all height is ordinarily sufficient, and because of a comparatively shallow depth, normally 3 ft., they are usually made free standing. A special 6-in. solid white brass foot casting is supplied for support in such cases.

These are not usually portable but can be made so by the use of a special floor insert.

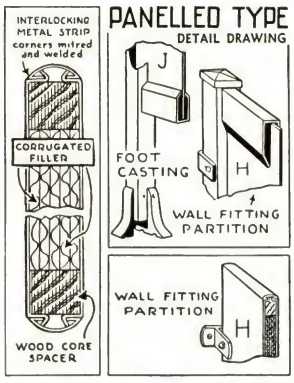
### SUPER-STEEL TOILET PARTITIONS

Super-steeL Partitions are fabricated from heavy furniture steel stock, full cold rolled and patent leveled; formed parts, such as posts, headrail and sanitary tubing are rolled shapes of heavy gauge. Hardware and castings are of bronze, chromium plated or nickel, except headrail castings are malleable iron finished to match enclosures unless otherwise specified. Foot castings are bronze polished, and can be furnished painted to match enclosures or bronze chromium plated on nickel. Door hardware, consisting of hinge brackets, gravity action hinge pull and slide latch, are all bronze castings polished to a chrome finish.

**Finish**—Standard colors are French Gray, Sage Green and Olive Green baked-on enamel or special finishes if desired.

### FLUSH TYPE

Panels and doors are made to a finished thickness of 1 in. by cementing two formed sheets to an interior fibre core under dense pressure of 500 lbs., and binding the sheets by means of a continuous interlocking strip.






Hospital Ward Equipped with Curtain Screening

### AMERICAN HOSPITAL CURTAIN SCREENING EQUIPMENT

AMERICAN CURTAIN SCREENING equipment is a really modern system of bedside screening that provides privacy—instantly, silently, without effort. Exclusive fittings allow the curtain to pass freely all points of support on curved track, which permits total enclosure of any bed with one curtain, and where curtains are used in series, all gaps are completely eliminated. The equipment is suspended from the ceiling, which assures free and unobstructed floor space. Equally suited for new building construction and for modernization programs.

**Construction Department**—Offers you wide experience in the installation of AMERICAN CURTAIN Equipment. Where the equipment is to be erected by others, accurate and concise details of all fittings and parts are supplied together with complete installation instructions—which eliminate any confusion and permits the work to be done at a minimum of labor costs.

**Curtain Rods**—Made of 14-gauge, 1-in. o.d. brass tubing, chromium plated. All bends are machine made to a 6-in. radius insuring uniformity. Rods are connected to bends by means of female threads on insides; rods and bends are then connected by means of a solid brass nipple, resulting in no visible connection, such as screws, rivets and other objects which prove unsightly. Flanges, suspension brackets and adjustable tees are of solid brass plated to correspond with tubing.

**American Fibre Wheel Roller Bearing Curtain Hooks**—Made of brass, chromium plated with wheels of prepared compressed fibre, readily insures easy and noiseless operation of the curtains.

**Curtains**—Material either 8 or 12-oz. duck or jean cloth, preshrunk in accordance with the U. S. Navy Specifications, and equipped with white metal rust-resisting grommets, spaced 6 in. on centers. Curtains are available in white or in colors.



Privacy with Curtain Screening

# ATLANTIS STEEL PRODUCTS CORP.

## Manufacturers of Steel Toilet Partitions, Hospital Cubicles and Shower Stalls

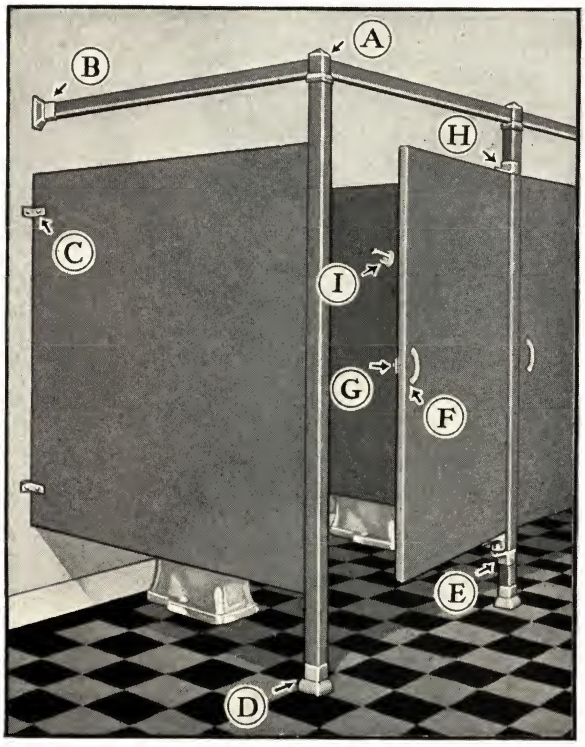
MAIN OFFICE
453 Broome St.,
New York, N. Y.

NEW JERSEY BRANCH
535 High St.,
Newark, N. J.

For page on Office Partitions, see File Index

### Flush and Panel Type Stalls and Doors

Atlantis stalls and doors for toilets are made in both flush and panel types. These partitions add cleanliness and attractiveness to any lavatory in which they are installed. They are constructed of 20-gauge furniture steel over a soundproof laminated fiber core, cemented and assembled under pressure. All edges of sheets are interlocked with patented Atlantis interlocker illustrated herewith. All corners are mitred and welded. The installation shown is of the flush type and presents a modern appearance — especially when finished in colors to harmonize with a particular color scheme. Atlantis doors and partitions are sanded smooth and finished with one coat of first quality metal primer in gray or olive green. However, in a case of special order, colors shall be as specified at slight extra cost. Baked enamel finishes are also furnished.

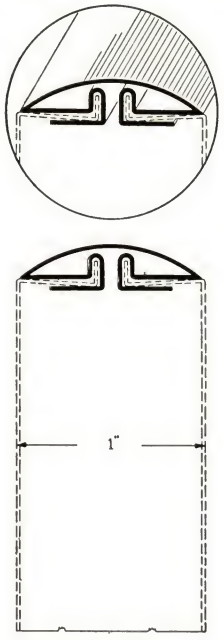



### Hardware and Fittings

Headrails and wall fittings are made of malleable iron or bronze. All door hardware is of chromium plated brass and is tarnish-proof. Hardware and fittings are extremely sturdy in construction and are guaranteed to keep all parts rigidly aligned. This will insure proper door operation.

### Doors

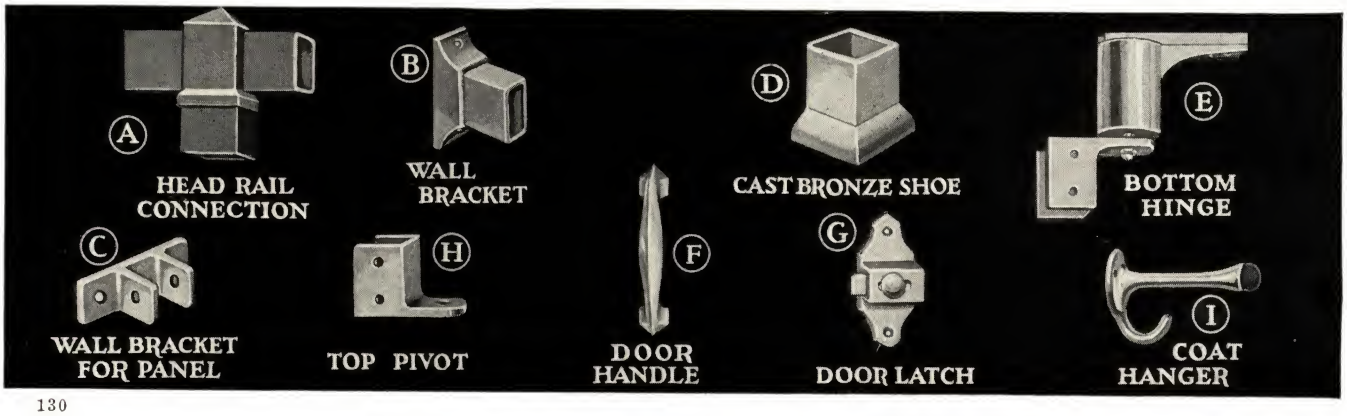
The doors are ⅞ in. thick, covered with sheet of bearing stretcher leveled furniture steel. Interlocking partitions are 1 in. thick, others are ⅞ in. Corners are mitred, welded and ground. Door stiles contain a laminated fiber core which deadens sounds. The door hinges are especially constructed to permit free action.




Interlocking Partition

### Short Specifications

Toilet enclosures shown on plans or listed in accompanying schedule shall be Atlantis [Flush] [Panel] Type Partitions and Doors, manufactured by Atlantis Steel Products Corporation, 453 Broome Street, New York, N. Y. Dimensions shall be as shown on plans or in schedule. Standard finish shall be [gray] [olive green] [special finish as described]. Hardware for doors shall be chromium plated brass. Doors shall be sound-deadened with a laminated fiber core. Partitions shall be 20-gauge furniture steel sound-deadened with a laminated fiber core. Headrails shall be [malleable iron] [bronze]. Enclosures to be installed in a neat and workmanlike manner and left clean and satisfactory to the architect.



# THE EBCO MANUFACTURING CO.

## Ebco Metal Partitions for Toilet Compartments, Dressing Compartments and Screens, Panel and Flush Type Construction

COLUMBUS, OHIO

AGENCIES IN ALL PRINCIPAL CITIES

For Ebco Dishwashing Sinks, Drinking Fountains, and Group Wash Sinks, see File Index

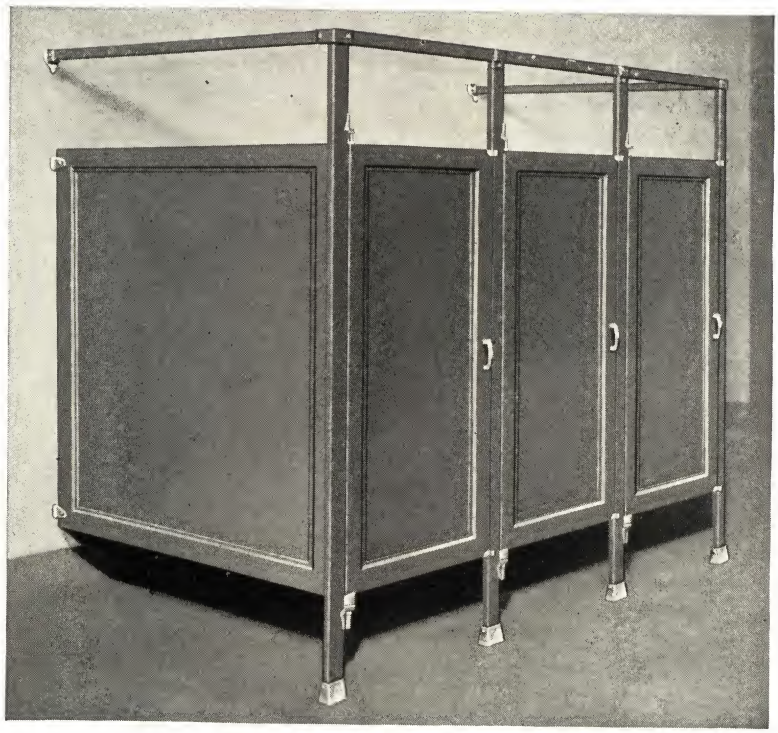
### Ebco "Sturdibuilt" Partitions

Better appearance and longer life are part of EBCO "Sturdibuilt" partitions. (See illustration at right.)

The "Sturdibuilt" panel type construction consists of a heavy hollow metal frame, completely surrounding a heavy gauge steel sheet, electrically welded together, making a rigid panel or door.

**Hardware**—EBCO cast brass hardware is bright chrome-plated. It will not tarnish or lose its brightness with age. EBCO foot cover castings are cast brass, bright chrome-plated.

**Finish**—EBCO partitions may be had in "Krinlac" or smooth baked enamel in a number of standard colors. Prime coat only or special finishes may be had on specification.

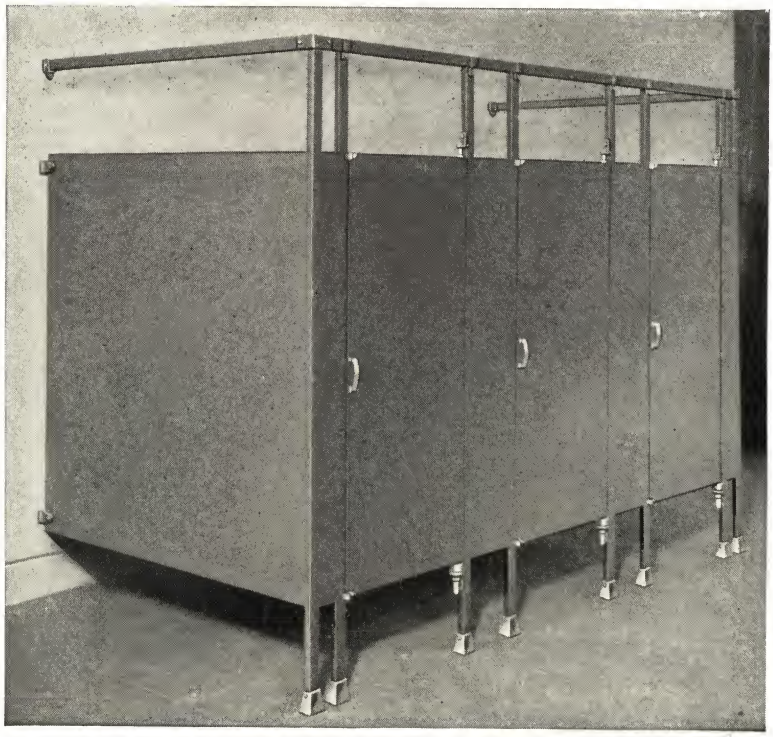


Typical Paneled Type Compartments

### Ebco "Silentsteel" Partitions

Flush type partitions are becoming more popular because of their superior utility and appearance. (Note illustration at right.)

"Silentsteel" flush type construction consists of two steel sheets on the outside, the intervening space filled with silencing board, the steel and the core being cemented together into a solid unit.



Typical Flush Type Compartments

### Ebco Steel Doors

EBCO "Sturdibuilt" or "Silentsteel" Doors make excellent enclosures when used with marble or slate. Special brass, chrome-plated hardware is available for all installations.

The EBCO hinge and door assembly is specially sturdy. A continuous half-inch cold rolled steel hinge rod running from the hinge body at the bottom of the door to the hinge pin at the top, keeps all parts in rigid alignment and insures perfect operation of doors. Hinge bodies are the inclosed gravity type with doors suspended on roller bearings. Doors may be set to any desired point between open and closed positions.

# FLUSH METAL PARTITION CORPORATION

## Toilet Stalls, Dressing Room and Shower Compartments, Hospital Cubicles

TELEPHONE
STillwell 4-3380

22-14 40th Avenue, LONG ISLAND CITY, N. Y.

REPRESENTATIVES

ALBANY, N. Y., The Haefner Co., 254 Delaware Avenue—Telephone, Albany 4-8336
BOSTON, MASS., H. W. Mayers, 250 Stuart Street—Telephone, Hancock 9684
BUFFALO, N. Y., William Clouting Kraetz, 25 East Depew Avenue—Telephone, Parkside 4811
NEWARK, N. J., Boorman and Co., 717 So. Orange Ave.—Telephone, Essex 3-6333
PHILADELPHIA, PA., G. T. Voorhis Co., 220 South 16th Street—Telephone, Pennypacker 6491
POUGHKEEPSIE, N. Y., Hudson Valley Builders' Steel Co., 178 Cottage Street—Telephone, Poughkeepsie 4034
WEST HARTFORD, CONN., R. V. Thomas, 22 Fern-Bel Lane—Telephone, West Hartford 32-1145

For Shower Compartments, see File Index

## FLUSH METAL PARTITIONS AND DOORS

FLUSH METAL Toilet Partitions and Doors are designed to meet every requirement modern building construction demands as to sanitation, beauty, color, durability, firmness, economy and *prompt delivery*. They are recommended for commercial buildings, public schools, churches, hospitals, etc.

FLUSH METAL Partitions and Doors are constructed of two sheets of 20-gauge furniture steel, cemented, under pressure, to a sound-deadening core, reinforced on all edges with 16-gauge steel channels, welded thereto, making a ⅞-in. flush, solid steel sanitary slab. Each partition slab is welded to its 2-in. square, 16-gauge supporting post, *making a single rigid unit*. Headrail is of 16-gauge, 1½x2½-in. special sloping top seamless tubing.

### Fittings and Hardware

**Headrail Wall Brackets (1); Headrail Connectors (2), and Partition Wall Fittings (3)**—Made of heavy cast malleable iron. Note the two-screw fastening to wall for each casting—an exclusive feature.

**Upper and Lower Door Brackets (4) and (9)**—Of heavy solid cast bronze fastened to posts with through-bolts and cap nuts. Note that the pivot pin is integral with the door.

**Two-prong Coat Hook (5)**—Furnished for dressing rooms and compartments with door swinging "out." Rubber-tipped bumper hook used when door swings "in." Both are of cast bronze.

**Door Pull and Door Latch (6) and (7)**—Of heavy castbronze and fastened with through-bolts and cap nuts.

**Door Strike (8)**—Door strike with heavy resilient rubber bumper is securely held in place by six prongs deeply embedded in the rubber. The end of the bumper is bent around the post to take shock off screws—an exclusive feature.

**Gravity Hinge (9)**—Furnished with every door permits the door to remain open at any angle.

**Post Base (10)**—Solid bronze casting. Note the double fastening to the floor, providing additional strength and eliminating torsional vibration.

**Finish**—All the door hardware is available in standard bronze, painted color of job, or chromium plated.




## PANEL METAL PARTITIONS AND DOORS

PANEL METAL Toilet Partitions are constructed of two 16-gauge, 2-in. square uprights for vertical members, and two 1⅝x2¼-in. sanitary-shaped tubing for horizontal members. A single 16-gauge furniture steel sheet is forced into four members, full depth, interlocked and welded to produce a strong single panel. PANEL METAL Partitions are recommended where a sturdy, economical and moderately-priced installation is desired.

FLUSH METAL DOORS, Fittings and Hardware, as described are standard equipment and furnished at no additional cost.

## FINISH AND DELIVERY

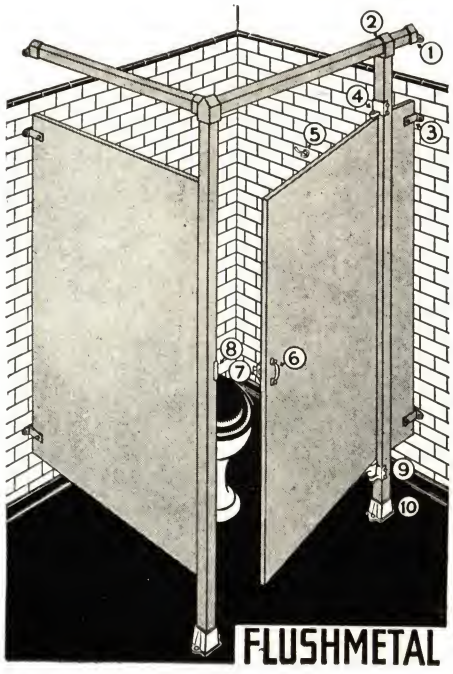
We furnish both FLUSH METAL and PANEL METAL Toilet Partitions in the following finishes:

(a) One prime coat of heavy gray oil primer, baked-on finish by others.

(b) Prime coat and finished coat of gray or green baked-on enamel at factory.

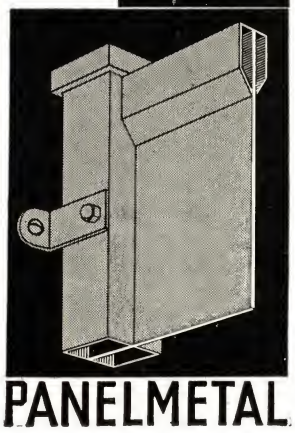
(c) Any other desired finish at slight additional cost.

Delivery and installation can be had in New York City and vicinity within three days after measurements are taken.






Flush Metal Partitions in New Criterion Theatre, Times Square, New York, N. Y.



MEMORANDA

# FIAT METAL MANUFACTURING COMPANY

## Manufacturers of Fiat Steel Toilet Partitions

MAIN OFFICE AND FACTORY
1201 Roscoe Street
CHICAGO, ILL.

NEW YORK OFFICE: 101 Park Avenue
BOSTON OFFICE: 11 Beacon Street
*Factory at 21-39 Borden Avenue, Long Island City, New York

REPRESENTATIVES

**Alabama**
MOBILE, Zelnicker Co., 58 St. Francis St.
MONTGOMERY, T. M. Gorrie, P. O. Box 441

**Arkansas**
LITTLE ROCK, Nevil C. Withrow, 297 Insurance Bldg.

**California**
LOS ANGELES, Lee Miller Co., 2946 W. Pico St.
SAN FRANCISCO, Trask & Squier Co., 39 Natoma St.

**Colorado**
DENVER, United Materials, Inc., 1122 Broadway

**District of Columbia**
WASHINGTON, Harry Schnabel, 4316 15th St., N. W.

**Florida**
JACKSONVILLE, J. C. Pastor, 1091 Talbot Ave.

**Georgia**
ATLANTA, F. Graham Williams, 1690 Boulevard N. E.

**Illinois**
CHICAGO, Fiat Metal Manufacturing Co. (Main Office)
PEORIA, John E. Chellberg, New National Hotel
ROCKFORD, Contractors Supply Agency, 1735 Douglas St.

**Indiana**
FORT WAYNE, Jones & Moss, 215 Standard Bldg.
HAMMOND, McLaughlin Hardware & Equipment Co., 5419 Hohman Ave.

**Iowa**
DES MOINES, R. J. Shank, 1004 Grand Ave.

**Kansas**
TOPEKA, Capitol Iron Works, 7th and Holliday Sts.

**Kentucky**
LOUISVILLE, American Builders Supply Co., 405 Garden St.

**Louisiana**
NEW ORLEANS, Clifford A. King, Jr., 905 Masonic Temple
ORANGE (TEX.), Harding & Lawler, P. O. Box 588

**Massachusetts**
BOSTON, A. W. Hall, 44 School St.

**Michigan**
DETROIT, L. T. Ollesheimer, Hoffman Bldg.

**Minnesota**
DULUTH, Thomson-Williams Co., 209 Builders Exchange Bldg.
MINNEAPOLIS, John F. Hurley Co., 412 National Bldg.

**Missouri**
KANSAS CITY, A. T. Bailey, 327 Westport Ave.
ST. LOUIS, Variety Building Products Co., 2615 DeKalb St.
SPRINGFIELD, Harry Cooper Supply Co.

**Montana**
GREAT FALLS, E. W. Bunnell, 4 So. 6th St.

**Nebraska**
OMAHA, Consolidated Builders Supply Co., 1002 No. 42nd St.

**New Mexico**
ALBUQUERQUE, J. C. Baldridge Lumber Co., 403 So. First St.

**New York**
BUFFALO, Troup Engineering Co., 1807 Elmwood Ave.
KINGSTON, Aird-Don Co., 74 Ten Broeck St.
LONG ISLAND CITY, Fiat Metal Mfg. Co., Inc., 21-45 Borden Ave.
ROCHESTER, Troup Engineering Co., 135 Spring St.
SCHENECTADY, Troup Engineering Co., P. O. Box 396
SYRACUSE, Troup Engineering Co., 205 Harrison St.

**North Carolina**
CHARLOTTE, Southern Engineering Co.

**Ohio**
CINCINNATI, A. W. Frank Co., Times Star Tower
DAYTON, Ohmer & Ohmer, Mutual Home Bldg.

**Oregon**
PORTLAND, E. E. Gilmer, 316 S. E. Madison St.

**Pennsylvania**
ALLENTOWN, A. L. Ochs, 1443 Linden St.
HARRISBURG, C. Frank Class, 18th and Mulberry Sts.
PHILADELPHIA, Allied Steel Products Co., 1940 Delancey St.
PITTSBURGH, J. F. Haldeman, Century Bldg.
READING, Reading Foundry & Supply Co., 522 Chestnut St.

**Tennessee**
CHATTANOOGA, H. T. Purcell, 1301 Market St.

**Texas**
DALLAS, Samuel Ellsberry, 2308 Griffin St.
HOUSTON, Basen Steel Works, 3118 Harrisburg Blvd.

**Utah**
SALT LAKE CITY, Rex W. Williams, 409 Dooley Bldg.

**Virginia**
LYNCHBURG, Goode Engineering Sales Co., Allied Arts Bldg.

**Washington**
SEATTLE, C. T. Bunker, 2113 Third Ave.

**Wisconsin**
MILWAUKEE, C. S. Perego, 1009 No. Van Buren Ave.

**Wyoming**
CHEYENNE, Wyoming Builders Specialty Co., 720 W. 18th St.

## FIAT PARTITION AND DOOR HARDWARE
### (Standard for Flush and Panel Type Partitions)

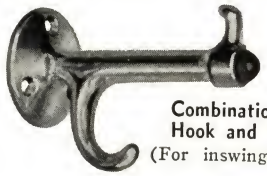


Universal Ball Bearing Gravity Hinge and Lower Bracket

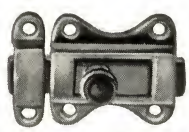


Top Hinge Bracket and Pin

Top Hinge Door Plate



Combination Coat Hook and Bumper (For inswinging door)



Sliding Door Bolt and Keeper



Rubber Covered Door Stop

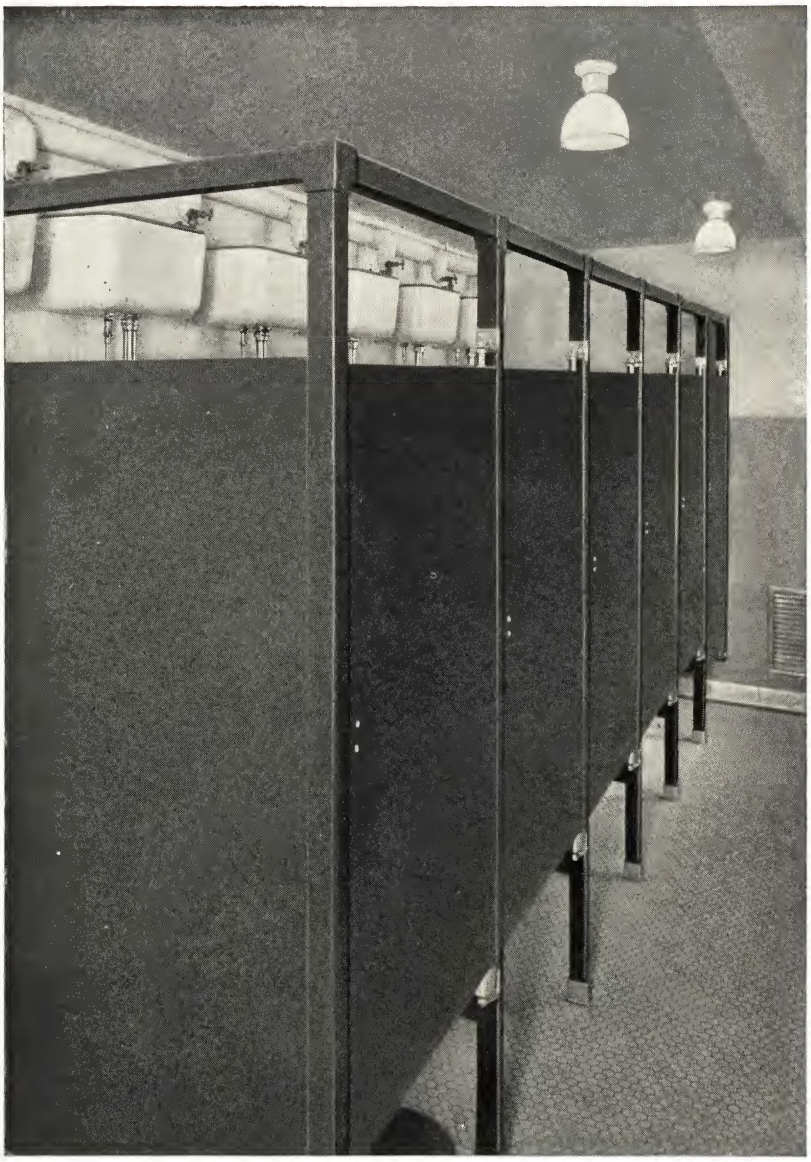


Plain Coat Hook (For outswinging door)



Door Pull

# FIAT FLUSH TYPE TOILET PARTITIONS



Installation of Fiat Flush Type All-Steel Toilet Partitions in Silver Springs School, Milwaukee, Wis.

## Specifications

**Partitions and Door Panels**—Partitions and door panels shall be 1 in. thick. Panels less than 48 in. wide shall be of 22-gauge. Panels 48 in. and wider shall be of 20-gauge. Before assembling inside panel surfaces shall be coated with an iron oxide primer baked on. They shall then be insulated with a laminated corrugated fiber board filler cemented to the inner surfaces under uniform pressure for 24 hours. Edges of panels shall be interlocked under tension with drawn steel moulding, welded at corners. Supporting posts 1¾ in. square in section of 16-gauge steel interlocked and welded to panels.

Backs against walls, utility enclosures, vent tops, and plates and utility doors shall be 16-gauge single sheet panel type construction.

**Headrail**—Shall be 1¾ in. square in section of 16-gauge steel.

**Hardware**—To be Fiat standard brass nickel-plated or chromium-plated as specified with fully encased universal ball bearing gravity hinges. Hinges can be furnished with working parts of stainless steel at slight additional charge.

**Partition Fittings**—Headrail, partition wall fittings and self-draining floor castings are of cast aluminum. (Brass chrome-plated foot castings furnished when desired.)

**Material**—All steel to be the finest quality open hearth, copper-bearing, furniture steel.

**Finish**—Baked prime coat of gray. Final painting after installation or baked enamel. Standard color, gray or sage green.



**Cross Section of Partition and Door**
Showing corrugated fiber board filler and construction

Fiat Flush Type Partitions present a refined appearance. The partition panels are insulated with a laminated, corrugated fiber filler cemented to the inner surfaces under uniform pressure for at least 24 hours. This construction gives a solid wall effect that does not give a metallic sound when struck. Partition panels are securely fastened to posts. Front and back posts and head rail are square in section. Door panels are same type construction as partition panels.

Fiat Flush Type Toilet Partitions are furnished with a prime coat of gray and final painting after installation or baked on enamel (a variety of colors available).

Refer to specifications for further details.

## Flush Type Doors on Marble, Structural Glass or on Slate Partitions

Fiat Flush Type Doors can be furnished with standard hardware in different sizes to fit any standard thickness of marble, structural glass or slate. These doors are made of the finest quality, copper-bearing, furniture steel, with a laminated corrugated fiber board filler, finished in high-grade baked-on enamel. The hardware used on marble installations is especially designed for long and continuous service. These doors are similar to those furnished on Flush Type Partitions.

# FIAT PANEL TYPE ALL-STEEL TOILET PARTITIONS

## Specifications

Furnish and install Fiat All-steel Panel Type Partitions as manufactured by FIAT METAL MANUFACTURING COMANY.

**Material**—All steel is to be used of finest quality open hearth, copper-bearing furniture steel.

**Partition Panels**—Shall be of 16-gauge. Sheets shall be inserted into front and back posts as well as top and bottom panel binders, to their full depth.

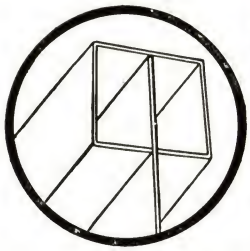
**Posts and Headrail**—To be 1¾ in. square tubing between which panels are inserted full depth. The tubing for headrail to be of similar construction and to be 16-gauge steel.

**Doors**—Shall have 16-gauge panels, door stiles and rails 18-gauge to be 3 in. wide and 1⅛ in. thick and to be of tubular locking construction so as to clamp the panel securely in place.

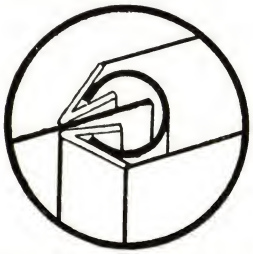
**Hardware** — Shall consist of universal ball bearing gravity hinge, door pulls, sliding bolts and keeper and combination coat hook and bumper. Door strikes to be rubber - tipped. All parts brass nickel-plated or chromium-plated.

**Partition Fittings** —To be of aluminum throughout.

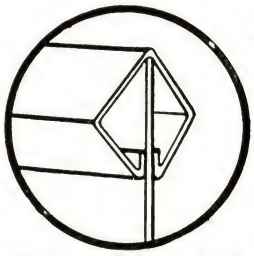
**Finish**—Prime coat of gray. Final painting after installation or baked enamel. Standard color gray or sage green.



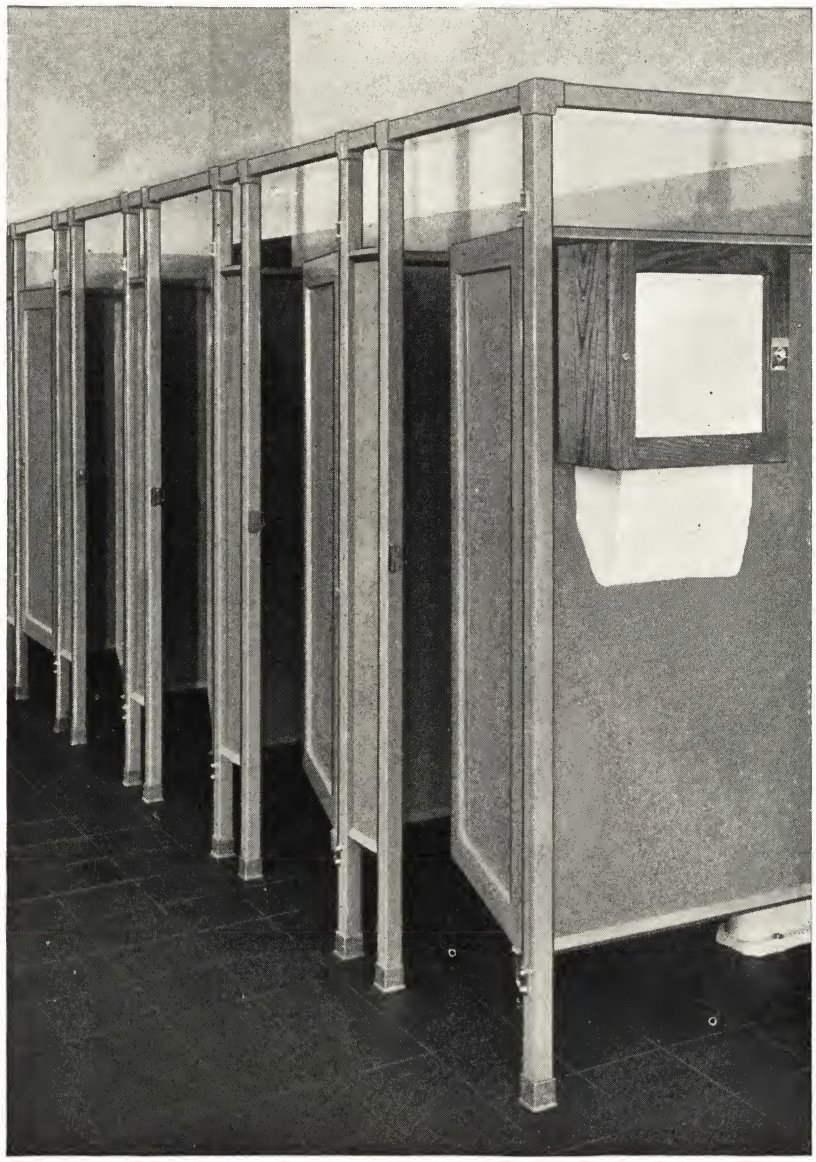
Detail of Front and Back Post Construction



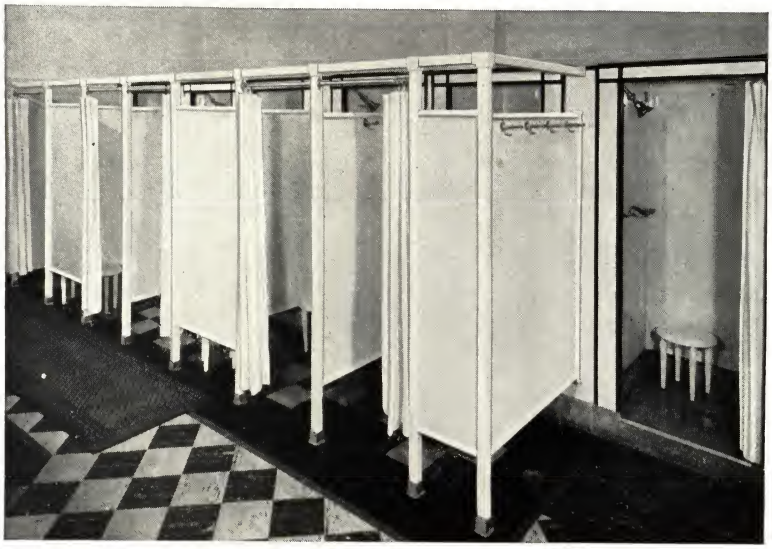
Detail Showing Fiat's Door Stile Lock Construction



Diamond Shaped Panel Binder with Double Reinforcing Shoulders



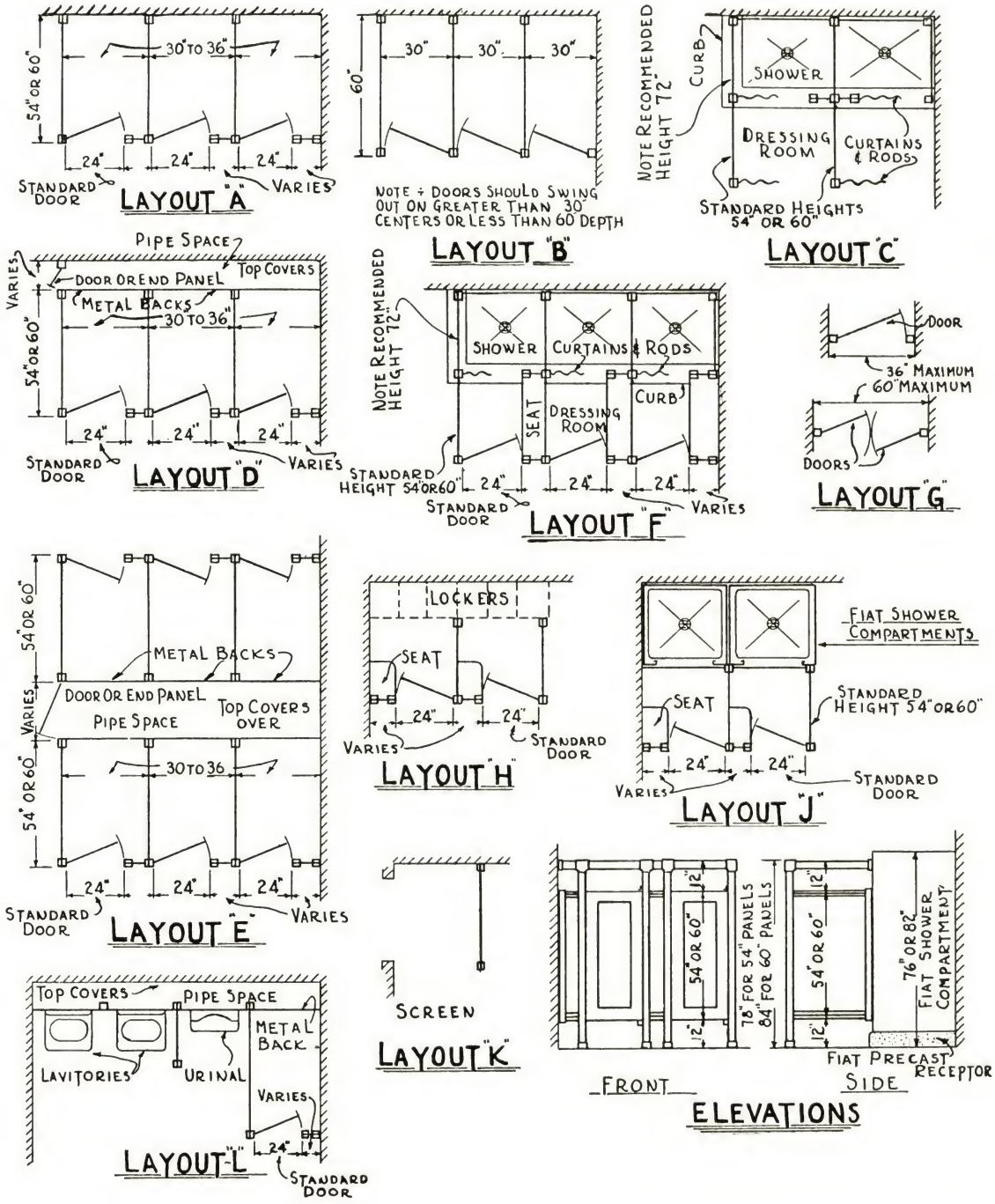
Installation of Fiat Panel Type All-Steel Toilet Partitions in Women's Toilet Room, Boris Smoler & Co., Chicago, Ill.



Installation of Fiat Panel Type All-Steel Dressing Stalls and Fiat Shower Cabinets at South Shore Country Club, Chicago, Ill.

Partitions are particularly suited for installation in industrial plants, commercial buildings, transportation terminals, and types of buildings where a utility type of partition fulfills requirements. Fiat Panel Type Partitions embody certain exclusive features developed by Fiat engineers. One of these is the diamond-shaped panel binder which is used at top and bottom of all partition panels — the shape of this piece prevents dirt and dust from lodging on top of it and it presents a neat appearance. Another feature is the tubular metal binder embodied in door stiles which securely holds door panel in place and this construction is properly welded throughout. Partition panels are inserted full depth in posts.

# TYPICAL TOILET PARTITION LAYOUTS SUGGESTED BY FIAT




**FIAT RUST-PROOF GALVANNEALED STEEL PARTITIONS** are recommended for shower partitions. Galvannealed steel has a smooth special finished surface prepared to receive the baked enamel finish. All types of Fiat Toilet Partitions may be constructed with this metal where its rust-proof qualities are essential.

## NOTE

For Fiat Sanitary Leakproof Shower Cabinets, Glass Shower Doors, Glass Shower and Bath Tub Enclosures and Fiat Sanitary Leakproof Receptors, see File Index.

20
22

# FOR MODERN BUILDINGS

# FERROMETAL

## PARTITIONS



Ferrometal Panel Type Dressing Rooms in Blue. Sidney Hill Health Institute.


**MILWAUKEE STAMPING CO.**

**MILWAUKEE, WISCONSIN**

REPRESENTATION IN ALL PRINCIPAL CITIES



**CATALOG NO. 138P**

FERROMETAL PARTITIONS AND DOORS are presented in this manual with recommended uses and layouts for ready reference.

Made by a Company with over forty years experience in metal fabrication, Ferrometal partitions are constructed for the modern architect and modern buildings.

The PLANT is large (150,000 square feet), and offers volume Production.

The DESIGN is modern—the result of a complete engineering staff.

The PRODUCT fits requirements of cost, design, appearance and use in all types of buildings.

## TYPES:

1. Flush Steel. Attractive appearance. Moderate Cost. Unusual Adaptability.
2. Panel Steel. Low Cost. Good design. Strong construction. Universal use.
3. Flush Aluminum. For finest quality and endless life.
4. Panel Aluminum. For special conditions when water is encountered.

## USES OF ABOVE TYPES:

Toilet Compartments—Screens—Vent Spaces—Utility Corridors, etc. Type 1, 2, 3, 4.

Dressing Room Compartments Type 1, 2, 3, 4.

Shower Rooms and Enclosures Type 2, 4.

Doors for Partitions of Glass, Marble, etc. Type 1, 2, 3. (Flush doors can be made in metals other than steel or aluminum.)

Cubicles for sub-dividing hospital wards, office space, beauty parlors, etc. Type 1, 2, 3, 4.

Powder and Mirror Rooms. Type 1, 3.

Shower Cabinets (See Catalog No. 337 or succeeding issues on Bathe-Rite Shower Cabinets).

The SERVICE is national with representation in over 100 centers throughout the nation.

Local Representative:

Ferrometal engineers will offer suggestions for practical adoption of Ferrometal products upon request.

# FERROMETAL FLUSH METAL PARTITIONS IN STEEL OR ALUMINUM

20/22

Modern building design, thanks to Architectural development along with technical manufacturing has resulted in the betterment and improvement of building of all types.

Clean, sanitary, conveniently arranged washrooms and sanitary facilities are a well made investment by promoting cleanliness. Modern, sanitary facilities and washrooms do not imply expensive installations and high upkeep, but are far less costly to provide and maintain than any other when proper equipment is selected. Ferrometal partitions are designed to meet amortization life of building at low upkeep. Partitions for washrooms, toilets and the like should be selected on a basis of quality and appearance.

Ferrometal Flush Steel or Aluminum Partitions are recommended and designed for Class A buildings such as schools, institutions, office buildings, monumental and public buildings.

They have such outstanding advantages as continuous smooth, 1" thick surface wall eliminating the danger of cracking or chipping.

All flush partitions and doors are double thickness of copper bearing stretcher level steel or aluminum thoroughly insulated to eliminate all noise and vibration. A continuous wood stile reinforces and supports strike side on all doors further eliminating vibration and door warpage.

Fittings throughout are furnished in drawn metal having many times the strength of ordinary cast metal. Foot fittings subjected to cleaning solutions are furnished in brass, either nickel or chrome plated. Minimum floor connections eliminate unsightly corners and crevices. Wall connections are furnished to allow a wall clearance of approximately 1" and facilitate cleanliness and ample flexibility for mounting on all types of walls or wainscoting.

Hardware is furnished in brass, nickel or chrome plated with Lawson Universal gravity or Pivot Spring Hinge.

"Color invites cleanliness, cleanliness invites sanitation. Use bright colors."

Furnished complete in standard Light Grey or Olive Green. Special solid color—to match particular color scheme—is available when specified.

All partitions and doors are custom built to final field dimensions, to insure erection suitable to conditions. All necessary erection material and fittings are included and adapted to actual floor and wall conditions of building.



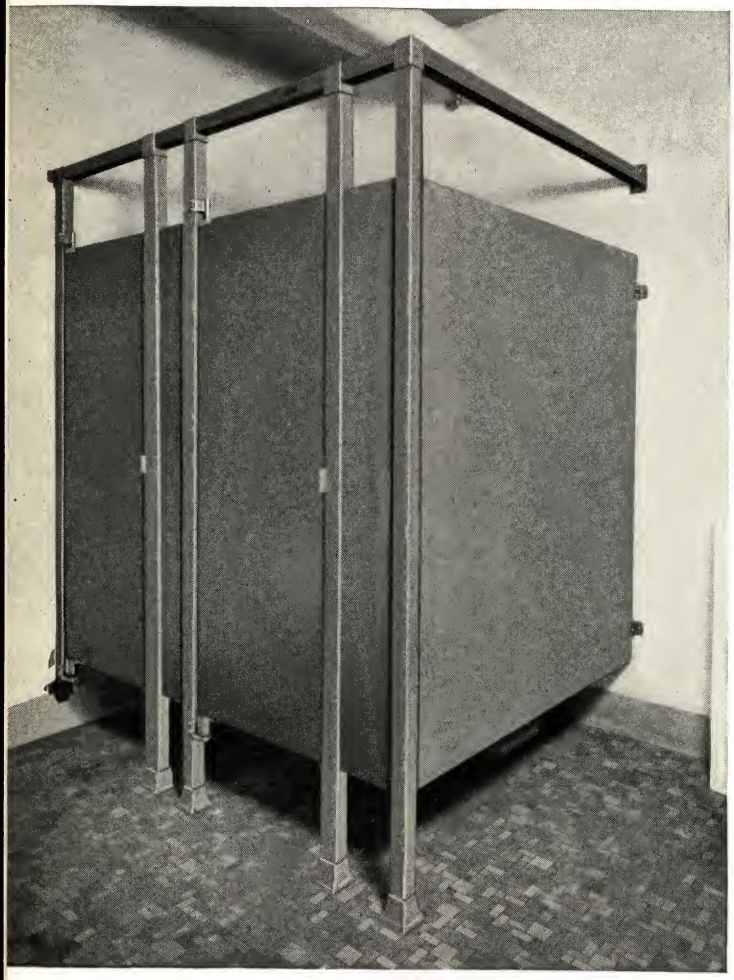
TYPICAL TOILET ENCLOSURE ASSEMBLY WITH NARROW DOORS AND FRONTS



TOILET ROOM ENCLOSURE WITH FULL WIDTH DOORS

SATISFACTION of thousands of architects and contractors throughout the country is Ferrometal's endorsement as the modern partition for schools of all types, government buildings, office buildings and institutions. More conclusive are the continued specification and use of Ferrometal by the same architects, contractors and owners.

# FLUSH TYPE PARTITIONS » » ARCHITECTS' SPECIFICATIONS

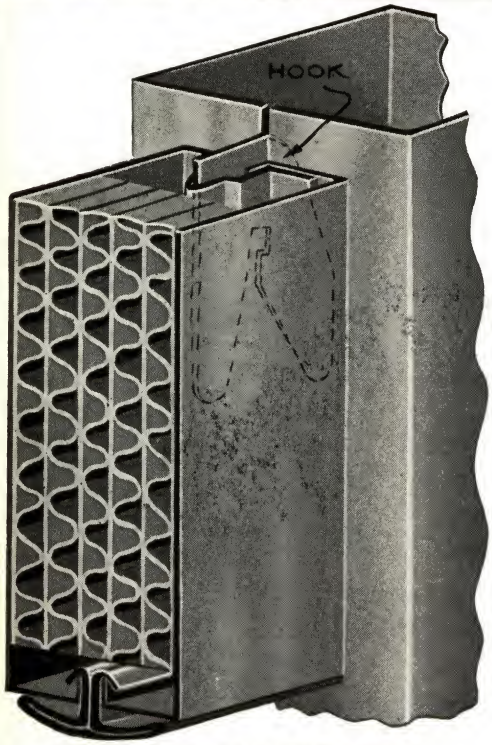


● GENERAL: All toilet enclosures, dressing rooms, screens, etc., shown on plans are to be Ferrometal Flush type partitions and doors as described and manufactured by the Milwaukee Stamping Co., Milwaukee, Wisconsin. All sizes are shown on blue print or as hereinafter specified.

● CONSTRUCTION: All partitions to be approximately 1 inch thick, made of two sheets of 20 gauge pickled cold rolled copper bearing stretcher leveled furniture steel (or 18 gauge, B & S Aluminum) completely filled and insulated with a corrugated fibre core cemented and assembled under pressure to outside sheets, combining sheets and filler in one mass. Edges of sheets to be formed and interlocked with heavy drawn steel moulding inserted under tension along outside edge thus locking the entire outer circumference in a continuous smooth surface. Corners of moulding to be mitered and welded in place and ground to the conformity of partition and moulding. Edges adjoining upright posts to be interlocked on inside with continuous locking bar with at least three protruding wedge hooks, to fit and lock into slotted uprights when assembled. Partition and upright assembly to be finally welded in place with all welds ground smooth. Partitions 36 inches or less, all panels to be 22 gauge U.S.S. Steel or 20 gauge B & S Aluminum.

IMPORTANT: Flush construction is not recommended for shower enclosures for the following reasons:

1. Observations and tests indicate no suitable flush panel construction can be sealed uniformly and permanently against water.
2. Adaptable filler materials, while moisture-resistant, are not waterproof. Waterproof material will not resist condensation.
3. Water temperature changes are conductive to condensation inside flush panels. Only single panel construction is recommended for shower enclosures. (See page 6.)




TYPICAL FLUSH PARTITION SECTION

● FITTINGS: All posts and headrails are to be 1¾ inches square heavy copper bearing steel, 16 gauge U.S.S. or 14 gauge B & S Aluminum. Foot fittings are to be adjustable and of heavy drawn brass with a nickel plate finish.

Foot fittings can be furnished in chrome polished finish, or bright aluminum.

All headrail fittings, wall or other connections are to be of heavy drawn rust-resisting steel with rounded smooth sanitary corners, free from holes and obstructions, finished same as partitions.

● DOORS: Same construction as partitions, except have concealed wood stile. (See page 8 for complete detail and specifications.)

● HARDWARE: All doors to be provided with brass, nickel plated Lawson Milwaukee Universal Self-closing Special Ballbearing Gravity Pivot Hinge which allows for simple adjustment to any desired position, open or closed. Furnish heavy nickel plated brass door bolts, door pulls, and coat hook. Top and bottom hinge brackets to fasten to door post with through bolts with brass nickel plated cap nuts.

Hardware can be furnished in chrome plate if desired. Special hardware to suit specific conditions can be supplied from the regular line of Lawson Hardware manufactured by the Milwaukee Stamping Company.

Lawson Universal Pivot Spring Hinges with triple adjustment can also be furnished and are interchangeable with gravity pivot hinges.

● FINISH: All surfaces to be thoroughly cleaned at factory with sandpaper and benzine and finished with a coat of rust-resisting primer baked on at 250°, suitable to either a final lacquer finish or enamel coat after erection.

● Final finish, (if at factory), to consist of a high grade baking enamel baked on at 250° over a baked primer.

● Final finish in field. (See painting specifications.)

*Standard finishes:* Olive Green or Light Grey. Special finishes and colors can be furnished at small additional cost.

# MODERN HARDWARE » » FOR FLUSH PARTITIONS

Ferrometal Partition hardware offers durability and ruggedness as well as appearance.

Ferrometal Flush Type Doors for metal partitions (glass or marble door details on page 8) are all furnished with Lawson Milwaukee Hardware especially designed for this type of work and manufactured in our own plant guaranteeing architect, contractor and owner responsibility of the entire material required on partition installation. All hardware is furnished in brass with nickel plated finish. Chrome plated finish can be furnished at a slight extra charge.

Universal Ball Bearing Gravity Hinges are sagless with adjustable alignment for right or left hand door opening in or out. Hinge has *brass*, non-drip hinge barrel, with working parts heat treated to eliminate operating wear.

Adjustable pintle with tapered seat allows for simple permanent adjustment and permits door to be held open at any desired position.

Top and bottom hinge brackets are bolted through supporting post or pilaster allowing rigid and permanent support.

Note: (Optional) All working parts in hinge assembly can be furnished in stainless steel at a slight extra charge.

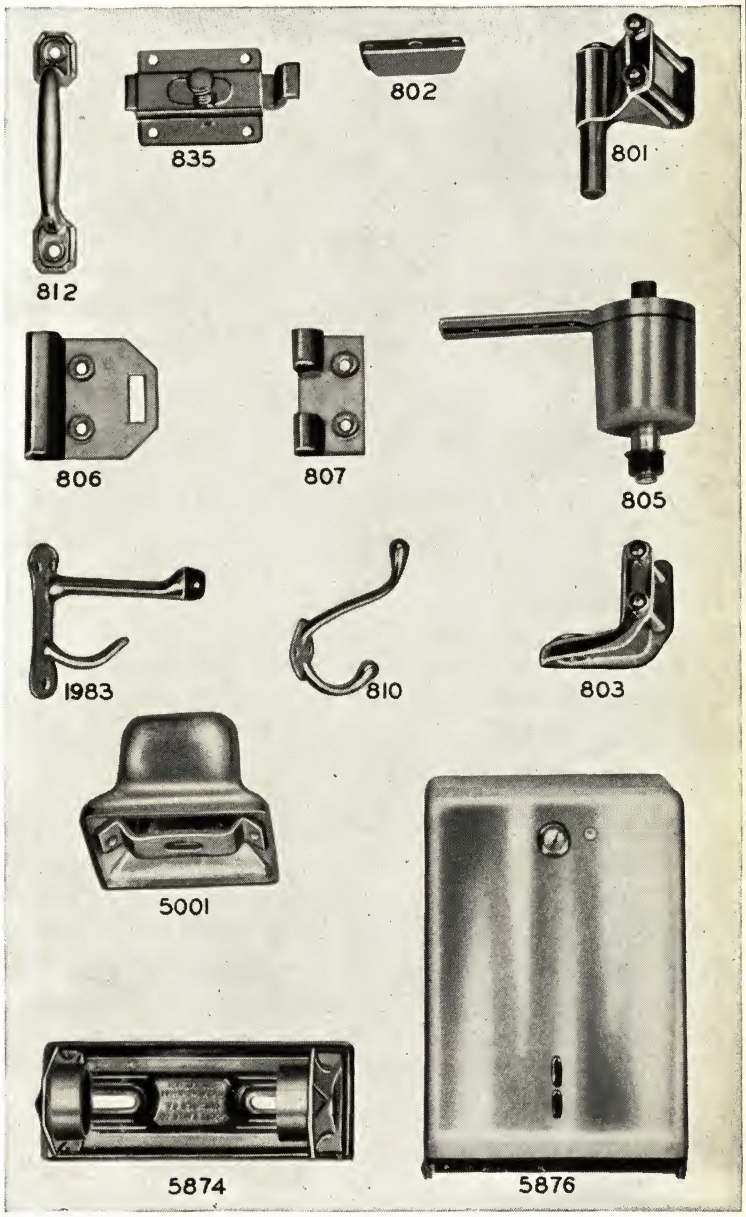
Heavy brass slide bolt furnished for all enclosure assemblies requiring locking device. Wrought door strike has rubber bumper forced into position under heavy pressure, eliminating possibility of its removal, and assures continuous quiet operation of the door.

*Cast brass* coat hooks are furnished for all compartments and for inswinging doors are equipped with a rubber tipped door stop to prevent hardware from striking and marring partition surface. Coat hooks are furnished in same finish as hardware items.

Foot fittings furnished are heavy drawn *brass with nickel plated finish*, and have an adjustable anchoring device

Optional items at small additional cost, curtain rods and hooks, curtains, paper holders, indicator latches, package baskets, etc.

Note: All necessary bolts, screws, etc., required for mounting hardware and optional items are supplied, finished same as hardware.




FERROMETAL QUALITY HARDWARE

801 B.E. Top Pivot
802 B.E. Top Pivot Channel
803 B.E. Bottom Hinge Bracket
805 N.P. Gravity Hinge
806 B.E. Strike & Bumper for Inswinging Door
807 B.E. Strike & Bumper for Outswinging Door
810 N.P. Coat Hook (Plain)
812 N.P. Door Pull
835 N.P. Sliding Door Bolt
1983 N.P. Coat Hook (with Bumper for inswinging doors)
5001 N.P. Drawn Foot Fitting
5874 N.P. Roll Paper Holder
5876 N.P. Cabinet Type Paper Holder (Double fold)

Note: All hardware N.P. furnished in nickel plated finish. Chrome finish optional at slight additional charge. All items B.E. furnished in baked enamel or prime to match partition finish.

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# FERROMETAL PANEL PARTITIONS IN STEEL OR ALUMINUM

Ferrometal Panel Partitions in Steel or in Aluminum are ideal for the sanitary facilities of all types of buildings and are recommended for toilet compartments, shower enclosures, dressing enclosures, entrance screens, sink enclosures, mop and equipment storage enclosures and any installation where sturdy, silent and sanitary construction is required.

Ferrometal Panel type partitions are popular priced of unusually strong construction.

Sanitary features in Ferrometal design allow easy cleaning, and avoid all unnecessary fluting or moulding which might catch and hold dirt or dust. No open joints or buckling of panels possible.

Ferrometal Panel doors of lead coated metal with air dried wood core prevent door warpage and stiffens entire construction as well as insures silent operation. No metal vibration as in hollow metal doors.

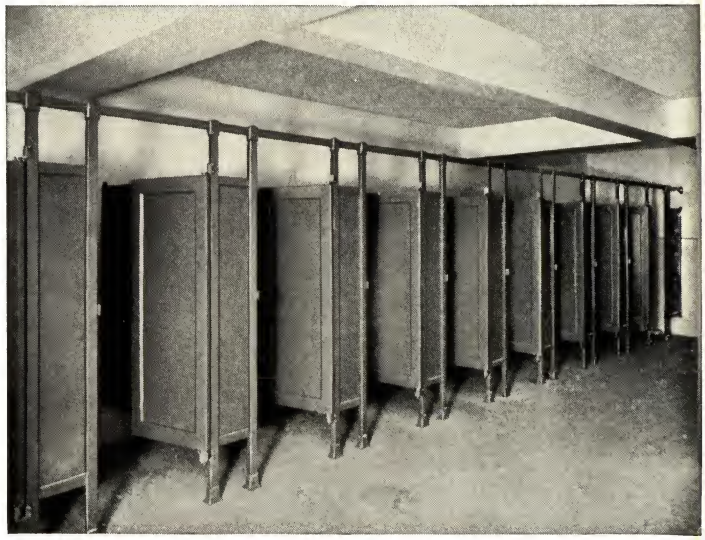
Fittings throughout are furnished in drawn metal, having many times the strength of ordinary cast metal. Foot fittings subjected to cleaning solutions are furnished in steel, cadmium plated and finished to match partitions. Minimum floor support is required, eliminating unsightly obstructions, corners, and crevices difficult to clean.

All partitions and doors are custom built to final field dimensions of building.

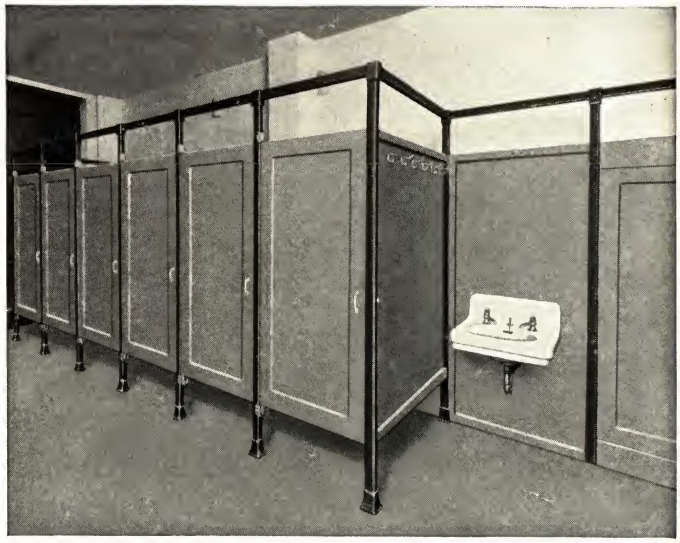
Satisfaction with the thousands of installations throughout the country, and constant repeat orders is Ferrometal's finest endorsement.

## RECOMMENDATION:

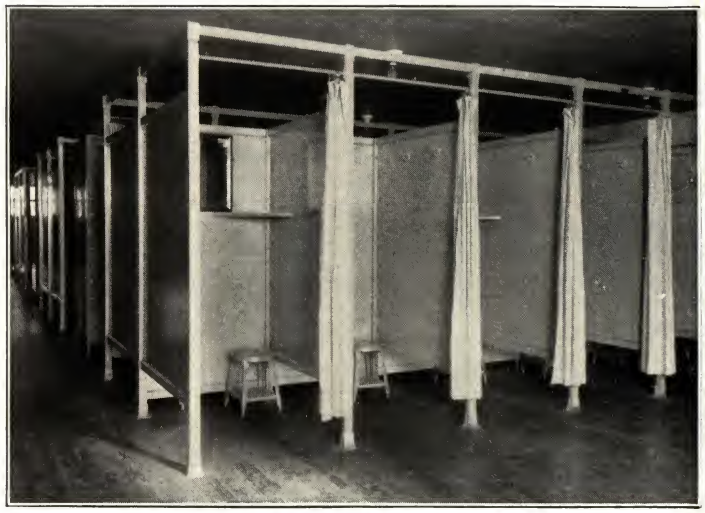
The U. S. Department of Commerce, Bureau of Standards, recommends that standard size partitions and doors be used wherever possible. Doors the full width of the compartment help reduce the cost of installation. Inswinging doors are recommended generally and included in state and municipal building requirements in many localities, as they eliminate chance of injury through abrupt opening and also keep floor space in washroom clear at all times. (See chart on page 10 for recommended compartment sizes.)



TOILET ENCLOSURE ASSEMBLY—NARROW DOORS



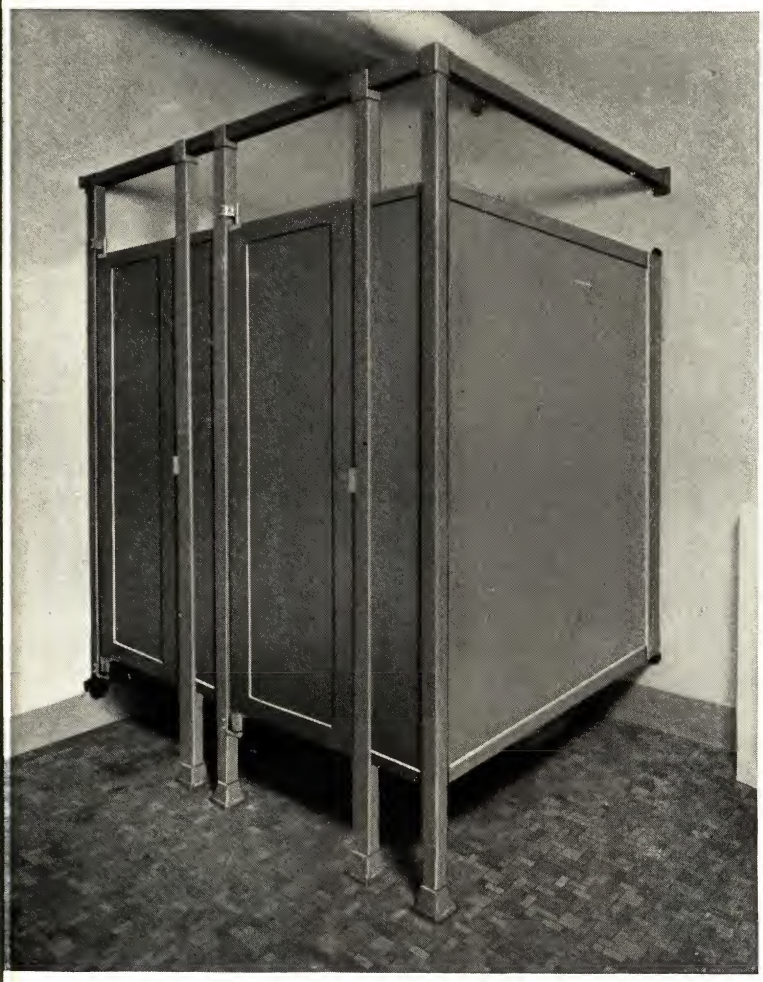
TOILET ENCLOSURE ASSEMBLY—WIDE DOORS AND PANEL WAINSCOTING



TYPICAL SHOWER AND DRESSING ROOM

# PANEL TYPE PARTITIONS »
# » ARCHITECTS' SPECIFICATIONS





● GENERAL: All Toilet Enclosures, Dressing Rooms, Shower Enclosures, etc., shown on plans to be Ferrometal panel type partitions and doors as described and as manufactured by the MILWAUKEE STAMPING Co., Milwaukee, Wisconsin. All sizes as shown on blueprint or as hereinafter specified.

Note: Ferrometal Panel Type Partitions are designed to suit building plan requirements at reasonable cost. They are attractive in appearance, designed to suit the trend of modern building requirements. Recommended for toilet rooms shower enclosures, dressing rooms, storage rooms, utility corridors, janitors' closets, office cubicles, etc.

The installation of Ferrometal partitions is quickly made by experienced mechanics assisted by details that have been previously arranged. All Ferrometal Partitions are fabricated to exact job requirements based on actual field dimensions. All material furnished is numbered and labeled to facilitate erection.

● CONSTRUCTION: All partitions are to be furnished in 16 gauge first quality cold rolled copper bearing stretcher leveled furniture steel with 2¼" sanitary shaped hollow metal rail across top and bottom edges. Panel and rails to be completely interlocked with front and rear post and securely welded in place. Front and rear post to be 16 gauge copper bearing steel 1¾" square with sanitary shaped edges without panels or projections. All joints between posts, panel and rail are to be sanitary and homogeneous.

Partitions 48" deep or less—panels are to be 18 gauge U. S. Standard steel or 16 gauge Brown & Sharpe Aluminum. All posts and headrails are to be 1¾" square heavy copper bearing steel, 16 gauge U. S. Standard or 14 gauge Brown & Sharpe aluminum.

Note: Aluminum partitions are especially recommended for shower and similar enclosures. Have the same solid panel construction and front and rear post of same material. Aluminum partitions are made of special grey plate alloy half hard temper.

● FITTINGS: Foot fittings to be adjustable and of heavy drawn rust-resisting steel finished to match partitions.

Note: Foot fittings can be furnished in brass with nickel or chrome finish, or bright aluminum, if desired.

● All headrail fittings, wall connections or otherwise are to be of heavy drawn rust-resisting steel with rounded smooth sanitary corners free from holes and obstructions, finished same as partitions.




TYPICAL PANEL
PARTITION SECTION

● DOORS: To be approximately 1" thick with metal clad 3½" stiles of 24 gauge lead coated copper bearing steel with an over-lapping double thickness at all corners countersunk to be flush with surface of stile.

● Door Stiles to contain an air-dried white pine core $\frac{15}{16}$" thick, securely doweled in four corners with 3" dowel pins. Inner edge of door stiles to be sanitary shape and interlocked at least 1" with panel of lead coated copper bearing stretcher leveled steel.

Note: Quiet operation of doors, an essential feature in this type of partition equipment, has been given careful study by Ferrometal designers. To insure this, wood stiffeners and sound deadeners have been used in all door stiles.

● HARDWARE: All doors to be provided with Lawson Milwaukee Universal Self-Closing Special Ball Bearing Gravity Pivot Hinge, which allows for simple adjustment to any desired position, open or closed. Furnish heavy nickel plated brass door bolts, and door pull. Furnish coat hook, bumpers and strikes where required. Top pivot and bottom hinge bracket to fasten to door post with through bolts with brass nickel plated cap nuts.

Note: Hardware can be furnished in chrome plate if desired. Special hardware to suit specific conditions can be supplied from the regular line of Lawson Hardware manufactured by the MILWAUKEE STAMPING Co. Lawson Universal Pivot Spring Hinges with triple adjustment can also be furnished and are interchangeable with gravity pivot hinges.

● FINISH: All surfaces to be thoroughly cleaned at factory with sand paper and benzine and finished with a coat of rust-resisting primer baked on at 250° suitable to either a final lacquer finish, or enamel coat after erection.

● Final finish, (if at factory), to consist of high grade baking enamel baked on at 250° over a baked primer.

● Final finish in field. (See painting specification.)

*Standard finishes:* Olive Green or Light Grey. Special finishes and colors can be furnished at small additional cost.

Hardware and fittings furnished with Ferrometal Panel Doors are quality products designed and produced in our own plant. All are simple, rugged and practical design, to stand abuse and applied to discourage vandalism.

Universal Ball Bearing Gravity Hinges are sagless with adjustable alignment for right or left hand door opening in or out. Hinge has non-drip hinge barrel with all working parts heat treated to eliminate operating wear. Adjustable pintle with tapered seat allows for simple permanent adjustment and permits door to be held open at any desired position. Standard finish is same as door, nickel plated or chrome, at a slight addition in cost.

Top and bottom hinge bracket furnished in formed steel in the same finish as door and bolted through supporting post or pilaster allowing rigid permanent support.

Note: (Optional) All working parts in hinge assembly can be furnished in stainless steel at a slight additional charge.

Heavy brass slide bar assembly furnished for all enclosure assemblies requiring locking device. Formed steel strike for in- or outswinging doors furnished with rubber mounted bumper, assuring continual quiet operation of the doors.

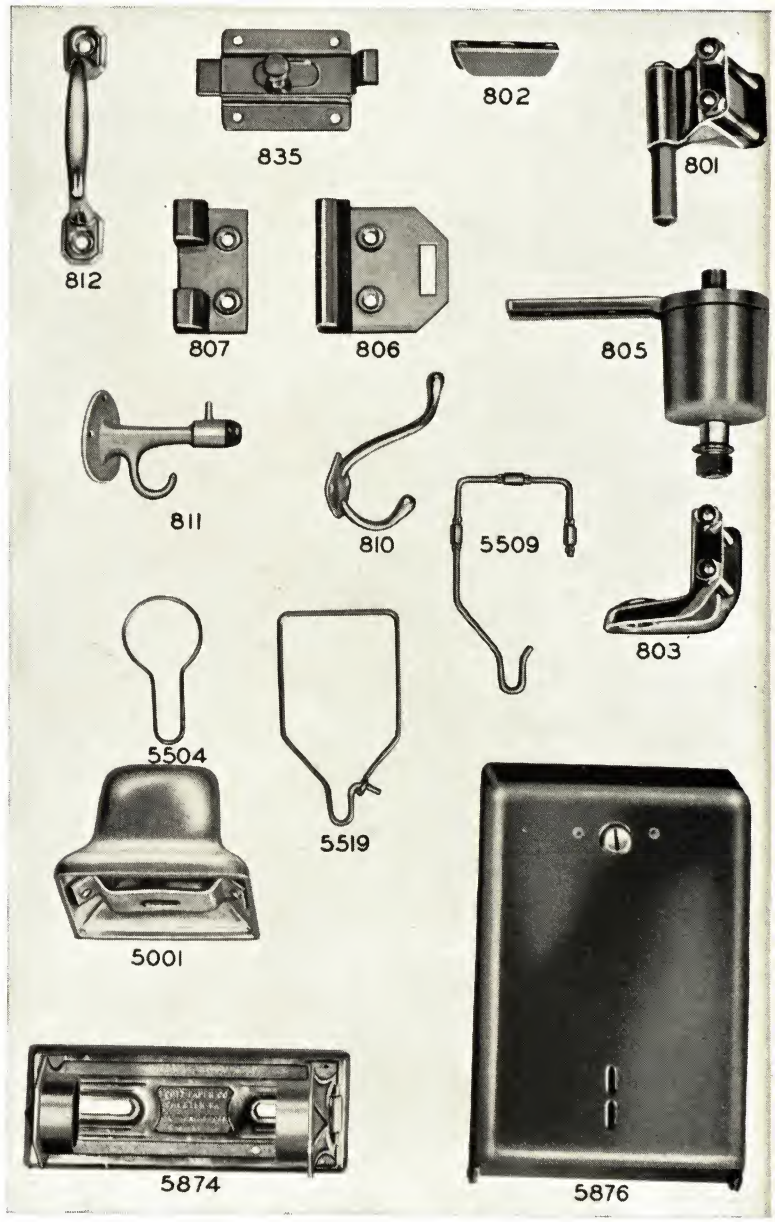
Note: The Metal Clad Door stile offers a rigid and substantial hardware backing on all Ferrometal Doors.

Coat hooks are furnished for all compartments, and for inswinging doors are equipped with rubber tipped door stop to prevent hardware from striking and marring partion surface.

Foot fittings of heavy drawn steel with adjustable anchoring device furnished with all partitions.

Note: Optional items such as paper holders, cylinder locks, curtain rods, curtains, rings, wood or metal seats, soap dishes, wire mesh screens, grab bars, and loafer rail, etc., can be furnished to suit special requirements.

Note: All necessary bolts, screws, etc., required for mounting hardware and optional items are supplied finished same as hardware.

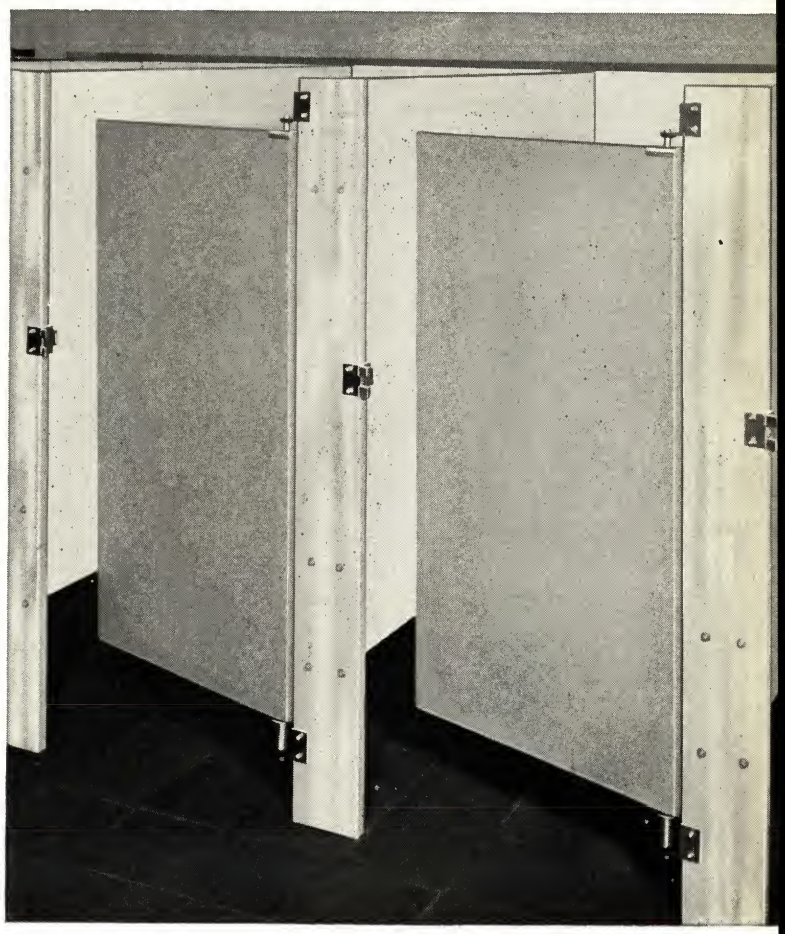



| | | | |
|---|---|---|---|
| 801 B.E. | Top Pivot | 5509 N.P. | Roller Curtain Ring (For 1¾ in. square Headrail) |
| 802 B.E. | Top Pivot Channel | | |
| 803 B.E. | Bottom Hinge Bracket | | |
| 805 B.E. | Gravity Hinge | 5519 N.P. | Sliding Curtain Ring (For 1¾ in. square Headrail) |
| 806 B.E. | Strike & Bumper for Inswinging Door | | |
| 807 B.E. | Strike & Bumper for Outswinging Door | 5874 N.P. | Roll Type Paper Holder |
| 810 N.P. | Coat Hook | 5876 N.P. | Cabinet Type Paper Holder (double fold) |
| 811 B.E. | Coat Hook for Inswinging Doors | | |
| 812 N.P. | Door Pull | | |
| 835 N.P. | Sliding Door Bolt | | |
| 5001 B.E. | Drawn Foot Fitting | | |
| 5504 N.P. | Round Sliding Curtain Ring for Round Curtain Rod | | |

Note: All items "N.P." furnished in nickel plated finish.

All items "B.E." furnished in baked enamel or prime to match partition finish. Chrome finish on N.P. items at slight additional cost.

# FERROMETAL FLUSH DOORS IN STEEL OR ALUMINUM



Ferrometal Flush doors are designed to meet the requirements of present architectural designs and are used to distinct advantage with partitions other than steel. They can be furnished in steel, aluminum, monel metal, or special alloys, if desired.

For use with marble, glass, slate, alberene stone, terrazzo, or similar dividing partitions for toilet, shower or dressing room enclosures.

Ferrometal Flush doors are light weight, durable and economical in cost compared with doors of other materials. Doors are fully equipped with hinges and hinge brackets, designed to operate properly without difficulty or damage to partition walls of material other than metal. Flush doors insure maximum quietness in operation and will not warp or buckle through constant operation.

Doors consist of a double thickness of copper bearing stretcher leveled steel thoroughly insulated with a fibre filler separating outer steel sheets. To further reinforce strike side of door, a heavy continuous wood liner eliminates vibration and warpage.

Sanitation requirements as well as appearance are always a feature of Ferrometal equipment. All flush doors have closed seams throughout without any uneven surfaces for dirt and dust to settle or lodge. Flush doors offer a wide adaptability of color to match finishes required in today's architecture.

Lawson Milwaukee hinge brackets and strikes are adjustable to suit mounting requirements.

● GENERAL: All metal doors for toilet enclosures, dressing rooms, entrance screens, etc., shown on plans are to be Ferrometal Flush type doors as described and as manufactured by the Milwaukee Stamping Co., Milwaukee, Wisconsin, all sizes—as shown on blueprint or as hereinafter specified.

● CONSTRUCTION: All doors to be approximately 1 inch thick, made of two sheets of 22 gauge pickled cold rolled copper bearing stretcher leveled furniture steel, completely filled and insulated with a corrugated fibre core cemented and assembled under pressure to outside sheets, combining sheets and filler in one mass. Edges of sheets to be formed and interlocked with heavy drawn steel moulding inserted under tension along outside edge thus locking the entire outer circumference in a continuous smooth surface. Corners of moulding to be mitred and welded in place and ground to the conformity of partition and moulding. A vertical stile 3½" wide of air dried white pine is to be assembled into strike side of door in conjunction with fibre core and is to extend the entire inside height, completely filling space between surface sheets. If furnishd in aluminum, surface sheets to be 20 gauge B & S.

Note: The corrugated fibre filler and wood stile provide a door noiseless in operation and void of hardware vibration.

● HARDWARE: All doors are to be provided with brass nickel plated Lawson Milwaukee Universal Self-closing Special Ball Bearing Gravity Pivot Hinge which allows for simple adjustment to any desired position open or closed.

Furnish heavy nickel plated brass door bolts, door pull, top pivot, coat hook, bumpers and strikes. Top and bottom adjustable channel hinge brackets in brass nickel plated to fasten to pilaster with brass nickel plated through bolts with cap nuts.

Hardware can be furnished in chrome plate if desired.

Special hinge construction has hardened ball race and special formed heat treated track.

Adjustable brackets have deep centered holes for marble, glass and similar mounting.

Note: Special hardware to suit specific conditions can be supplied from the regular line of Lawson Hardware. Write for specific recommendations.

● FINISH: All surfaces to be thoroughly cleaned at factory with sandpaper and benzine, and finished with a coat of rust-resisting primer baked on at 250° suitable to either a final lacquer finish or enamel coat after erection.

Final finish, (if at factory), to consist of a high-grade enamel or lacquer baked on at 250° over a baked primer.

Final finish to be applied in field. (See painting specifications.)



TYPICAL
FLUSH DOOR SECTION

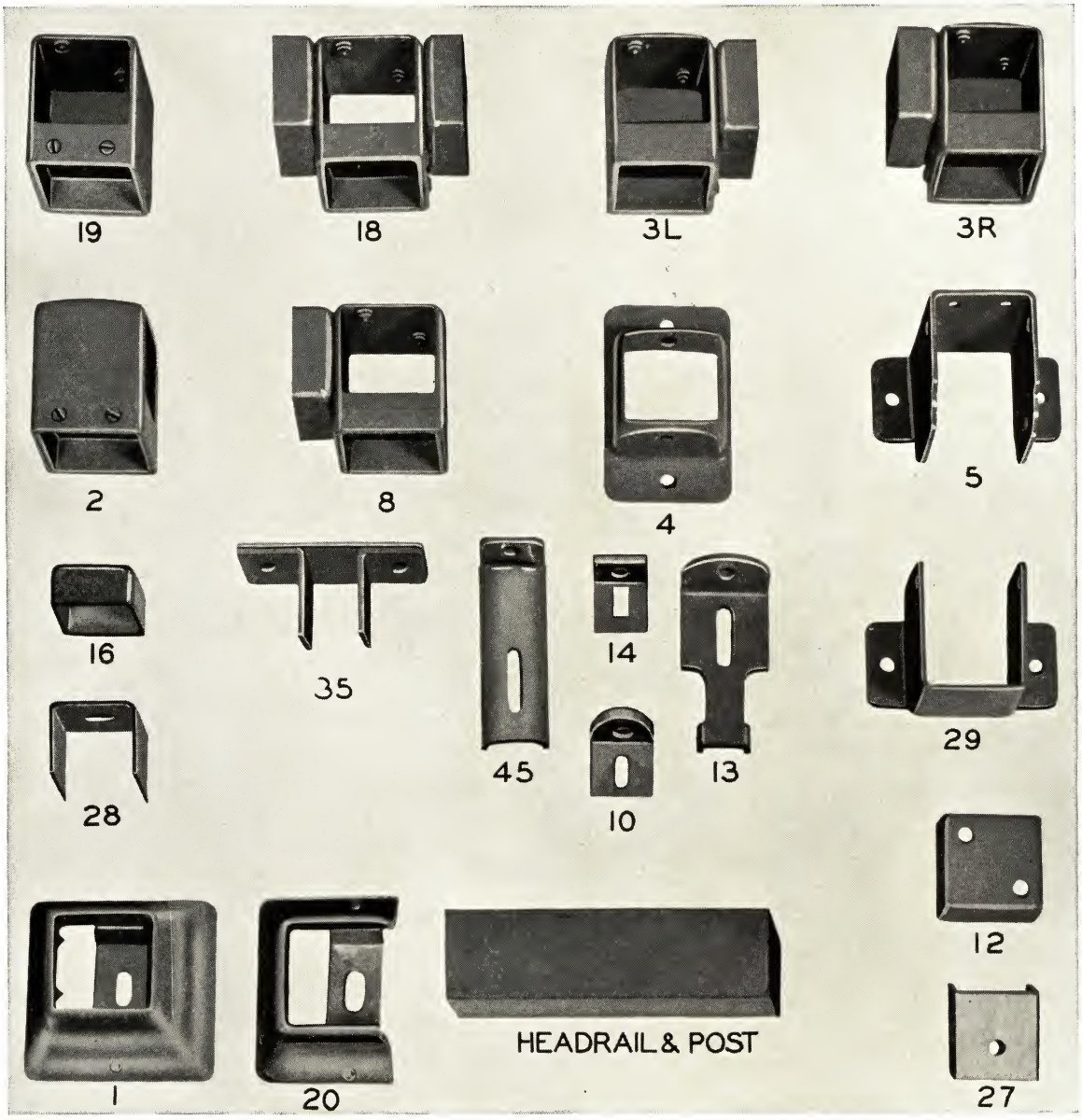
# FLUSH AND PANEL PARTITION FITTINGS

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Heavy fittings furnished for all wall, headrail and post connections are of heavy gauge drawn steel many times the strength of cast fittings. All fittings have smooth surfaces and rounded corners and are finished to match partitions. All fittings are securely anchored to wall and fastened to partition assembly proper. They cannot become loose, crack or become otherwise damaged. This insures a rigid assembly throughout.

All hardware, screws, nuts and bolts, toggle bolts, rawl plugs, lead shells, required for erection of Ferrometal partitions are furnished with each job to suit wall and floor conditions.

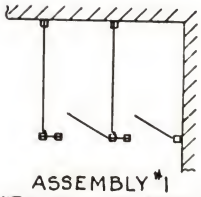
All fittings as well as screws, nuts, bolts, are cadmium plated. Fittings given a final primer or finished baked enamel to match color of partitions on the job.



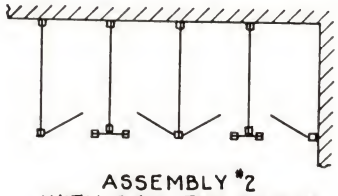

No. 1. Drawn Foot Fitting.
No. 2. 2 Way Tee Headrail and post connections.
No. 3. R. or L. 2 Way Headrail and post corner connection.
No. 4. Headrail Wall Anchor.
No. 5. Wall Post and headrail wall bracket. (Upper.)
No. 8. 3 Way headrail and post connection.
No. 10. Corner Clip.
No. 12. Upright and Post Cap.
No. 13. Adjustable Panel type wall connection.
No. 14. Corner Clip for Tee panel connection.
No. 16. Inside Headrail Fitting.
No. 18. 4 Way headrail and post connection.
No. 19. 1 Way headrail and post connection.
No. 20. R. or L. 3 side projection; R. or L. Foot Fitting.
No. 27. Top cover plate for wall post.
No. 28. Post floor inside anchoring channel.
No. 29. Lower wall post bracket.
No. 35. Stirrup type fitting for flush partition wall connection for use with tile and similar walls.
No. 45. Adjustable flush type top wall connection.

## TYPICAL TOILET AND SCREEN ASSEMBLIES

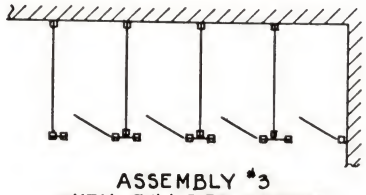
ALL ASSEMBLIES CAN BE FURNISHED WITH OUT-SWINGING DOORS



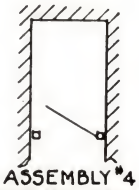
ASSEMBLY #1
WITH MULLION FRONTS



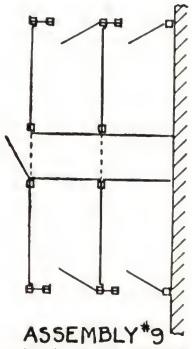
ASSEMBLY #2
WITH SKIP TEE FRONTS



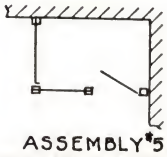
ASSEMBLY #3
WITH FULL TEE FRONTS



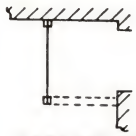
ASSEMBLY #4
BETWEEN WALLS



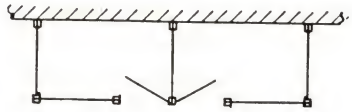
ASSEMBLY #9
WITH VENT SPACE



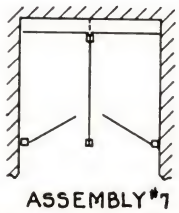
ASSEMBLY #5
CORNER ASSEMBLY



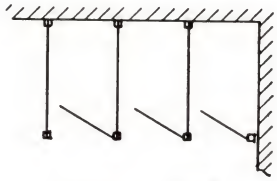
ASSEMBLY #6
SCREEN



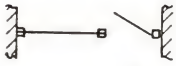
ASSEMBLY #10



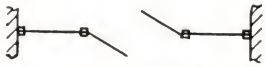
ASSEMBLY #7
BETWEEN WALLS WITH BACKS



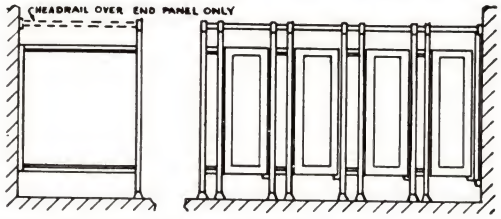
ASSEMBLY #8
WITH FULL WIDTH DOORS



ASSEMBLY #11
SCREEN WITH SINGLE DOOR



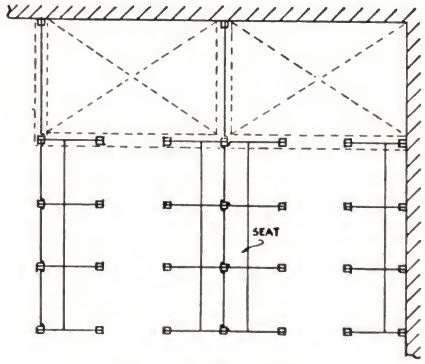
ASSEMBLY #12
SCREEN WITH DOUBLE DOOR



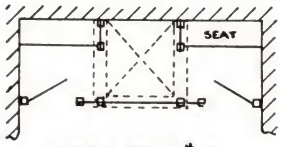

PANEL ELEVATION

FRONT ELEVATION

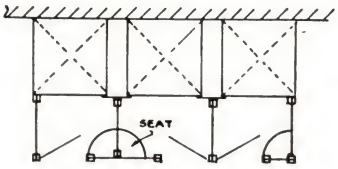
## TYPICAL SHOWER AND DRESSING ROOM ASSEMBLIES



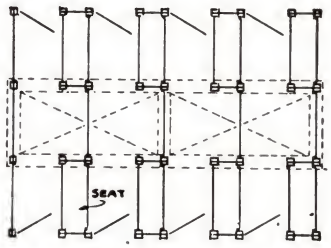

ASSEMBLY #14



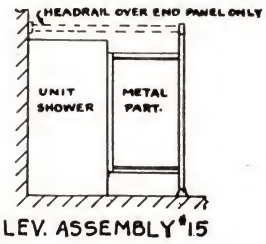

ASSEMBLY #13




ASSEMBLY #15
UNIT SHOWERS WITH DRESSING STALLS




ASSEMBLY #16




ELEV. ASSEMBLY #15

### SIMPLIFIED PRACTICE RECOMMENDATION

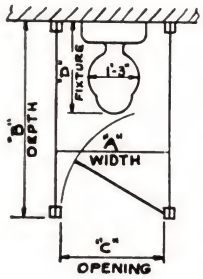
FOR ASSEMBLIES USING FULL WIDTH DOORS

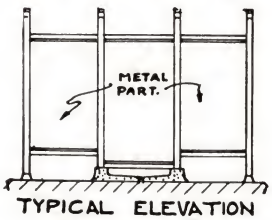
FOR SCHOOLS

| C. TO C. OF PARTITIONS OR FIXTURES | WIDTH OF DOORS | DEPTH OF PARTITION | WILL CLEAR FIXTURE PROJECTING | HEIGHT OF PARTITION | HEIGHT TO TOP OF HEADRAIL |
|---|---|---|---|---|---|
| 30" | 28" | 54" | 29" | 54" | 78" |
| 32" | 30" | 54" | 27" | 54" | 78" |
| 34" | 32" | 54" | 25½" | 54" | 78" |
| 36" | MAX. 34" | 60" | 29½" | 54" | 78" |

OTHER TYPE OF BUILDINGS

| | | | | | |
|---|---|---|---|---|---|
| 30" | 28" | 60" | 35" | 60" | 84" |
| 32" | 30" | 60" | 33" | 60" | 84" |
| 34" | 32" | 60" | 31½" | 60" | 84" |
| 36" | MAX. 34" | 60" | 29½" | 60" | 84" |




TYPICAL ELEVATION
ASSEMBLY #16

# REPRESENTATIVES

**MAIN OFFICE AND FACTORY**

## MILWAUKEE STAMPING CO. – MILWAUKEE, WIS.

**CHICAGO OFFICE-150 NO. WACKER DRIVE**

**Alabama**
BIRMINGHAM, D. P. Barrett Co., 320 Brown-Marx Building

**Arizona**
PHOENIX, Baker-Thomas, 300 So. 12th Street

**Arkansas**
LITTLE ROCK, Selle Equipment & Constr. Co., 1105 Main Street

**California**
LOS ANGELES, Bradfield Building Prod. Co., 619 E. Third Street
SAN FRANCISCO, Honolulu Iron Works, 215 Market Street (Represents Hawaii)
SAN FRANCISCO, Parker-Carpenter, Inc., 604 Mission Street
SANTA BARBARA, Ott Hardware Company

**Colorado**
DENVER, Rocky Mt. Archts. & Bldrs. Service, 611 California Building

**District of Columbia**
WASHINGTON, Harry Schnabel, 4316 15th Street, N. W.

**Florida**
CORAL GABLES, Fred Sargent, 737 Navarre Avenue
TAMPA, A. B. Zierleyn, R. R. 1, Box 351
WEST PALM BEACH, Alexander Gordon, 3636 Paseo Navarro Street

**Georgia**
ATLANTA, L. E. Murray, 161 Spring Street
Atlanta Sheet Metal Corp., 799 Marietta Street, N. W.
AUGUSTA, David Slusky & Son, 1009 Broad Street
MACON, Taylor Iron Wks., Broadway and Oglethorpe Streets
SAVANNAH, J. H. Persse, 28 E. Bryan St.

**Idaho**
BOISE, J. G. Doerr, 501 So. Eighth Street

**Illinois**
CHICAGO, Milwaukee Stamping Co., 150 No. Wacker Drive
DECATUR, Ornamental Metalworks Co., 450 So. Franklin Street
PEORIA, G. A. Clark, 522 Central National Bank Building
ROCKFORD, Capitol Ornamental Iron Works, 1012 Ninth Street
SPRINGFIELD, Peter Vredenburgh Lbr. Co., Third and Jefferson Streets
DANVILLE, Material & Fuel Company, Box 162

**Indiana**
EVANSVILLE, G. L. Mesker & Co.
HAMMOND, Standard Equip. & Sup. Corp., 534 Michigan Avenue
INDIANAPOLIS, Stackhouse Bldg. Spec. Co., 6117 College Avenue
SOUTH BEND, South Bend Bldg. Spec. Co., 232½ Michigan Street

**Iowa**
CEDAR FALLS, E. W. Watson, 287 Grand Boulevard
DES MOINES, Hansen Metalkraft Co., Box 270, 2905 Amick Avenue
SIOUX CITY, Otto F. Bridge, 513 Jackson Street

**Kansas**
KANSAS CITY, T. L. Bruton, 2918 Parkwood Boulevard
SALINA, Lee Hdwe. Co.
TOPEKA, Topeka Fdry. & Iron Works Co., 300 Jackson Street
WICHITA, Grabendike Eng. Sales Co., P. O. Box 333

**Kentucky**
LOUISVILLE, Kentucky Iron Works, Room 220, 620 So. Fifth Street

**Louisiana**
NEW ORLEANS, Nachary Bldrs. Sup. Co., 318 Carondelet Street

**Massachusetts**
BOSTON, Wills & Hill, 99 Bedford Street
SPRINGFIELD, H. Laurence Foster, 458 Bridge Street

**Michigan**
DETROIT, A. L. Oppenheimer, 2211 Woodward Avenue
GRAND RAPIDS, Grand Rapids Screen Co., Murray Building
KALAMAZOO, Equipment Service Co., 1506 American National Bank Bldg.
SAGINAW, Koehler Brothers, 208 So. Water Street

**Minnesota**
DULUTH, H. D. Bullard, 410 Builders Building
MINNEAPOLIS, Geo. T. Warner, 126 So. Eighth Street

**Mississippi**
JACKSON, Clark Bldg. Material Co., 119 Roach Street

**Missouri**
ST. LOUIS, F. A. Cammann Bldrs. Service, Suite 927 Century Building
SPRINGFIELD, Kennedy Brick & Steel Co., 412 So. Jefferson Avenue

**Montana**
BOZEMAN, F. I. Powers

**Nebraska**
OMAHA, Lumberman's Brick & Supply Co., 1214 Farnam Street

**New Mexico**
ALBUQUERQUE, A. C. Weigerding, P. O. Box 173

**New York**
ALBANY, Austin F. Loucks, Jr., 483 Central Avenue
BUFFALO, W. D. Shumway, 504 Crosby Building
NEW YORK, A. R. Nelson, 101 Park Avenue
ROCHESTER, S. A. Spencer, 135 Spring Street
SYRACUSE, Thomas M. Agan, 205 Harrison Street

**North Carolina**
ASHEVILLE, Dave Steel Co.
CHARLOTTE, A. L. Simpson, P. O. Box 1672
GREENSBORO, Carolina Steel & Iron Co.

**Ohio**
CINCINNATI, Al Levinson Co., Times Star Tower, Eighth and Broadway
CLEVELAND, W. C. Pfleider, Inc., Swetland Building
COLUMBUS, B. M. Freeman, Atlas Building, 8 E. Long Street
DAYTON, Frank Kemper, 653 Reibold Building
LIMA, Bldg. Accessories Co., 311 W. High Street
TOLEDO, Spencer Comstock, Security Bank Building

**Oklahoma**
OKLAHOMA CITY, J. B. Klein Iron & Fdry. Co., Box 964

**Oregon**
PORTLAND, Allen-Jenkins, 1413 N. W. Glison Street

**Pennsylvania**
ALTOONA, Altoona Pipe & Sup. Co., 2111 Beale Avenue
ERIE, Erie Concrete & Steel Sup. Co., 1301 Cranberry
HARRISBURG, C. H. Hershock, 1513 No. Cameron Street
PHILADELPHIA, Robert R. Mackay, 2206 Chestnut Street
PITTSBURGH, Scott & Haigh Co., Grant Building
SCRANTON, La Bar & Evans, 711 Linden Street

**South Carolina**
COLUMBIA, C. W. Turner, 1321 Pendleton Avenue
CHARLESTON, Carolina Supplies & Cement Co., Chappel and Washington Streets
GREENVILLE, W. Lindsay Smith, Allen Building

**Tennessee**
CHATTANOOGA, Nixon-Hasselle Co., 13th and Carter Streets
KNOXVILLE, R. G. Jeffries, P.O. Box 2023, 409 W. Clinch Avenue
NASHVILLE, Englert Eng. Co., 120 Third Avenue, So.

**Texas**
ABILENE, Abilene Brick Co., P. O. Box 241, 910 Hickory Street
DALLAS, J. L. O'Hearn Co., 630 Wilson Building
EL PASO, Neff-Stiles Co.
HOUSTON, Robert Voightlander, 1612 Miller Street
SAN ANTONIO, John W. Phillips Co., Builders Exchange

**Utah**
SALT LAKE CITY, Steel Engineers Company, 1526 S. W. Temple

**Virginia**
RICHMOND, R. Massie Nolting, 1103 E. Main Street, Room 431
ROANOKE, H. C. Baker Co., Inc., 29 Franklin Road

**Washington**
SEATTLE, Arthur A. Dally, 332 Pioneer Building
SPOKANE, Building Supplies Inc., W. 1310 Ide Avenue

**West Virginia**
BLUEFIELD, J. W. Johnson, Box 719
CHARLESTON, Fireproof Prod. Co., 216 Professional Building

**Wisconsin**
GREEN BAY, Contractors Supply Co., Bridge and Pearl Streets
MILWAUKEE, Wauwatosa Fuel & Supply Co., 7700 Harwood Avenue

*Lawson Milwaukee Spring Hinges, Lavatory Hardware, Builder's Hardware and Riteway Garment Fixtures—Write for detailed catalogue.*

For our pages on Shower Compartments and Builder's Hardware, see File Index

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# PORCELAIN PRODUCTS COMPANY

Lustron Porcelain Enameled Enclosures

1425 South 55th Court, CICERO, ILLINOIS

Representatives in All PRINCIPAL CITIES ... SEE LOCAL TELEPHONE DIRECTORY

---

Lustron was developed to meet the insistent demand for vastly improved construction in porcelain enameled toilet enclosures. Here is a building material that has the lustrous surface quality of beautifully colored glass combined with the rugged strength of steel and the solid massiveness of marble. Lustron partitions, doors, stiles and wall panels are of special enameling steel with a veneered backing of insulation board which has been applied to the base metal under pressure of approximately 150 pounds per square inch. This construction provides a degree of solidity equal to that of heavy marble. Being porcelain enameled Lustron is unaffected by either temperature or humidity. Being versatile in color and color combinations, Lustron can be in perfect harmony with floors, walls, or other appointments such as lavatory fixtures. Lustron will not rust, discolor, fade or scratch. It is non-porous, sanitary and as easy to clean as a china plate.



**Typical Commercial Installation of Lustron Enclosures**

Lustron is the original *all-porcelain-enameled* enclosure. Doors, stiles, partitions, head-rails, base strips, — *everything* is finished in durable porcelain enamel. That means Lustron affords wear-resisting porcelain where the most wear occurs. This is such an appreciated feature that for many modernization projects Lustron porcelain enameled doors are bought to replace old obsolete material.

## LUSTRON TOILET ENCLOSURES

The two pre-requisites of easy maintenance and durability for all washroom facilities are native characteristics with Lustron. Mischievous children with chalk, the Moon Mullins type of man with a pencil, or the maliciously inclined with a fountain pen — *all* are impotent to make a lasting impression on Lustron. One stroke of a damp cloth instantly restores the surface of Lustron to its original gleaming cleanliness.

Lustron's scientifically correct construction features afford unusually rugged durability. Neither the thoughtless slamming of doors nor the heavy mop-pails of careless charwomen are enemies to Lustron. Even the athletically inclined messenger boys can chin themselves on Lustron doors or head-rails without damage. A sample of Lustron and a list of standard colors and color combinations will be sent at your request.



**At Left:**
**Lustron is impervious to indelible impression. A damp cloth instantly erases all marks.**

**At Right:**
**Lustron toilet enclosures are built with "extra" strength.**














## LUSTRON DE LUXE ENCLOSURES

With Lustron De Luxe enclosures property owners can make rest rooms one of the outstanding features of their buildings. They are available in a wide variety of color combinations, ranging from solid masses of color, with or without striping, to the most delicate of pastel shades. In Lustron it is readily possible to individualize the toilet enclosures for the discriminating property owner. Insignias, emblems, trade-marks or coats-of-arms can be reproduced in porcelain enamel and fused right into each door. Reproduced above are typical designs which can be put into the glass-hard, fadeless porcelain enamel. This method of individualizing toilet compartments is particularly appealing to the exclusive hotel, the large chains of commercial hotels, country clubs, athletic clubs, large railway terminals and the finer office buildings. Lustron's flexibility and individualization makes for ready sales and becomes a point of permanent satisfaction for the client.

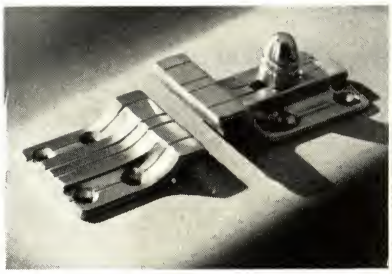
## LUSTRON STANDARD ENCLOSURES

The Standard model of Lustron enclosures shown on the opposite page is available in the following colors: all white, ivory, pastel green or combination ivory interior and pastel green exterior.

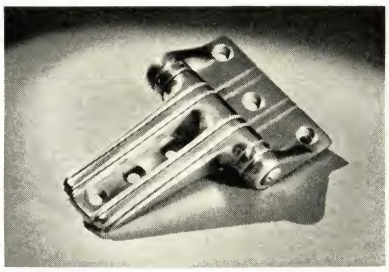
The same desirable construction features used in the de luxe enclosures are incorporated in the standard model. The standard model is particularly suited for industrial installations not requiring special color treatment. A table listing standard sizes for Lustron enclosures is also shown on the next page.

## LUSTRON HARDWARE

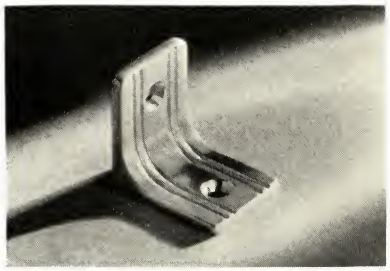
The modern hardware shown below was designed to harmonize with the trim, clean lines of Lustron Enclosures. It is made with white bronze chrome finish and eliminates the necessity of bolts or cap nuts on stall exteriors.



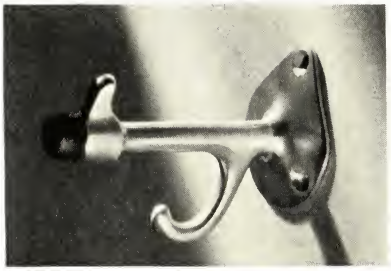
3701 — Latch
3702 — Strike



3703 — Hinge



3704 — Angle



3705 — Combination
Coat Hanger and Doorstop



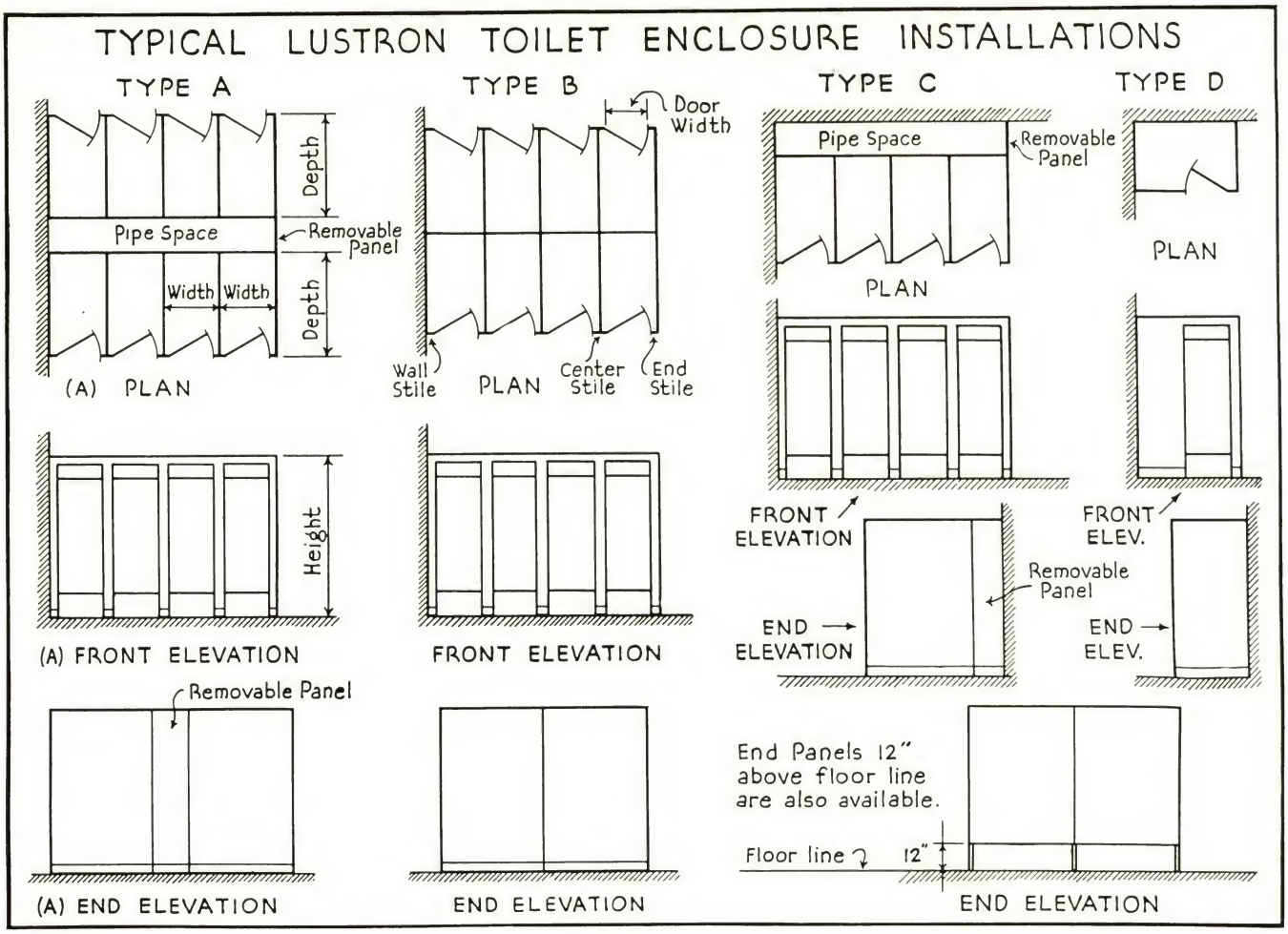
## LUSTRON STANDARD ENCLOSURES

SIZES FOR STANDARD LUSTRON ENCLOSURES

| WIDTH* | DEPTH | DIVIDING PARTITION HEIGHT | DOOR SIZE | CENTER STILE† | END STILE† | WALL STILE† | END PARTITION† |
|---|---|---|---|---|---|---|---|
| 2′–6″ | 4′–6″ | 5′–0″ | 2′ x 5′ | 6″ x 7′ | 3⅞″ x 7′ | 3″ x 7′ | 4′ 6″ x 7′ |
| 2′–6″ | 5′–0″ | 5′–0″ | 2′ x 5′ | 6″ x 7′ | 3⅞″ x 7′ | 3″ x 7′ | 5′ x 7′ |
| 2′–8″ | 4′–6″ | 5′–0″ | 2′ x 5′ | 8″ x 7′ | 4⅞″ x 7′ | 4″ x 7′ | 4′ 6″ x 7′ |
| 2′–8″ | 5′–0″ | 5′–0″ | 2′ x 5′ | 8″ x 7′ | 4⅞″ x 7′ | 4″ x 7′ | 5′ x 7′ |
| 2′–10″ | 4′–6″ | 5′–0″ | 2′ 2″ x 5′ | 8″ x 7′ | 4⅞″ x 7′ | 4″ x 7′ | 5′ x 7′ |
| 2′–12″ | 5′–0″ | 5′–0″ | 2′ 2″ x 5′ | 10″ x 7′ | 5⅞″ x 7′ | 5″ x 7′ | 5′ x 7′ |

*Center to center of partitions except end partitions.

†Sizes shown include 4″ headrail and 4″ base.




# SPECIFICATIONS FOR LUSTRON TOILET ENCLOSURES

**The metal partitions and doors for toilet compartments are to be furnished by the Porcelain Products Company, Cicero, Illinois.**

### Dividing Partitions

The dividing partitions shall be constructed of two flanged porcelain panels veneered under pressure to a ½" insulation board core, making a double faced partition of ⅝" thickness overall.

### End Partitions

The end partitions shall be constructed of two flanged porcelain panels veneered under pressure to a ¾" insulation board core, reinforced with ¾" poplar plywood. making a double faced partition of ⅞" thickness overall.

### Stiles

The end stiles shall be constructed of two flanged porcelain panels veneered under pressure to a 1" poplar plywood core, making a double faced panel of 1⅛" thickness overall. These stiles shall extend from the top of the head-rail to the floor. All joints shall be caulked with an approved caulking compound.

### Doors

The doors shall be constructed of two flanged porcelain panels veneered under pressure to a 1" insulation board core, reinforced with 1" poplar plywood, making a double faced panel of 1⅛" thickness overall. All joints shall be caulked with an approved caulking compound.

### Head-Rails

The head-rails shall be constructed of a flanged porcelain panel, making a double faced panel of 1⅝" thickness overall. These head-rails shall extend across the head of the door-opening resting on top of the stiles.

### Hardware

All hardware and fittings shall be of white bronze chrome finish with no exposed bolts or cap nuts on the exterior of the stalls. Two heavy hinges shall be installed on each door. The hinges shall have a spring arrangement to hold the door open inward or closed when stall is vacant.

### Colors

The colors may be as selected to harmonize with fixtures or decorations. The interior and exterior may be of different color, if desired.

# *Sanymetal* TOILET ROOM ENVIRONMENTS



*Also*

**ENVIRONMENTS**

*for* **SHOWER ROOMS**

**WASH ROOMS** *and*

**LOCKER ROOMS**

★

**CATALOG No. 74**

Craftsmanship in Metal

The Sanymetal Symbol

**THE SANYMETAL PRODUCTS CO., INC.**

CLEVELAND OHIO



View of the Sanymetal Engineering Department.

# A SPECIALIZED *gained from over 40,000*

In common with other architects, perhaps you too have long wanted to lift toilet room environments in the buildings you create to a plane in harmony with other modern exterior and interior appointments. The opportunity to improve toilet room environments has now unfolded. It is now possible for you to achieve as new and original treatment in toilet room environments as for other interiors. Authoritative suggestions are now available from a source most willing and eager to develop new ideas and suggestions.

For over twenty years now, Sanymetal has been receiving inquiries by the hundreds from architects, engineers and contractors regarding the suitability of this or that type of toilet partition and this or that suggested arrangement or layout for toilet rooms, shower rooms and locker rooms. Naturally, in responding to these requests, Sanymetal's engineers and craftsmen were the first to detect the need for and apply successfully the merits of porcelain enamelled metal in the manufacture of toilet partitions and wainscot panels in a manner which is promoting a renaissance in toilet room environment.

The versatility of Sanymetal engineers and craftsmen is exemplified in the design and construction of a wide range of types of Sanymetal toilet and shower room partitions. Irritating restrictions imposed by price limitations have been alleviated, permitting architects and engineers a wide scope in the exercise of their creative ability in designing modern toilet room environments. The range of types of Sanymetal partitions for toilet rooms, shower rooms and locker rooms presented in these pages is visible evidence of how Sanymetal engineers and craftsmen responded to the many ideas which have been presented by architects and engineers throughout the years. Constantly on the alert to detect new ideas and loyal to a policy of continual development and improvement of toilet room environments, these men, naturally, accept every opportunity to work out new ideas. In so doing, Sanymetal's engineering and general business policy is exemplified. Consequently, Sanymetal has been privi-

## A TECHNICAL SERVICE AVAILABLE TO ARCHITECTS AND ENGINEERS

Out of an experience extending over twenty years during which Sanymetal has participated in over 40,000 toilet room installations, Sanymetal offers a technical service to architects and engineers for the purpose of laying out difficult toilet room installations for every type of building.

This service is confined to the technical phases of a toilet room installation and in no way encroaches upon the exercise of creative talent by architects in developing modernity and elegance in toilet room environment.

The purpose of this service is to facilitate the laying out of installations. From thousands of blueprints on file this phase of Sanymetal service may be used to reduce time. Requests for technical service should state the size of the toilet room and the approximate number of compartments contemplated. If possible, also state whether or not installation will be back-to-wall without vent, back-to-wall with vent, back-to-back without vent or back-to-back with vent.

A commendable procedure is to consult the Sanymetal Representative in your locality. If that is not possible, then write direct to the factory.

## A BOOKLET OF MODERN TOILET ROOM ENVIRONMENTS

A special twelve-page booklet illustrating Sanymetal Porcena Toilet Partition and wainscot panels applied in typical modern rooms is available upon request. This booklet is printed in three colors and contains reproductions of detail drawings with explanations concerning the suitability of Porcena Toilet Partitions and wainscot panels. Write for your copy.

Sanymetal

**ENGINEERING SERVICE IS AVAILABLE THROUGH ANY OF THE BRANCH OFFICES**

# ENGINEERING SERVICE

## *toilet room installations is ready to serve you*

ledged to contribute to the building industry many improvements in toilet partitions. But of greatest import is the fact that this experience has unfolded to Sanymetal engineers a vision of a renaissance in toilet room environments.

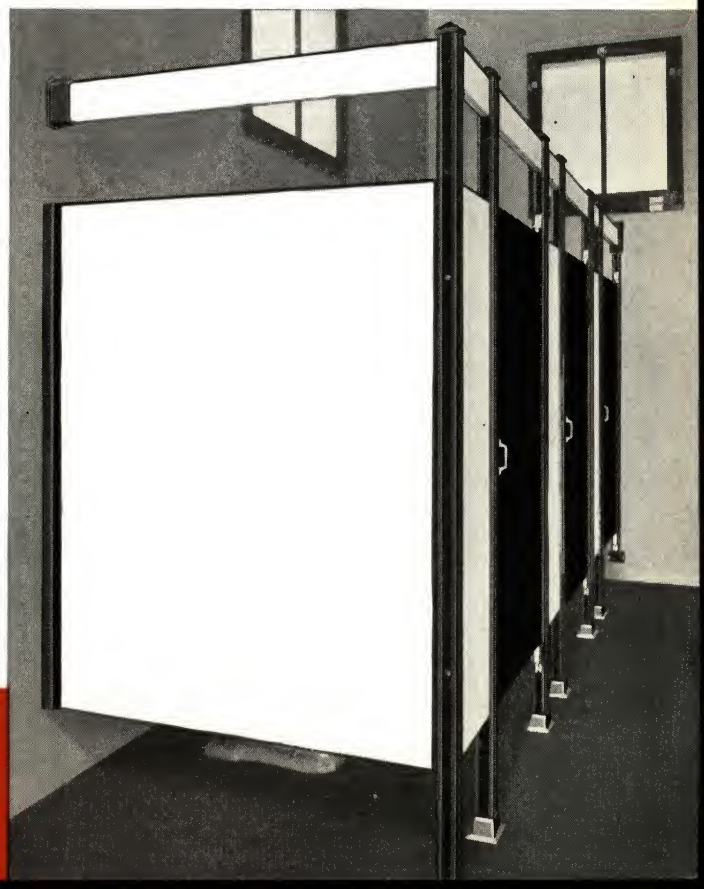
Recognition is the foundation of authority. For the recognition and opportunity to serve hundreds of architects and engineers during a period of over twenty years, Sanymetal is most grateful—grateful because these requests for service and inquiries for authoritative information encouraged Sanymetal engineers to originate and offer practical improvements that have removed restrictions to creative talent.

## THE *Renaissance* IN TOILET ROOM ENVIRONMENTS

It is an actuality. The availability and adaptability of new materials such as glass brick, new floor materials, decorative glass and mirrors is giving impetus to the modernization of toilet room environments. Outstanding among the new decorative and serviceable materials is porcelain enamelled metal out of which Sanymetal has fabricated Porcena Toilet Partitions. Thus, many heretofore discouraging restrictions to modern design and decoration have now been eliminated.

A luxury loving public, accustomed to bathrooms embodying varying degrees of modernity and elegance, expects livelier and appropriately appointed toilet room facilities wherever people congregate for work or play. The public's appreciation of modernity and elegance in exterior and interior treatment of all types of buildings has a dollar and cents value. No wonder, then, that the modernity and elegance of a toilet room environment is proving to be an effective differential in the rental of office space and winning and nurturing good will of customers and employees. Beauty, wedded to utility, has been exemplified in the bathrooms of every modern home. It is logical that this association should now be manifested in the toilet rooms of every type of building.

Architects and engineers, keen students of the public's desires, are now presented another occasion to demonstrate their creative talents. Utility is paramount. But unadorned utility no longer has a potent psychological effect. Beauty and refinement beget an enlarged appreciation for utility. An appropriate combination of beauty and utility is now realizable in the creation of toilet room environments by the use of Sanymetal Porcena Toilet Partitions.



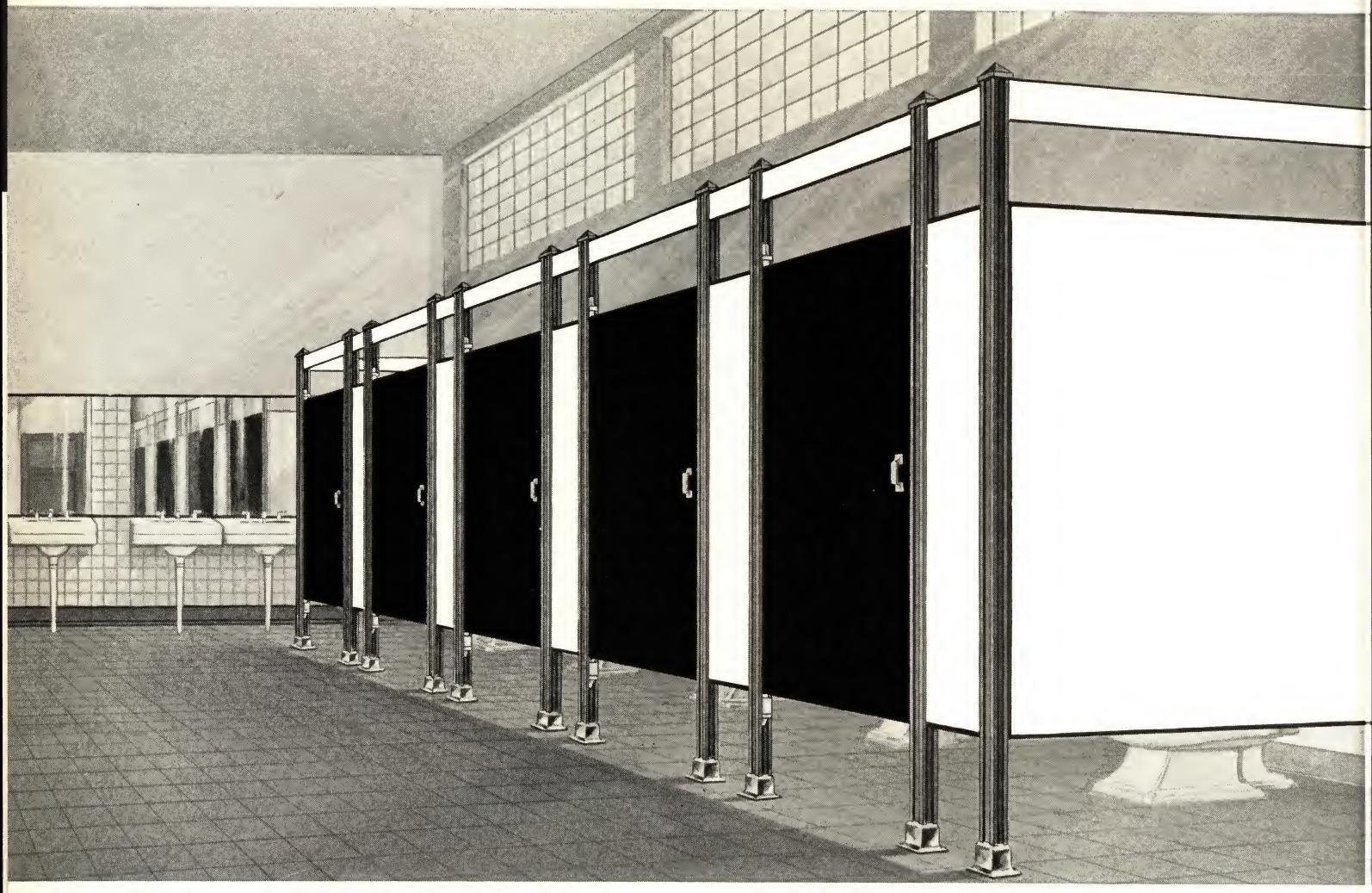
One of several three and four toilet compartment units of Porcena Toilet Partitions in employees' toilet room of a large steel company.

**LISTED ON THE BACK COVER OF THIS CATALOG**

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# Sanymetal Porcena TOILET PARTITIONS

## HELP CREATE NEW AND UNUSUAL TOILET ROOM ENVIRONMENTS



A typical illustration of Porcena Toilet Partitions installed on the basement floor of a large public building.

The influence of a toilet room environment created by the use of Porcena Toilet Partitions promotes a sense of order and a respect for finer things and encourages cleanliness. An installation of Porcena Toilet Partitions leaves no dingy dark corners, for their gleaming brightness reflects both natural and artificial light creating a livelier environment. The hard flint-like surface of porcelain enamel is moisture and rust proof and resists the corrosive action of ordinary acids. This non-porous surface absorbs no odors. Colors are permanently fast—will not fade.

Porcena Toilet Partitions consist of flush type insulated partition panels, porcelain enamelled on both sides. Strike a solid wall and you get a dull thud; strike a Porcena Toilet Partition and you will get the same identical dull thud indicating the permanence of these panels. Porcena Partition Panels are usually harmonized with doors finished in plain baked enamel in an appropriate color.

Sanymetal has successfully utilized porcelain enamelled metal during the past ten years in the manufacture of toilet partitions and is thoroughly conversant with the adaptability of this material. Sanymetal's use of porcelain enamelled metal includes the manufacture and assembly of units used in constructing and decorating all types of buildings. Sanymetal Porcena Toilet Partitions embody the ideas and results derived from this experience. A rapidly growing list of Porcena Toilet Partition installations indicates their suitability for toilet rooms in practically every type of building.

Specifications on Page 6.

*Hardware illustrated and described on Pages 18 and 19.*

# Sanymetal Porcena FEATURES

## ARE A GUARANTEE AGAINST OBSOLESCENCE

**Moisture and Rust Proof**
**Permanent Flint-Hard Finish—**
**Colors Permanently Fast**
**Porcelain Enamelling Process**
**Adds Strength**




Sanymetal Porcena Partition Panels Are Unlike All Other Toilet Partitions

### SHOCK

Porcena (Porcelain Enamelled) Partition Panels withstand shocks and hard usage without injury to their smooth, lustrous surface. Porcelain enamelled panels are good for years of service and require no refinishing or retouching.

### STRENGTH

The process by which Porcena (Porcelain Enamelled) Partition Panels are made adds strength to the natural inherent structural strength of the steel. This added strength comes from the fusing of the porcelain enamelling material with the steel. The modern method of applying porcelain enamel is such that the enamel is not easily chipped, scarred or marred in any way. The first layer is burned into the steel at approximately 1800° Fahr. This impregnates the steel with the enamel to the extent that it cannot be hammered out. Thus, the steel is permanently protected from rust or corrosion.

### SIMPLE CONSTRUCTION

Porcena Partition Panels are made of two sheets of steel porcelain enamelled on both sides with an insulating core between them and are completely sealed all around with steel sealing strips.

### CLEANLINESS

Porcena Partition Panels are impervious to odors, moisture, and ordinary acids. They are moisture proof, which means that they are proof against rust. Absorption of anything — odors, liquids, or what not — presupposes porosity. Porcelain enamel is not porous. It is flint-hard, glass-smooth. It will not absorb odors or moisture. It discourages the too common inclination to disfigure toilet room equipment with degrading scribble.

### BEAUTY

The beauty of Porcena Partition Panels cannot be destroyed. The surface is obstinately resistant to scratching and marring because porcelain enamel combines the hardness of glass with the strength of steel. Porcelain enamel retains its original luster and can be scoured and scrubbed both vigorously and frequently and still look as fresh as the day it came from the factory.

### ENVIRONMENTS

Porcena (Porcelain Enamelled) Partition Panels have a hard, glass-like permanent finish. This finish never rusts, tarnishes, nor changes color. Colors are permanently fast — will not fade. This finish has a pearly luster which gives to a toilet compartment roominess and a much greater degree of light than is available from regular metal partition panels finished in plain baked enamel.

Specifications on Page 6.

*Hardware illustrated and described on Pages 18 and 19.*

Porcena (Porcelain Enamelled) Partition Panels should never be confused with ordinary single sheet steel panels. Porcelain enamel should never be confused with paint enamel or lacquer finishes. Porcelain enamel is fused onto iron at such high temperatures that the minerals practically become a part of the metal. The fusing of porcelain enamel with the steel actually adds strength to the steel and gives it longer life. Porcena Partition Panels are known as flush type insulated panels. They are approximately an inch thick. Note the cross-section illustration. At Point 1: A heavy gauge porcelain enamelled sheet of steel. At Point 2: A heavy gauge porcelain enamelled sheet of steel. At Point 3: Between these two sheets of steel, a dense fiber core. Thus, these partition panels consist of two sheets of 16-gauge steel, each covered with three layers of porcelain (glass); a total of six layers of porcelain enamel and a dense ¾-inch insulating core. These panels will withstand as much of a blow without damage as a marble or slate partition. This construction was originated by Sanymetal Engineers.

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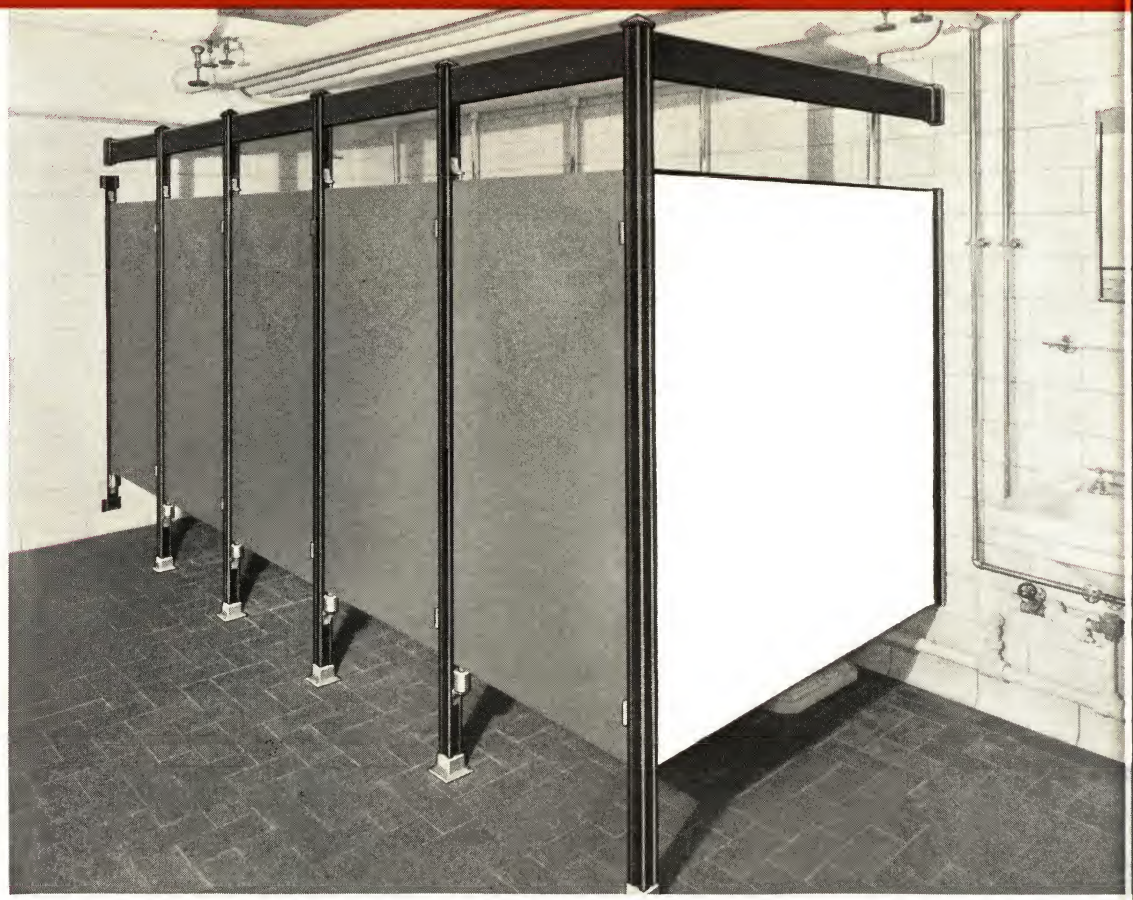
# SPECIFICATIONS

# Sanymetal Porcena TOILET PARTITIONS

● Porcena Toilet Partitions are suitable for all toilet partition installations in every type of building. They are often utilized for installations of shower stalls in clubs, gymnasiums and other establishments. Other adaptations constantly occur and architects are invited to consult with a Sanymetal Representative for more complete information.

## PARTITION PANELS

Partition panels are to be made one inch thick of two sheets of 16-gauge porcelain enamelling steel. Panel sheets are to be given a heavy finish of VITREOUS PORCELAIN and assembled over and cemented under pressure to a ⅞-inch thick rigid sound deadening fiber core. The edges of porcelain enamelled plates are to be formed and sealed together with a continuous drawn locking strip of rust-protected steel with baked paint enamel finish.



Striking installation of Porcena Toilet Partitions in Johns Hopkins Faculty Club, Baltimore, Maryland. Doors are brick red, partition panels are white Porcena, partition posts are black.

## POSTS

Posts of partitions are of rust-protected steel and to be two inch square hollow drawn interlocked construction of not less than .040 stock, panelled on four sides, forming recesses into which VITREOUS PORCELAIN panels of partitions are to be set and securely fastened. Note to Architects: To insure an absolutely rust-proof installation, posts can be specified of stainless steel, monel metal, or aluminum, to same dimensions and gauges of stock as given above. State whether posts are to be natural metal finish or baked paint enamel finish.

## HEADRAIL

PORCENA partitions when set in place shall be securely braced with one inch wide by four inches high PORCELAIN ENAMELLED overhead panel bracing, extending between posts, fitted into post recess, held in position and alignment by intercontinuous channel screwed to posts.

## DOORS

Doors are to be made one inch thick of two sheets of No. 20-gauge steel, full cold rolled stretcher leveled furniture finish stock, assembled over and cemented under pressure to a ⅞ inch thick rigid sound deadening fiber core. The two face plates are to have formed edges and sealed together with continuous drawn locking strips. Doors are finished in baked paint enamel.

## PARTITION FITTINGS

Top Post Cap: The top of post shall be capped with a neat aluminum casting, enamelled to match partition post.

Floor Fittings: The front post of partitions is to be securely fastened to the floor with two inch high wrought brass chrome plated shoe attached to floor with two No. 12 x 1½ inch wood screws in lead or fiber expansion shields.

Wall Fittings: Partitions are fastened to back wall with continuous boxed "U" channel. Wall channel to be baked enamel finish over rust-protected .040 gauge steel.

## DOOR HARDWARE

Doors shall be equipped with brass chromeplated encased gravity hinges with concealed ball bearing rollers. Hinges are to be adjustable for inswing, outswing, or double acting doors. Each door shall be equipped with one cast pull, stops, coat hook and slide bar latch, chrome plated over brass or white metal. All door hardware to be attached with brass chrome plated through sleeve bolts with theftproof heads.

## FINISH

All partition panels and head rail to be white VITREOUS PORCELAIN with ¼ inch black border. Posts, wall channels, and doors to be three-coat baked on paint enamel.

*Hardware illustrated and described on Pages 18 and 19.*

# Sanymetal Porcena WAINSCOT PANELS

## COMBINE UNUSUAL DECORATIVE EFFECTS WITH DESIRABLE SANITARY ADVANTAGES

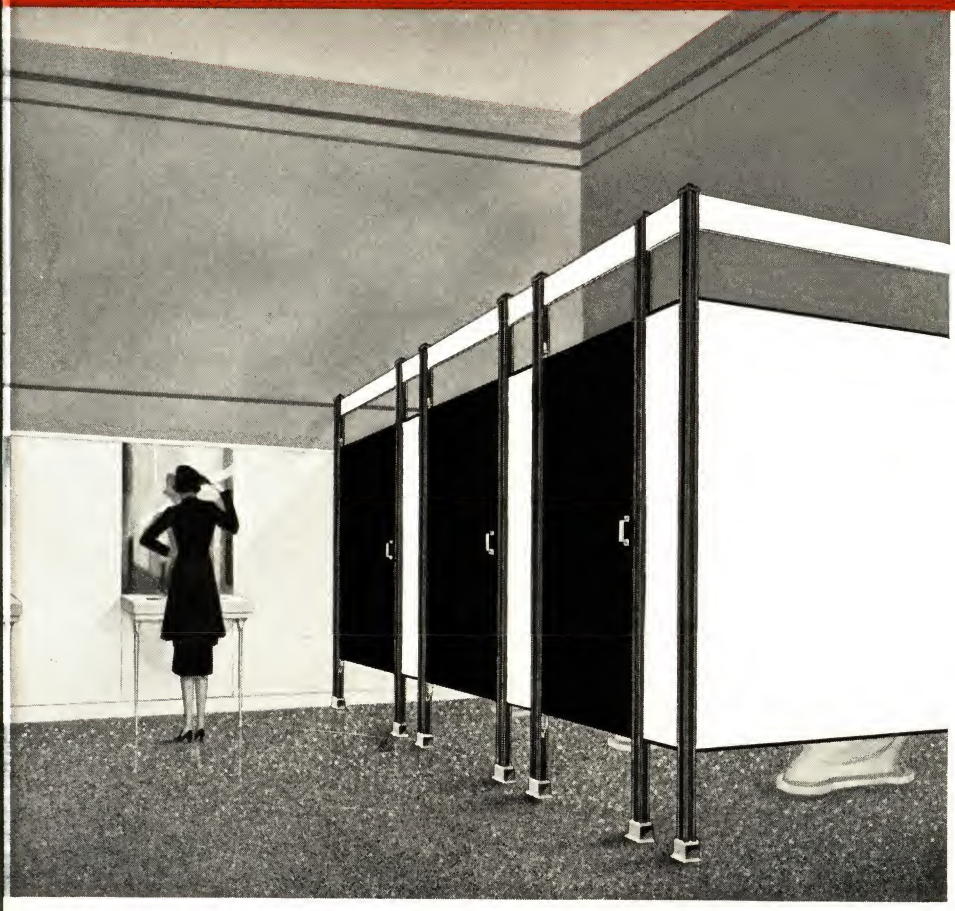


Illustration shows how present toilet room facilities can be modernized — the toilet room of a department store, showing installation of Porcena Wainscot Panels and Porcena Toilet Partitions.

In corridors, toilet rooms, washrooms, shower rooms and in kitchens; in fact, in an almost limitless number of environments, the installation of Porcena Wainscot Panels will improve the environment from the standpoint of cleanliness, brightness and orderliness while protecting wall surfaces.

Sanymetal Porcena Wainscot Panels are fabricated in various dimensions making them suitable and adaptable for installation in every type of environment where wall protection and decoration are required or desired.

Sanymetal Porcena Wainscot Panels definitely remove the necessity of attempting to work out a toilet room environment with two or more different materials.

Porcena Wainscot Panels are finished identically like Porcena Toilet Partition Panels. They possess the same outstanding characteristics of Porcena Toilet Partitions that are presented on Page 5.

Unusual decorative effects are obtainable through the combination of Porcena Wainscot Panels and Porcena Toilet Partitions. For instance, Porcena Wainscot Panels may be used to protect and decorate the entire wall surface of a toilet room, wash room, shower room, etc., or only that portion of the room for which protection and decoration may be desired.

Porcena Wainscot Panels are made to standard specifications which are available only through authorized Sanymetal Representatives. Their finish is obstinately resistant to scratching and marring because porcelain enamel combines the hardness of glass with the strength of steel. The beauty of the gleaming surfaces of these panels cannot be destroyed. Porcelain enamel retains its original luster and can be scoured and scrubbed both vigorously and frequently and still look as fresh as the day it came from the factory. No other wall protective or decorative material is so easily cleaned and renewed as Porcena Wainscot Panels.

Complete presentation of exclusive qualities of Porcena Wainscot Panels given under captions: shock; strength; cleanliness; beauty on Page 5.

## SPECIFICATIONS

### PORCENA WAINSCOT PANELS

Due to a wide range of panel dimensions that it is possible to fabricate in manufacturing Porcena Wainscot Panels, it is advisable for architects and contractors to consult with a Sanymetal Representative or write factory concerning the application of Porcena Wainscot Panels. Sanymetal desires to share with architects and contractors the experiences gained in making a constantly increasing number of installations of Porcena Wainscot Panels.

The intent in presenting the following information is to provide a guide for specifying Porcena Wainscot for every type of construction. This information is not to be considered as a formal specification. Sanymetal Representatives are qualified to work out specifications for each type of installation.

All wainscot as shown on plans shall be Sanymetal PORCENA (porcelain enamel). Panels to be constructed of 16-gauge steel and insulated with one inch thick rigid fiber core backing. Lines of division may run horizontal or perpendicular as desired. Inside and outside corners shall be factory made and enamelled after forming.

For toilet rooms it is recommended that a terrazzo base be provided with 1¼-inch ledge on which wainscot panelling is to be set.

Wainscot panels shall have lapped joints. When assembled all joints should be sealed with plastic cement and troweled smooth.

# Sanymetal FLUSH TYPE TOILET PARTITIONS

## SUITABLE FOR DEVELOPING MODERN ENVIRONMENTS

This type of toilet partition is firmly established as a standard. Sanymetal Flush Type Partitions and Doors are particularly suitable for installation in all types of buildings where the effect desired must be comparable to that ordinarily available only with more expensive materials. Sanymetal Flush Type Partitions and Doors harmonize and blend well with the effects produced by materials commonly used for walls, ceilings, and floors.

These Sanymetal Flush Type Partitions and Doors are especially suited not only for toilets and lavatories but for dressing rooms and ward screens in all types of buildings. They embody the latest structural improvements and present outstanding sanitary features combined with durability and resistance to fire.

## MATERIALS

Sanymetal Flush Type Partitions and Doors may be made up from the following materials: full cold rolled stretcher leveled furniture finish steel; stainless steel, and aluminum. This choice of materials permits the achievement of practically any desired appearance or artistic effect.

## CONSTRUCTION FEATURES

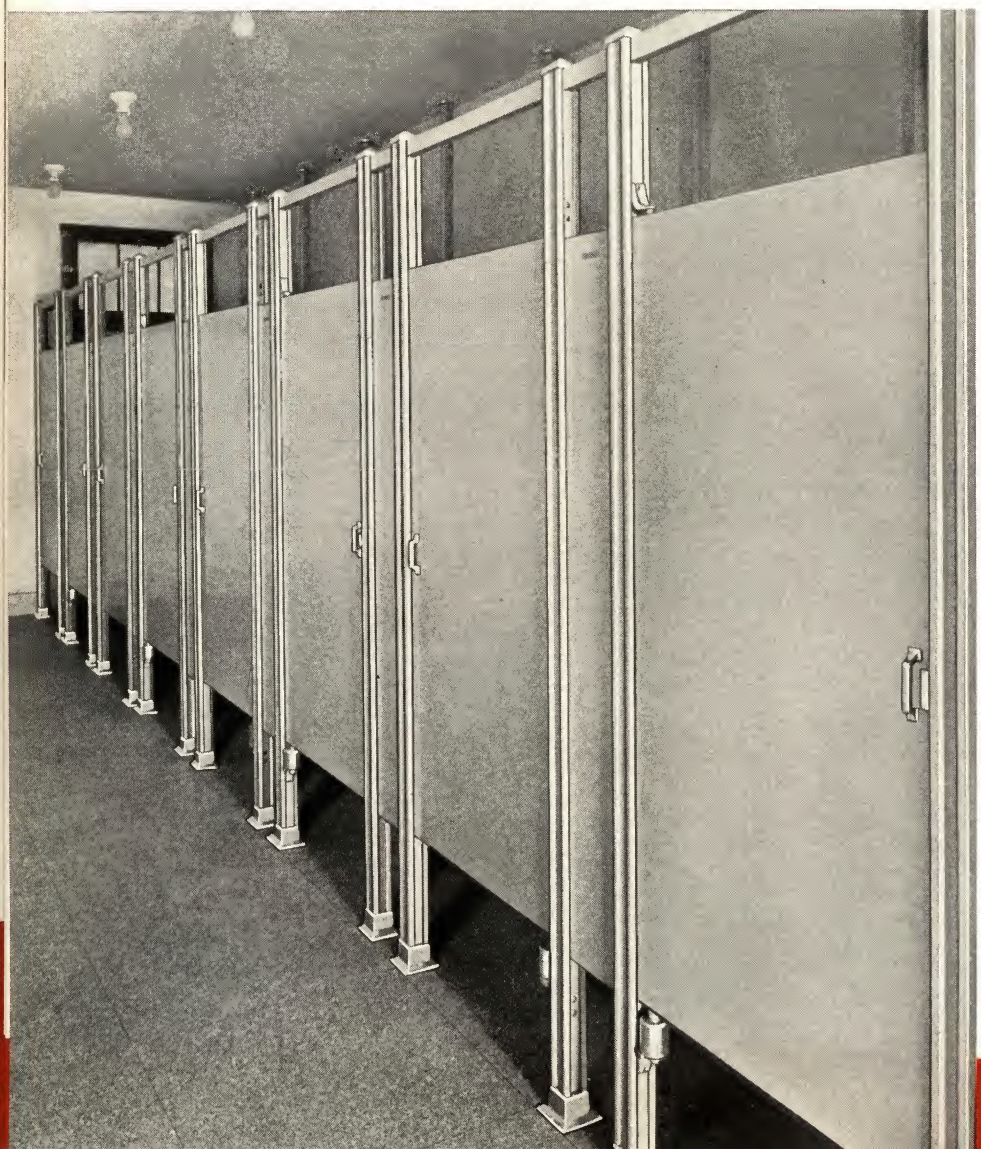
Sanymetal Flush Type Partitions and Doors are fabricated in a combination of pleasing rectangular designs which allow for making up the following standard size compartments:

Widths: 30, 32, 33, 34, and 36 inches.

Depths: 36, 42, 48, 54, and 60 inches.

Heights of Panels and Doors: 54 and 60 inches; always installed 12 inches above floor so that heights of Panels and Doors, measuring from floor surface to top of Panel or Door, are 66 inches and 72 inches respectively. Headrail usually installed 12 inches above top of Panels and Doors making total over-all heights, floor surface to headrail, 78 inches and 84 inches respectively.

Partitions and doors are fabricated with double sheets of steel spaced one inch apart filled between and glued under pressure to a sound-deadening insulating fiber core with edges of panels joined, bound and sealed with a continuous drawn locking strip, thus providing rigid one inch thick partition panels and doors with flush surfaces. This method insures uniformity, rigidity and maximum strength along the edges and at every point.



Partition panels are set into recesses of panelled posts which method conceals the joints and connections and reinforces materially both the partition panel and the post upright making an unusually strong and rigid installation with all cross-sections true and uniform in profile.

Sanymetal Flush Type Partitions and Doors are finished (unless made of materials which require no finish) with a special rust-resisting baked-on prime coat over which are applied baked-on enamel or lacquer finishing coats in a variety of colors from which to select.

## BLUEPRINTS OF TYPICAL INSTALLATIONS AVAILABLE TO ARCHITECTS

With over twenty years' experience and 40,000 installations as a background, Sanymetal is well-equipped to offer architects blueprints of a variety of typical installations. These serve to facilitate the laying out of installations and may be used to reduce time. Requests for blueprints should state size of room and approximate number of compartments contemplated. If possible also state whether or not installation will be back-to-wall without vent, back-to-wall with vent, back-to-back without vent, or back-to-back with vent.

*Hardware illustrated and described on Pages 18 and 19.*

One end of an installation of Sanymetal Flush Type Toilet Partitions at Euclid Beach Tourist Camp, Cleveland, Ohio.

# SPECIFICATIONS

## SANYMETAL FLUSH TYPE TOILET PARTITIONS

Note: Illustrations and description of features of Sanymetal Flush Panel Type Toilet Partitions on Page 12.

The metal partitions and doors for toilet, and dressing compartments are to be Flush Panel Type, as made by The Sanymetal Products Co., Inc., of Cleveland, Ohio.

## DOORS AND PANELS

Doors and panels of partitions are to be made 1 inch thick of two sheets of full cold rolled stretcher leveled full finished steel, assembled over and cemented under pressure to a ⅞ inch thick sound deadening core. Panels less than 54 inches deep are to be made of not lighter than 22-gauge steel. The two face plates are to have formed edges and sealed together with continuous drawn locking strips.

## POSTS

Posts of partitions are to be 2 inch square hollow drawn interlocked construction of not less than .040 stock, panelled on four sides forming recesses into which panels of partitions are to be set and securely fastened.

## HEADRAIL BRACE

Partitions when set in place shall be securely braced with continuous 1 inch by 1½ inch drawn steel tubular overhead bracing, extending through the top of posts which are notched to receive headrail. Post and headrail shall be drilled and held in position with metal screw.

## PARTITION FITTINGS

Top Post Cap: The top of post shall be capped with a neat casting, painted same as partitions and headrail.

Floor Fittings: The front posts of partitions to be securely fastened to floors with 2 inch high wrought brass shoes to be furnished nickel plated (specify chrome plated if preferred); shoes to be securely fastened to floors with two No. 12 x 1½-inch wood screws into lead or fiber expansion shields.

Wall Fittings: Partitions may be fastened to back walls with continuous boxed U channels (or if preferred back of partition may be set approximately 1 inch from back wall with cast or wrought steel knee braces painted same as partitions).

## DOOR HARDWARE

Doors shall be equipped with brass gravity hinges with concealed ball bearing rollers. Hinges are to be adjustable for inswinging, outswinging, or double acting doors. Each door shall be equipped with one cast pull, stops, coat hook and slide bar latch of white metal chrome plated. All door hardware to be attached with brass chrome plated through sleeve bolts with theftproof heads.

## FINISH

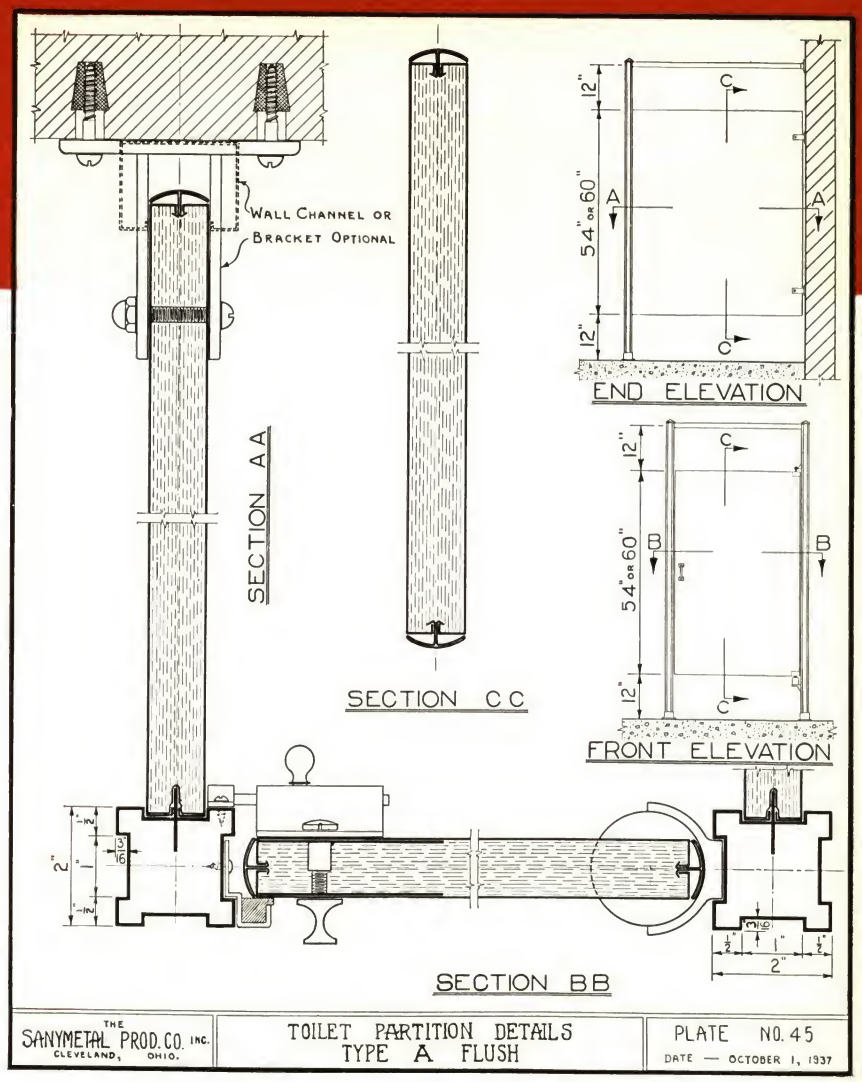
All metal to be thoroughly sanded, washed with benzine, filled and primed with sublimed blue lead baked on. If enamel finish spray on and bake separately two additional coats olive green or battleship grey baking enamel. Finishes shown on Pages 22 and 23.

## INSTALLATION AND OPERATION

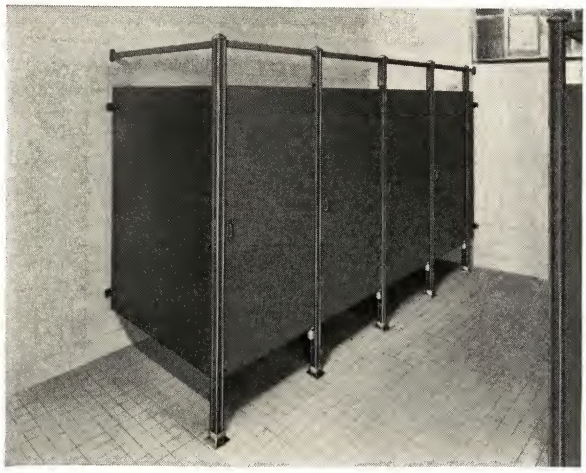
Doors swing on Sanymetal encased full-floating ball bearing roller gravity hinges adjustable to any door swing or position, noiseless, easy action; solid brass; nickel or chromium plated. See Page 19.

Each post is set in sanitary floor shoe which is adjustable to uneven floors, solid brass or aluminum, nickel or chromium plated. See Pages 18 and 19.

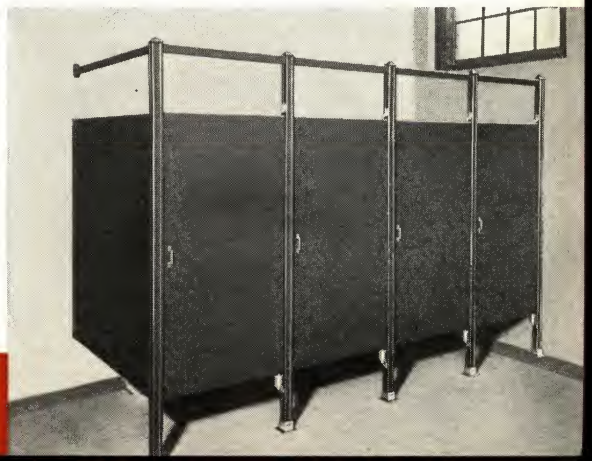
An outstanding feature is the headrail construction. Rectangular headrail extends through sunken panel section of post and is fastened directly and securely to the post with metal screw. Loose connections at this point positively prevented. Cap on top of post is only to finish off the appearance.




THE SANYMETAL PROD. CO. INC. CLEVELAND, OHIO. | TOILET PARTITION DETAILS TYPE A FLUSH | PLATE NO. 45 DATE — OCTOBER 1, 1937



Installation of Sanymetal Flush Type Toilet Partitions at Yankee Stadium, New York. View shows only one of several batteries installed like one illustrated.



Typical of the thousands of Sanymetal Toilet Partition installations in schools. This one at St. Thomas School, Baltimore, Md.

# Sanymetal FULL PANEL TYPE TOILET PARTITIONS

## THE TYPE TO USE WHEREVER A RECTANGULAR DESIGN MAY DOMINATE THE ENVIRONMENT

Sanymetal Full Panel Type Partitions are actually full panel. Each panel is completely surrounded by hollow drawn and interlocked stiles and rails, whereas usual practice utilizes post into which panel fits, to frame one side of panel. Sanymetal Full Panel Type construction is more rigid and substantial and able to withstand rough service.

Sanymetal Full Panel Type Toilet Partitions find great favor where long established standards of uniformity in the use of such materials must be complied with or where conservatism and other limiting conditions must be met by the installation of suitable partitions of recognized value and dependability.

Sanymetal Full Panel Type Toilet Partitions and Doors embody modern features of design and fit well into any environment where together with adjacent materials they form a complete environment in which no one thing predominates.

## MATERIALS

Sanymetal Full Panel Type Toilet Partitions and Doors may be made up from the following materials: full cold rolled stretcher leveled furniture steel; and aluminum. This choice of materials permits the achievement of practically any desired appearance or artistic effect.

## CONSTRUCTION FEATURES

Sanymetal Full Panel Type Toilet Partitions and Doors are fabricated in a combination of pleasing rectangular designs which allow for making up the following standard size compartments:

Widths: 30, 32, 33, 34 and 36 inches.
Depths: 36, 42, 48, 54 and 60 inches.

Heights of Panels and Doors: 54 to 60 inches; always installed 12 inches above floor so that heights of Panels and Doors, measuring from floor surface to top of Panel or Door, are 66 inches and 72 inches respectively. Headrail usually installed 12 inches above top of Panels and Doors making total over-all heights, floor surface to headrail, 78 inches and 84 inches respectively.

Partitions and doors are made with wide hollow drawn and interlocked stiles and rails mitred at the four corners and forced over a single sheet of steel panel. The mitred corners have continuous welds which, with the interlock type of construction used in forming the hollow drawn steel shapes, insures sealed and water tight joints and seams between the panel sheets and the stiles and rails. Dust catching ledges are reduced to a minimum without sacrificing modern, pleasing and correct architectural design and other features that characterize first class hollow metal construction.

Partition panels are set into recesses of panelled posts which method conceals the joints and connections and reinforces materially both the partition panel and the post upright, making an unusually strong and rigid installation with all cross-sections true and uniform in profile. Each partition with its integral front and rear post is a single substantial unit.

Sanymetal Full Panel Type Toilet Partitions and Doors are finished (unless made of materials which require no finish) with a special rust-resisting baked-on prime coat over which are applied baked-on enamel finishing coats in a variety of colors from which to select. Finishes on Pages 22 and 23.

*Hardware illustrated and described on Pages 18 and 19.*



Typical installation of Sanymetal Full Panel Type Toilet Partitions at The Providence Journal, Providence, Rhode Island.

## BLUEPRINTS OF TYPICAL INSTALLATIONS AVAILABLE TO ARCHITECTS

With over twenty years' experience and 40,000 installations as a background, Sanymetal is well equipped to offer to architects blueprints of a variety of typical installations. These facilitate the laying out of installations and may be used to reduce time considerably. Requests for blueprints should state size of room and approximate number of compartments contemplated. If possible also state whether or not installation will be back-to-wall with vent, back-to-wall without vent, or back-to-back with vent.

# SPECIFICATIONS

Note: Illustrations and description of features of Sanymetal Full Panel Type Toilet Partitions on Page 13.

## SANYMETAL FULL PANEL TYPE TOILET PARTITIONS

All toilet partitions and doors, entrance screens and dressing rooms are to be Sanymetal Full Panel Type as manufactured by The Sanymetal Products Company, Inc., Urbana Road, Cleveland, Ohio.

## DOORS AND PANELS

Doors and partition panels shall be furnished with matched stiles and rails on the four sides, mitred, welded and ground flush. These stiles and rails are to be drawn steel shapes of not less than .040 gauge with edges turned in and interlocked forming water tight joints and a recess into which the panel sheet is to be forced. Gauges are to be as recommended by the Bureau of Standards, U. S. Department of Commerce. Simplified practice recommendation R101-29 as follows:

In partitions 54 in. deep by 54 in. high or larger, panel sheets 16-gauge, U. S. Standard (0.0613 inch). In partitions smaller than above mentioned and doors panel sheet steel shall be 18-gauge U. S. Standard (0.0490 inch).

## POSTS

Posts of partitions are to be 2 inches square hollow drawn, interlocked construction of not less than 0.40 stock, panelled on four sides forming recesses into which front stile of partitions is to be set and securely fastened.

## HEADRAIL BRACE

Partitions when set in place shall be securely braced with continuous 1 inch by 1½ inch drawn steel tubular overhead bracing, extending through the top of posts which are notched to receive the headrail. Partition and headrail shall be drilled and held in position with metal screws.

## PARTITION FITTINGS

Top Post Cap: The top of post shall be capped with a neat aluminum casting, painted same as partitions and headrail.

Floor Fittings: The front posts of partitions are to be securely fastened to floors with 2 inch high wrought brass shoes to be furnished nickel plated (specify chrome plated if preferred); shoes to be securely fastened to floors with two No. 12 x 1½-in. wood screws into lead or fiber expansion shields.

Wall Fittings: Partitions may be fastened to backwalls with continuous boxed U channels (or if preferred back of partition may be set approximately 1 inch from back wall with cast or wrought steel knee braces painted same as partitions).

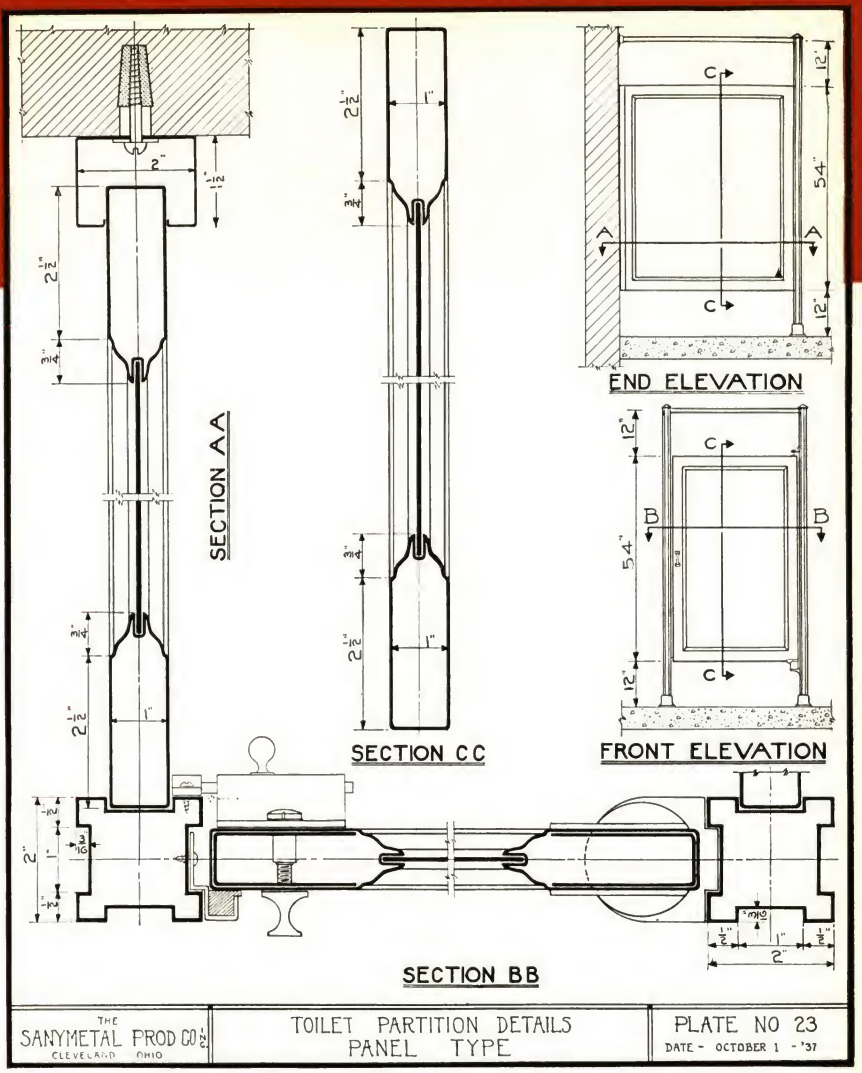
## DOOR HARDWARE

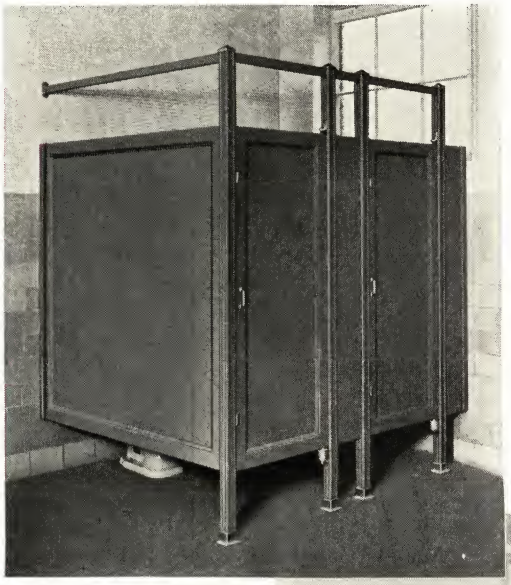
Doors shall be equipped with brass gravity hinges with concealed ball bearing rollers. Hinges are to be adjustable for inswinging, outswinging, or double acting doors. Each door shall be equipped with one cast pull, stops, coat hook, and slide bar latch of white metal chrome plated. All door hardware to be attached with brass chrome plated through sleeve bolts with theftproof heads.

## FINISH

All metal to be thoroughly sanded, washed with benzine, filled and primed with sublimed blue lead baked on. If enamel finish spray on and bake separately two additional coats olive green or battleship grey enamel. Finishes shown on Pages 22 and 23.

*Hardware illustrated and described on pages 18 and 19.*



Another typical Sanymetal Toilet Partition installation in schools. This is one of several Sanymetal Full Panel Type Toilet Partition installations in the Capitol Hill Junior High School, Oklahoma City, Okla.

Sanymetal Full Panel Type Partitions in the Montgomery Ward Company, at Hagerstown, Md.



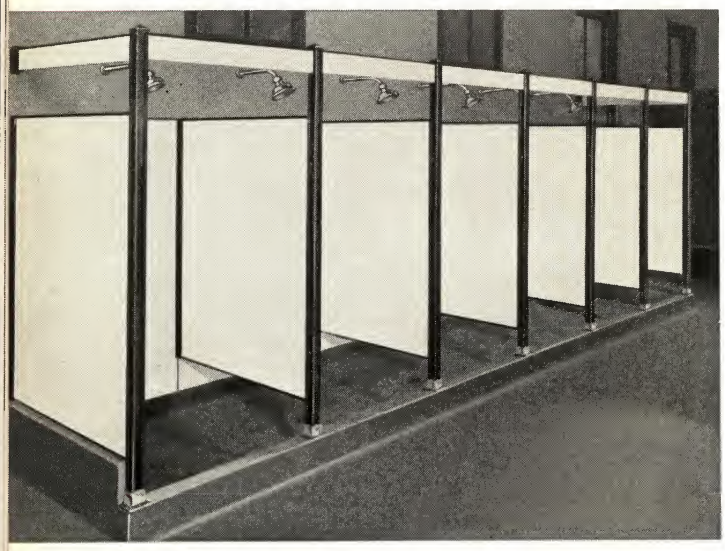
# 20/24 Porcena SHOWER STALL INSTALLATIONS ARE SANITARY, ENDURING AND NEAT APPEARING

The suitability of Porcena Partition Panels for building shower installations for every purpose has been conclusively demonstrated by such installations as are pictured on this page.

Shower stall installations, with or without dressing rooms, when built of Porcena Partition Panels, encourage those who use these facilities to cooperate in keeping them orderly and neat. The hard, flint-like surface of Porcena Partition Panels does not absorb heavy odors. The residue of shower bathing that would ordinarily adhere to the surface of partition panels does not adhere to the smooth, glistening porcelain enamel surfaces of these panels. With as little effort as it takes to keep the porcelain surfaces of household appliances sweet and clean, these Porcena Partition Panels can be kept strictly sanitary.

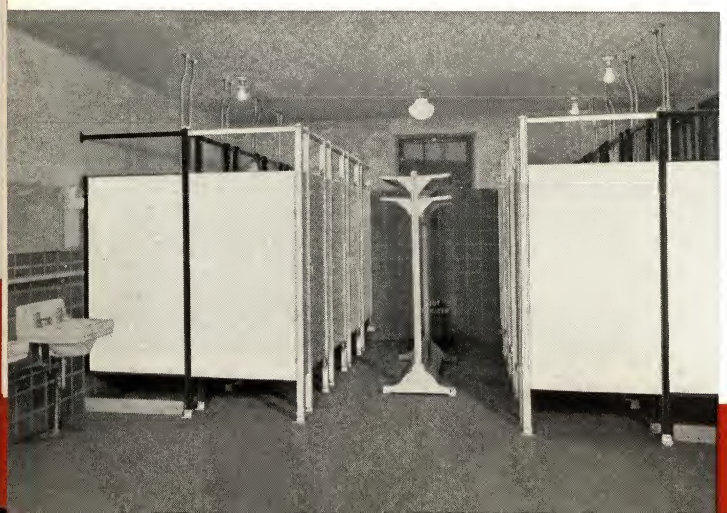
These features make them adaptable for shower stall installations in gymnasiums, country clubs, men's clubs, Y.M.C.A.'s, industrial plants and many other locations. Installations in clubs and other locations usually consist of shower stalls and dressing rooms, while installations in gymnasiums, Y.M.C.A.'s, schools, industrial plants, etc., usually consist of stalls as pictured in the top illustration on this page.

Refer to Page 6 for specifications on Porcena Partitions or consult with Sanymetal representatives in your vicinity.



Installation of Porcena Partition Panels used in combination with Porcena Wainscot in employees' shower room of a large steel company.

Porcena Partition Panels used for shower stalls and dressing rooms at the Euclid Beach Tourist Camp, Cleveland, Ohio.



## FLUSH TYPE STAINLESS STEEL SHOWER STALL INSTALLATIONS GIVE A GOOD MEASURE OF SANITARY SERVICE

Shower stall installations are sometimes made by using Sanymetal Flush Type Partition Panels made of stainless steel.

Stainless Steel shower stall partition panels, combined with the special features of the Sanymetal post, permit installation in any arrangement that is desirable or necessary. Unlimited combinations are possible because of these exclusive features embodied in the Sanymetal post. Information pertaining to shower stall basin and curb construction will be found below.

## TECHNICAL INFORMATION PERTAINING TO SHOWER STALL INSTALLATION

Shower stall installations are usually made by using partition panels to build as many units as may be desired. Dressing rooms may be combined with the shower stall installation by using additional partition panels, as shown in the lower illustration on this page. Sanymetal recommends the use of Porcena Partition Panels for shower stall installations because these panels are fully protected against ordinary acids, vermin, moisture, etc.

Shower stall installations are usually composed of compartments three feet square; but compartments can be had in any size desired. It is usually best to locate the shower mixing valve on one of the sidewalls of the room; thus preventing the possibility of a person scalding himself by having to turn on the water when standing in the stall.

## MASONRY IS A VITAL ELEMENT IN SECURING A PERMANENTLY SATISFACTORY SHOWER STALL INSTALLATION

The practice has been to set partition panels upon a masonry curb and permanently join the partition panel to the curb with a mastic seal. Sanymetal furnishes partition panels in accordance with this practice. But, Sanymetal suggests that a special curb be built having a recess on top of it into which the partition panel is set about one-half inch off the curb. This permits circulation of air which evaporates moisture and insures a longer life for the installation. This can be done without permitting water to leak out of the shower compartment.

Doors are usually furnished for the entrance to dressing room compartments, but the opening between the shower stall compartment and the dressing room compartment is usually equipped with a curtain. Where showers are used continuously a rubber shower curtain is recommended, although standard equipment is a white duck curtain.

When working out a shower compartment installation you may obtain many worthwhile suggestions from the Sanymetal representative in your locality or by writing direct to the Engineering Department at Cleveland, Ohio.

# Sanymetal FULL PANEL TYPE TOILET PARTITION

## CONSTRUCTION IS ACTUALLY FULL PANEL

## FEATURES

**1.** Rectangular headrail extends through sunken panel section of hollow drawn post and is fastened directly and securely to the post with metal screw, thus eliminating the possibility of a loose connection at this point. With this feature the cap on top of the post is only to finish off the appearance. Specially designed headrail wall connector casting secures neat appearing installation.

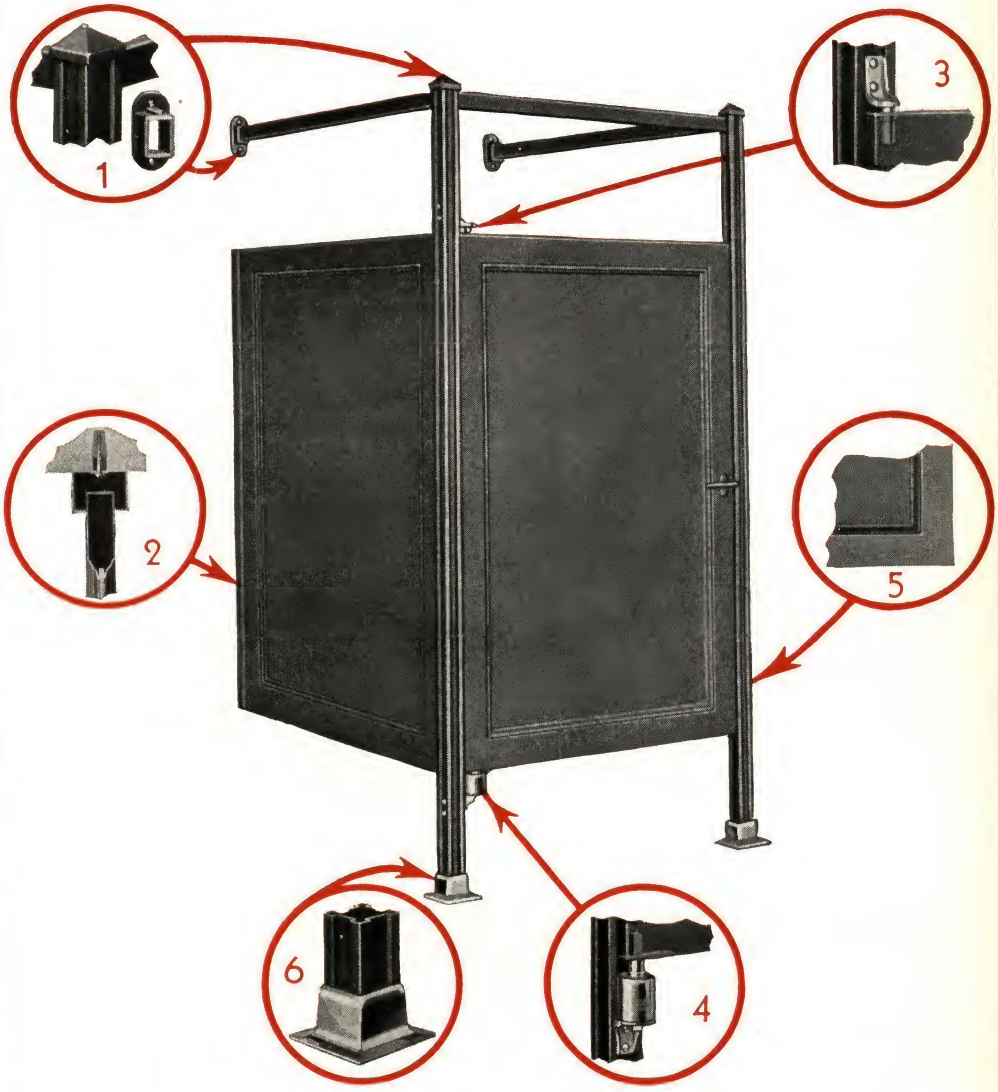
**2.** Adjustable wall channel with concealed fastenings and cross section of drawn hollow metal stile and rail. Installation accomplished by inserting back stile of partition into wall channel and fastening with screws through top and bottom of cap of channel.

**3.** Pivot Pin: ⅝ inch diameter of stainless steel rotating in impregnated graphite bronze bushing; noiseless; practically wearless; easy action assured.

**4.** Sanymetal encased full floating Ball Bearing Roller Gravity Hinge; adjustable to any door swing or position; noiseless, easy action; solid brass, nickel or chromium plated. Ball bearings and race are stainless steel.

**5.** Partitions are made with drawn hollow metal interlocking rails with all raw edges concealed having 16-gauge stretcher leveled, full pickled, full cold rolled panel sheets. All raw metal edges are concealed. Door panels 30 inches wide and less are 18-gauge sheet steel; doors of greater width panel sheets are 16-gauge sheet steel.

**6.** Post Floor Shoe: Sanitary design; adjustable for uneven floors; a simple, sturdy design; solid brass or aluminum, nickel or chromium plated.







**Sanymetal Full Panel Type Doors Embody Construction Features Which Insure Enduring, Sanitary Service over the Years to Come.** Sanymetal Full Panel Type Doors are actually full panel construction. The panel is completely surrounded by hollow drawn and interlocked stiles and rails mitred and permanently welded and ground flush. Edges are turned and interlocked forming watertight points. This type of construction utilizes the inherent strength of the steel and formed sections to the fullest extent and makes this type of door so that water cannot get into the hollow drawn section, thus insuring longer life for the entire structure.

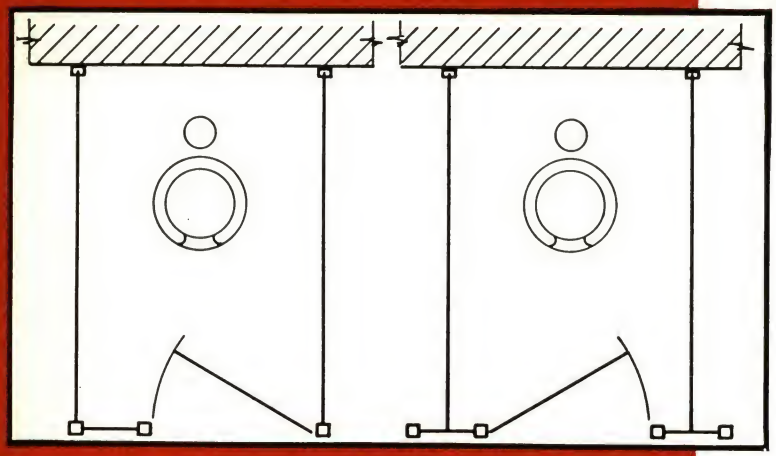
Full Panel Type Doors are made in sizes listed in table of Standard Stock Sizes on Page 18.

Standard finishes for Full Panel Type Doors are shown on Pages 22 and 23.

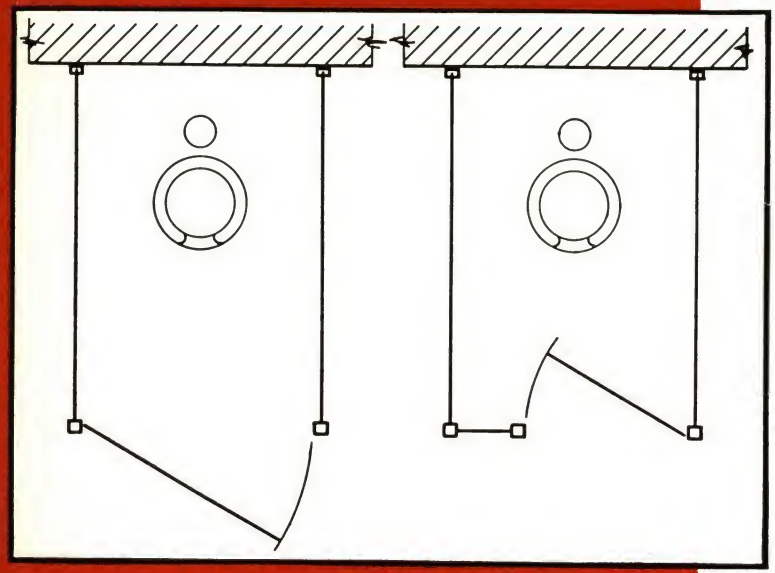
Sanymetal Full Panel Type Doors are equipped with the universally used Sanymetal encased gravity hinges described on Page 21. Other items of hardware such as pulls, stops, coat hooks, slide bar latch, etc., are also chromium plated and are appropriate modern designs. Hinges are adjustable for inswinging, outswinging, or double acting doors.

Standard finishes for Sanymetal Full Panel Type Doors are shown on Pages 22 and 23.

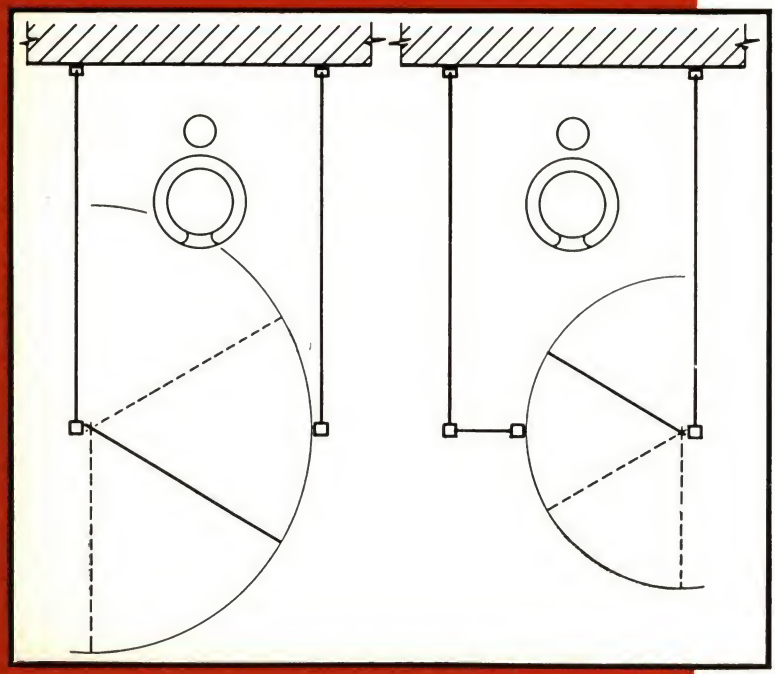
# Sanymetal Offers Concerning Toilet



"L" Front Construction "T" Front Construction



Wide Door Narrow Door



Outswinging Door Inswinging Door

These suggestions and comments are offered as the result of expe little over twenty years. Our purpose is to point out the advantages tion—to give you useful information which may be helpful in aiding

## "L" OR "T" FRONT CONSTRUCTION

"T" Front construction requires that the door be set in the center of the front of the compartments. "L" Front construction permits the door to be hung at the extreme side of the compartment. Toilet fixtures are always set in the center of the compartment width and normally project out into the compartment about 27 inches. Therefore, there is less clearance on the swing of an equal sized door on the "T" Front construction than there is with the "L" Front construction (see illustration). Consequently, the "L" Front type of installation affords more standing room inside of the compartment when closing the door. "T" Front construction doesn't allow door to shut flush. "L" Front construction presents much better appearance when door s shut.

Sanymetal furnishes either "T" Front or "L" Front construction as desired but recommends "L" Front construction.

## WIDE AND NARROW DOORS

The size of door determines the general appearance of the toilet partition installation and affects the degree of convenience realized because the size of the door may either enlarge or limit the amount of free space inside the compartment. The dimensions of an outswinging door become important when considered in connection with accessibility to the compartment from the corridor or aisle.

Sanymetal suggests that the most satisfactory installation for a compartment 30 inches or more wide should consist of a front panel and narrow door. This is based on the principle that the smaller sized door is lighter in weight, requires less room in which to swing in or out, and exerts less leverage on the hinges. Compartments less than 30 inches in width may be satisfactorily built up with or without front panels. Sanymetal furnishes whatever panels and doors may be required for making installations either way but recommends the use of front panels and narrow doors.

## INSWINGING AND OUTSWINGING DOORS

It is considered of prime importance that all corridors and aisles be unobstructed at all times. Consequently, Sanymetal suggests that wherever possible the toilet partition installation should embody inswinging doors. Doors swinging into the compartment require deeper compartments but outswinging doors do not reduce the essential depth of a compartment enough to overcome the disadvantage of obstructed corridors and aisles and possible injury to persons. The total amount of space essential for the outswinging door, plus the depth of the compartment is much greater than the amount of space required for a compartment of sufficient depth to allow for an inswinging door.

Inswinging doors swing only 90 degrees from a closed to an open position, while outswinging doors swing 180 degrees, exercising an unnecessary leverage on the hinges and the entire installation to which the hinges are attached. Inswinging doors stand open when unoccupied and instantly indicate whether or not the compartment is in use while outswinging doors necessitate trying the door to determine whether or not the compartment is occupied.

Inswinging doors are always latched when closed, thereby preventing danger of injury to individuals. Inswinging doors are never subjected to the punishment that outswinging doors receive from children who are tempted to ride them.

Sanymetal furnishes both inswinging and outswinging doors but recommends the use of inswinging doors.

# You Helpful Suggestions

# Partition Installation

rience in making over 40,000 installations during a period of a
of this or that feature or type of construction and method of installa-
you to arrive at the right decision.

## DEPTHS OF COMPARTMENTS

The depth of the compartment is usually determined by type of toilet fixtures installed, distance from the rear wall of compartment to front tip of toilet fixture and door swing clearance. On inswinging doors the width of the door itself should be 1 inch less than the distance between the front tip of the toilet fixture and the front of the compartment. Compartments having inswinging doors should be 54 inches deep with 24 inch doors.

Outswinging doors necessitate a compartment 48 inches deep. Depth of compartment is governed by the distance from the rear wall of the compartment to the front tip of the toilet fixture, plus a required area of free space in front of the toilet fixture at least 20 inches deep.

Where fronts of compartments are open (no doors used) the depth of the compartment is determined by the distance from the rear wall of the compartment to the front tip of the toilet fixture, plus whatever additional space in front of the fixture is desired.

See Page 18 for Table of Standard Stock Sizes of Toilet Partition Panels and Doors.

## DOUBLE OR SINGLE POST CONSTRUCTION

Double post construction works out exceptionally well with Porcena Toilet Partition Panels or Flush Type Toilet Partition Panels when posts are finished in colors to contrast. Double post construction permits the use of narrow doors; a panel is set in between two posts and encloses a section of the front of the compartment leaving a small space to be closed by the door. Double post construction is stronger, more rigid, and needs no diagonal headrail bracing for support when compartments cannot be attached directly to right angle walls of the room.

Single post construction requires full width doors. Single post construction consists of a single post at the front end of each panel forming a compartment. This construction is utilized on compartments without doors as well as on compartments with doors. Single post diagonal headrail requires bracing to make installation rigid unless compartment panels can be directly attached to a wall at right angles to the back wall of the installation. Diagonal headrail bracing is not required when the installation can be anchored to the side wall of the room.

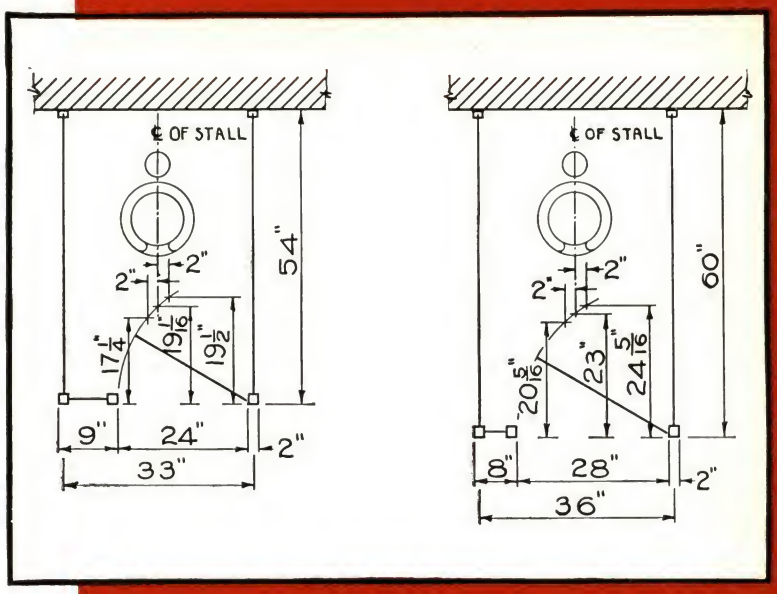
## WALL FIXTURES

Sanymetal toilet partitions are fitted for attaching to brick, concrete, hollow tile, wood, and cinder block walls. When installations are to be attached to metal lath and plaster, wood lath and plaster, wood stud and composition walls, reinforcing wood grounds should be inserted at points where each partition panel and overhead rail connects with the wall.

Sanymetal partitions are furnished with adjustable continuous boxed U wall channels as illustrated but can be supplied with wall brackets for providing ventilation space between wall and partition panel. Sanymetal recommends that partition panel be attached to wall without providing so-called ventilation space because such ventilation results in circulation of heavy, unpleasant odors. When partitions are to be attached to walls at low window sills a full length floor to headrail post is used.

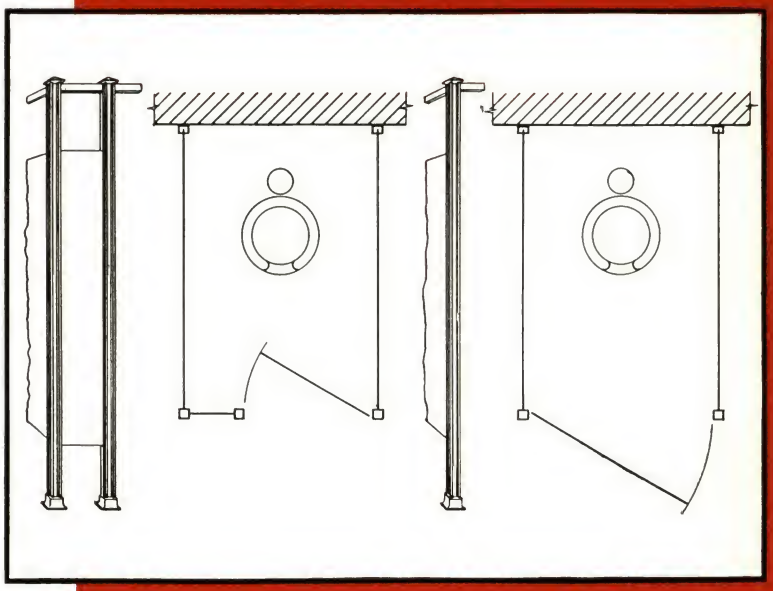
Sanymetal's experience suggests the use of continuous boxed U wall channels wherever possible. Adjustable wall channels overcome variations in contour of out of plumb walls. Furthermore, with wall channels installations can be made much more secure to the wall because the channel permits of more secure fastening.

This permits running the headrail as required to secure proper reinforcement for the entire installation because it is not necessary that the headrail follow the line of the partition panel when it can be installed independently in its own wall bracket.



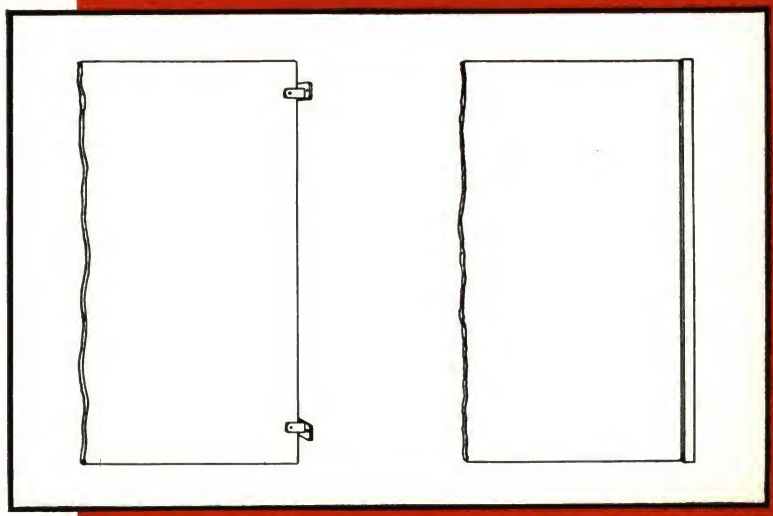

Construction of 54-inch depth Compartment

Construction of 60-inch depth Compartment



Double Post Construction

Single Post Construction

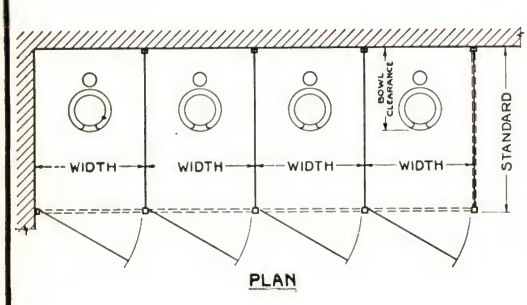


Wall Bracket Construction

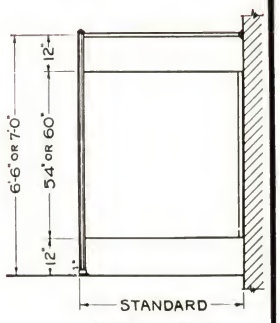
Adjustable Wall Channel Construction

# Sanymetal TOILET

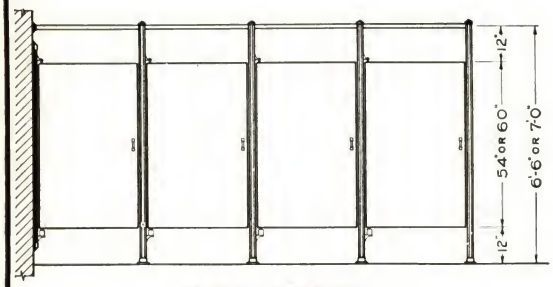
## BACK-TO-WALL TOILETS WITHOUT VENT




PLAN

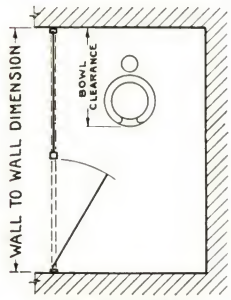



SIDE ELEVATION




FRONT ELEVATION

This type of installation consists of a single row battery of compartments built against the back wall and without vent or utility space. In this installation the plumbing is concealed. Vent space is provided for in the masonry wall. Such an installation proves the most satisfactory from a maintenance standpoint and is perhaps the most widely used of all designs. Furnished either with or without doors. If with doors, then with either inswinging or outswinging doors. Also furnished in single post or double post front panel construction. When furnished single post construction, doors are full width of front of compartment and where right angle wall forms one side of the end compartment, a wall post slightly higher than the height of the door is used for hinging the door or to serve as a jamb in case the door swings in the opposite way. With double post front panel construction, the front of the compartment is enclosed by an "L" Front panel and the door. Where right angle wall forms one side of compartment a Wall Front Panel adjoins the wall. This panel is set in an adjustable wall channel which insures a perfect fit even against badly plumbed walls. This channel is closed at top and bottom and fastens to the wall with concealed screws. It is the same type of channel that is used to attach the partition panels to the back wall of the installation. When outside window comes at point where installation would, or should, adjoin wall, consult Sanymetal representative or write Engineering Department at Cleveland, Ohio.




ALCOVE TOILET

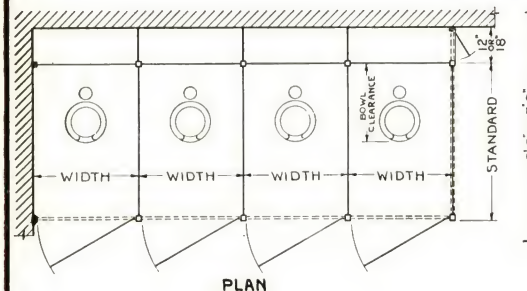
PLAN

Back-to-wall toilets without vent are installed with either Flush Panel Type or Full Panel Type Partitions.

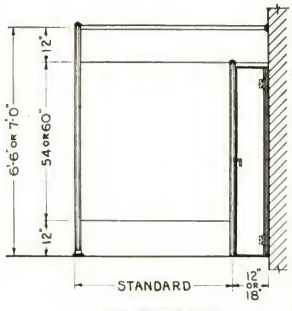
### SINGLE TOILET WITHOUT VENT

This is a typical view of how a single toilet installation without vent space can be made where walls enclose two sides of the compartment. Usually adapted for purpose of conserving space.

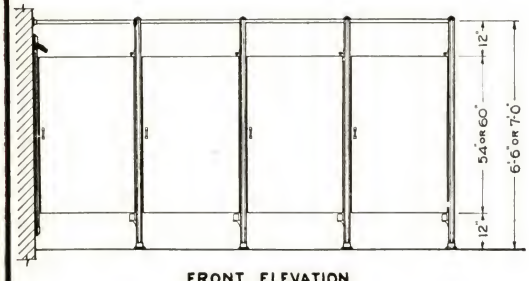
## BACK-TO-WALL TOILETS WITH VENT




PLAN




SIDE ELEVATION




FRONT ELEVATION

Back-to-wall toilets with vent include a vent or utility space of the same height as the dividing partition panels. This vent or utility space is between the rear of the compartment and the wall of the room. The vent space is sometimes built up by use of metal partition panels or may be built up of other materials which architect may select. If utility or vent space is less than 18 inches in depth, Sanymetal recommends that architect specify, if metal partition backs are used, that these backs be two piece units with upper portion of panel removable for easy access to plumbing. Utility doors and tops are provided in dimensions to suit any required vent or utility space depth and height. If compartments are to be ventilated through the vent or utility space, louvers or vent registers should be specified in back panels.

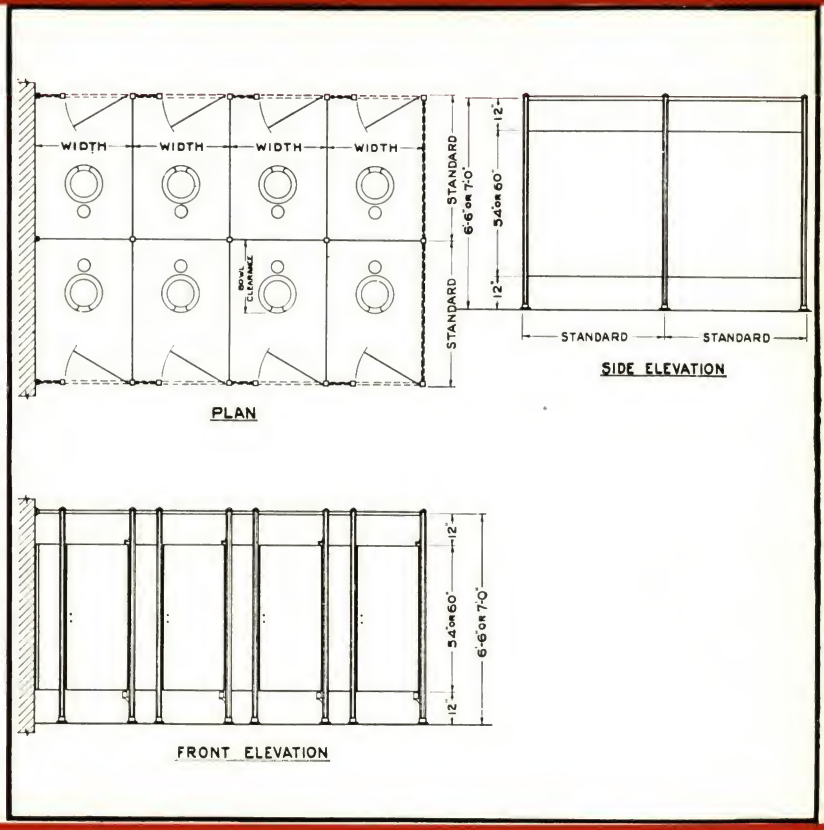
In this type of an installation vent space should be enclosed at the top making a completely enclosed vent space chamber. Access is provided by the utility door at one end of the chamber if depth is 18 inches or greater, otherwise removable backs as above described should be specified. This installation can be made with either Flush Panel Type or Full Panel Type Partitions and Doors and with other variations as noted under the heading Back-to-Wall Toilets Without Vent.

# BACK-TO-BACK TOILETS WITHOUT VENT

This type of installation consists of a double row battery of compartments and is suitable for providing the maximum number of toilet compartments in an allotted space. Back-to-back compartments without vent are also commonly used where dressing compartments adjoin shower compartments.

In Sanymetal back-to-back without vent installations the back of each compartment consists of a single panel partition either Flush or Full Panel Type. Backs are usually specified to be set 12 inches off the floor since this makes the most sanitary installation and affords easy accessibility to plumbing supply lines from either side of the back panel partition. In this type of installation the design and the construction of the Sanymetal posts is utilized to the utmost advantage in joining partition panels and the back panel. Where such an installation is built at right angles to an inside wall, the plumbing supply lines are usually run from the wall directly below the back panels. This makes plumbing easily accessible from either side of the back panel. If flush tank toilets are to be installed and it is necessary to attach flush tanks to back panels, architect should specify that reinforcement be provided in these backs to carry the added weight of the two tanks which will be mounted on either side of the back panel.

This type of installation may be equipped with doors or furnished without doors. If with doors, then inswinging or outswinging doors can be furnished. (See Page 14 for details.) A back-to-back without vent installation may be furnished with the "L" Front construction and narrow door or with the single post construction and full width door. Either Full Panel Type or Flush Panel Type Partitions are equally adaptable in effecting this type of installation.



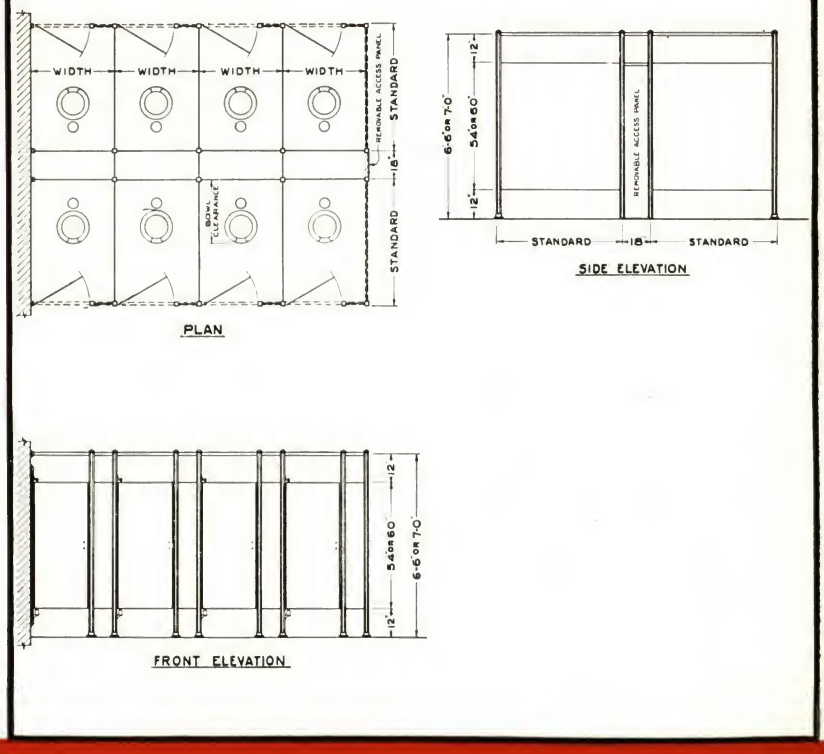

# BACK-TO-BACK TOILETS WITH VENT

In this type of installation the vent or utility space is usually created by the use of metal partition back because this saves the cost of the masonry wall construction.

In back-to-back toilets the vent or utility space is of the same height as the dividing partition panels. If the utility or vent space is less than 18 inches in depth, Sanymetal recommends that architects specify metal partition backs be two piece units with upper portion of panel removable for easy access to plumbing. Utility doors and tops are provided in dimensions to suit any required vent or utility space depth and height. If compartments are to be ventilated through the vent or utility space, louvers or vent registers should be specified in the back panel.

In an installation of this type, the plumbing supply lines are completely concealed but still easily accessible, particularly when back panels are specified to be two piece units with the upper portion of the panel removable for access to the plumbing.

The top of the vent or utility space in this type of installation should be completely enclosed making a closed vent space chamber. Access to plumbing is provided by utility door at one end of the chamber if depth is 18 inches or greater; otherwise, removable back as above described should be specified. This installation can be made with either Flush Panel Type or Full Panel Type Partitions and Doors and with other variations which may be worked out with the aid of a Sanymetal representative or by writing the Engineering Department at Cleveland, Ohio.



# Sanymetal STANDARD STOCK SIZES OF PARTITIONS AND DOORS

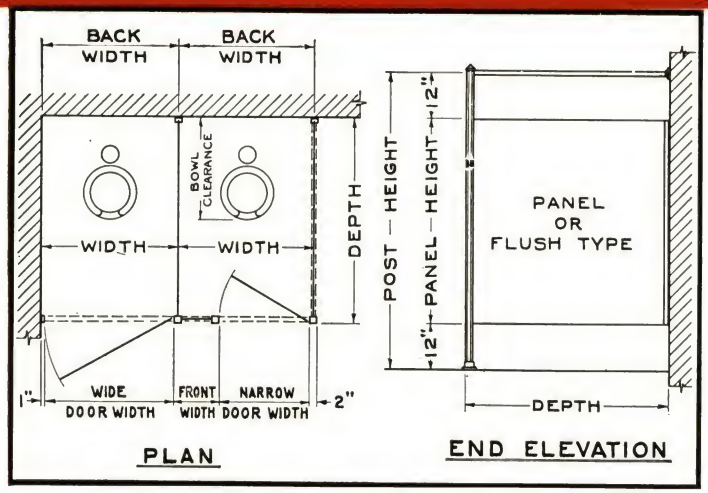



**TABLE OF STOCK SIZES OF SANYMETAL TOILET PARTITION UNITS**

| Stock Sizes Compartment Side Panels | Stock Sizes Full Width Doors | Stock Sizes Narrow Door | Stock Sizes "L" Front Panels | Stock Sizes—Back Panels | |
|---|---|---|---|---|---|
| | | | | OFF FLOOR | TO FLOOR Note: Height measurements are full height |
| 36 x 54 | 28 x 54 | 20 x 54 | 6 x 54 | 30 x 54 | 30 x 66 |
| 42 x 54 | 30 x 54 | 22 x 54 | 8 x 54 | 32 x 54 | 32 x 66 |
| 48 x 54 | 31 x 54 | 24 x 54 | 10 x 54 | 33 x 54 | 33 x 66 |
| 54 x 54 | 32 x 54 | 26 x 54 | 12 x 54 | 34 x 54 | 34 x 66 |
| 60 x 54 | 33 x 54 | 28 x 54 | 6 x 60 | 36 x 54 | 36 x 66 |
| 36 x 60 | 34 x 54 | 20 x 60 | 8 x 60 | 30 x 60 | 30 x 72 |
| 42 x 60 | 28 x 60 | 24 x 60 | 10 x 60 | 32 x 60 | 32 x 72 |
| 48 x 60 | 30 x 60 | 26 x 60 | 12 x 60 | 33 x 60 | 33 x 72 |
| 54 x 60 | 31 x 60 | 28 x 60 | | 34 x 60 | 34 x 72 |
| 60 x 60 | 32 x 60 | | | 36 x 60 | 36 x 72 |
| | 33 x 60 | | | | |
| | 34 x 60 | | | | |

Note: These dimensions also apply to the units used in shower stall installations.

Architects and engineers in laying out toilet room environments and toilet partition installations will realize worthwhile advantages by following the practice of specifying standard size compartments wherever possible. This practice expedites the fabrication of the various units that are to compose the toilet partition installation and reduces the amount of time required for installation. It is obvious that certain economies are thereby effected.

Standard size compartments are as follows:

Widths: 30, 32, 33, 34 and 36 inches
Depths: 36, 42, 48, 54 and 60 inches
Heights of panels and doors 54 and 60 inches
Distance from floor to bottom of panels and doors: 12 ins.
Distance from top of panels and doors to headrail: 12 ins.

Over-all heights measured from floor to headrail: 78 to 84 inches, the difference being determined by the height of panels and doors which are either 54 inches or 60 inches in height.

It is to be understood that the foregoing dimensions are standard stock sizes. They are not intended to limit architects and engineers in designing the type of installation most suitable for a particular environment. Sanymetal fabricates special sizes of panels and doors to meet special conditions and is always ready to willingly cooperate in the fabrication of whatever sizes of panels and doors may be required for a particular installation.

# Sanymetal TOILET PARTITION HARDWARE AFFORDS THE UTMOST IN CONVENIENCE

Every item of Sanymetal toilet partition hardware is substantially constructed and mechanically perfected to afford the utmost convenience. Sanymetal engineers, utilizing the findings of years of experience and appreciating the unrelenting abuse hinges and other door fittings must survive, have fortified each fitting with reserve strength and stamina. Sanymetal engineers originated, pioneered, and patented what is today recognized as the gravity hinge which is so widely used. All hardware used on Sanymetal Porcena and Sanymetal Flush Panel Type and Full Panel Type Toilet Partitions is attached with brass, chromium plated through sleeve bolts with theftproof heads.

## ITEMS OF SANYMETAL HARDWARE ILLUSTRATED ON OPPOSITE PAGE

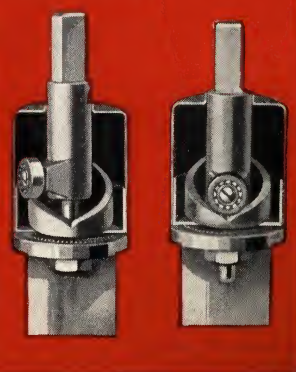
No. 762 Half Surface Butt Hinge.
No. 8360 Top Hinge Assembly, pivot hinge; 5/8 inch in diameter of heat treated alloy steel rotating in impregnated graphite bronze bushing; noiseless, practically wearless, easy action assured.
No .8370 Roller Hinge Assembly. Sanymetal End Gate Full Floating Ball Bearing Roller Gravity Hinge; adjustable to any door swing or any post. Noiseless, easy action, solid brass, chromium plated.
No. 801 Wrought Post Floor Shoe; sanitary, self-draining design; adjustable for uneven floors; a simple, sturdy design, free of gadgets; solid brass or aluminum chromium plated.
Coin Lock. (Doors with Coin Locks must be equipped with 872-S Spring Hinge.)
No. 360 Spring Butt Hinge.
No. 871-S Top Pivot Spring Hinge.
No. 872-S Bottom Pivot Spring Hinge.
No. 701 Cast Post Floor Shoe; sanitary design; a simple, sturdy design free of gadgets; chromium plated.
No. 320 Wall Flange for Headrail.
No. 706 Wall Post Cap for attaching wall post to wall.
No. 316 Post Cap for ornamental purposes only.
No. 721 "T" Ball Fitting for Headrail.
No. 724 Wall Bracket for securing partition panel to wall.
No. 704 Floor Post Inserts.
No. 783 Paper Holder, Box Type.
No. 718 Curtain Rod Flanged for partition post.
No. 720 Curtain Rod Flanged for walls.
No. 716 Back Post Cap.
No. 725 Back Wall Bracket.
No. 322 "Y" Fitting (right or left hand) for bracing.
No. 321 "T" Fitting for rectangular Headrail.
No. 784 Paper Holder, Roll Type.
No. 2112 Partition Panel Clip.
No. 2113 Panel "T" Clip.
No. 771 Bumper.
No. 342 Post Door Stop.
No. 700 Door Stop.
No. CS-742 Check Stop.
No. 742 Door Stop.
No. 775 Rectangular Curtain Hook.
No. 774 Round Curtain Hook.
No. 786 Soap Tray.
No. 781 Combination Coat Hook and Bumper.
No. 780 Coat Hook.
No. 787 4 inch Coat Hook.
No. 7400 Pull, modern design.
No. 772 Hasp for padlock (A—Door part. B—Jamb part)
No. 741 Cast Door Pull.
No. 770 Cylinder Block and Keys.
No. 769 Flat Key Lock and Keys.
No. 745 Double Door Latch.
No. 2129 Double Door Latch Keeper.
No. 7570 Military Latch.
No. 869 Throw Latch Keeper.
No. 7430 Latch.
No. 2103 Keeper.

# Sanymetal TOILET PARTITION HARDWARE

## AFFORDS THE UTMOST IN CONVENIENCE




The illustrations at right show sectional view of Sanymetal Ball Bearing Roller Gravity Hinges. Ball bearings and race are stainless steel. These hinges are fully encased. They are adjustable to any door swing or any post. Noiseless, easy action, solid brass chromium plated. A Sanymetal development universally used in the toilet partition industry.



# Sanymetal

# SALES REPRESENTATIVES

Competent Sales Representatives of recognized standing in their respective territories are located in the following cities. Local telephone or business directories in most cases give name, address, and telephone number of Sanymetal Representative. Whenever necessary to make proper contact with Sanymetal Representatives, please wire or write factory at Cleveland, Ohio.

## ALABAMA
Birmingham: H. G. Mouat, 850 Martin Bldg.

## ARKANSAS
Little Rock: Nevil C. Withrow, 207 Insurance Bldg.

## CALIFORNIA
Los Angeles: Continental Specialties Co., 1367 E. 17th St.
San Francisco: Price Building Specialties Co., 35 Stillman Ave.

## COLORADO
Denver: Colorado Builders Supply Co., 1534 Blake St.

## CONNECTICUT
Hartford: Clapp & Treat, Inc., 4 American Row
New Haven: H. Dumelin & Sons, 295 Sherman Ave.

## DISTRICT OF COLUMBIA
Washington: Harry Schnabel, 4316 15th St.

## FLORIDA
Jacksonville: Builders Products Co., 204 E. 8th St.
Miami: George W. Loehr, 149 N. E. 40th St.
Tampa: Builders Service Company, 420 Stoval Professional Bldg.

## GEORGIA
Atlanta: J. M. Van Harlingen, Forsyth Bldg.

## ILLINOIS
Chicago: Roy A. Sanborn, 20 N. Wacker Dr.
Decatur: Hugh J. Baker & Co., 311 Citizens Bank Bldg.
Moline: Beder Woods Sons Company

## INDIANA
Evansville: Hugh J. Baker & Co., P. O. Box 505
Ft. Wayne: Hugh J. Baker & Co., 804 Hayden Ave.
Indianapolis: Hugh J. Baker & Co., 602 W. McCarthy St.

## IOWA
Des Moines: Des Moines Stair Co., 311 Masonic Bldg.
Sioux City: Haakinson & Beaty Co., First & Nebraska Sts.

## KANSAS
Witchita: Jackson-Walker Co., 622 E. Murdock St.

## KENTUCKY
Louisville: Atlas Plaster & Supply Co., 30th & Greenwood Sts.

## LOUISIANA
New Orleans: Ole K. Olsen Company, 823 Perdido St.

## MAINE
Augusta: Mansurs, Inc., 193 Water St.

## MARYLAND
Baltimore: Walter S. Brauns, 514 St. Paul St.

## MASSACHUSETTS
Boston: H. A. Seeley Company, 33 Chauncy St.

## MICHIGAN
Detroit: Wire & Iron Products Co., 840 Cherry St.
Grand Rapids: Charles Vandervelde, 757 Hawthorne St.
Lansing: C. M. Van Auken, 1717 Inverness Ave.
Saginaw: Arthur C. Beckert, 21 Berger Rd., W. S.

## MINNESOTA
Great Falls: Harold R. Hewett, 225 Second St., S.
Minneapolis: Hustad Company, 529 S. 7th St.

## MISSOURI
Kansas City: A. G. Overesch, 217 Dwight Bldg.
St. Louis: Herbert Golterman, 710 Louderman Bldg.

## NEBRASKA
Omaha: Earl S. Lewis & Co., 1025 Redick Tower

## NEVADA
Reno: Fisher C. Bailey Co., E. Fourth & Alameda Ave.

## NEW JERSEY
Newark: Fireproof Products Company, Frelinghuysen Ave.

## NEW YORK
Albany: Harvey B. Kimmey, 27 Columbia St.
Buffalo: Kenmore Builders Supply Co., 28 Hinman Ave.
New York: Fireproof Products Co., 536 E. 133rd St.
Niagara Falls: Empire Builders Supply, 820 Cedar Ave.
Rochester: Swalbach Building Products Co., 961 Lyell Ave.
Syracuse: A. P. Madden, 246 Harrison St.

## NORTH CAROLINA
Charlotte: W. L. Hoover, 938 Berkley Ave.
Raleigh: Peden Steel Company, 512 W. Hargett St.

## NORTH DAKOTA
Fargo: Fargo Foundry Co., 92 N. P. Ave.

## OHIO
Cincinnati: Dubrow & Otte, 1426 Clay St.
Columbus: Alvan Tallmadge, 62 Parkwood Ave.
Dayton: John G. Pool Co., 494 Ludlow Arcade
Ironton: Meehan Steel Products Co.
Toledo: S. L. Everitt, 619 Edison Bldg.

## OKLAHOMA
Oklahoma City: Bissell Builders Supply Co., 1205 Colcord Bldg.
Tulsa Bissell Builders Supply Co., 912 Tulsa Bldg. & Loan

## OREGON
Portland: McCraken-Ripley Co., 2221 North Albina St.

## PENNSYLVANIA
Harrisburg: Atherton Bowen, P. O. Box 853
Johnstown: Griffith-Custer Steel Co., 37 Bedford St.
Pittsburgh: E. A. Butts, 419 Melwood St.
Philadelphia: James A. Clancy, 1014 Harrison Bldg.
Scranton: A. D. Parsons, Inc., 501 Cedar Ave.
Wilkes-Barre: Wm. H. Pierce, Room 402, Bennet Bldg.
Williamsport: Wm. M. Nicely Co., 124 W. Willow St.
York: C. H. Strayer, 501 N. Beaver St.

## SOUTH CAROLINA
Columbia: Elmore Hane, 8 Ritz Theatre Bldg.
Greenville: Frank R. Henry Co., P. O. Box 692

## SOUTH DAKOTA
Sioux Falls: Builders Supply Co., 213 Paulton Bldg.

## TENNESSEE
Chattanooga: Campbell Sales Company, 16 Market Square
Johnson City: Eustis A. Lancaster, John Sevier Hotel Bldg.
Knoxville: W. B. Martin Company, 826 Holston Bank Bldg.
Memphis: Akers & Company, 202 Falls Bldg.
Nashville: John E. Johnson, 201 28th Ave., N.

## TEXAS
Austin: J. I. Boggs, 1203 W. 9th
Dallas: R. M. Sedwick Company, 412 Construction Bldg.
El Paso: Warren D. Small, Mills Bldg.
Houston: Dewitt A. Sanders, 1810 Elmen St.
Lubbock: Lubbock Steel Works, Inc., P. O. Box 1403
San Antonio: F. L. Sweet & Co., 265 W. Thorain Blvd.

## UTAH
Salt Lake City: S. A. Roberts, 222 Dooly Bldg.

## VIRGINIA
Norfolk: W. O. Sherman Company, 136 W. Wilson
Richmond: Henry W. O'Grady, 205 W. 36th St.
Roanoke: Roanoke Engineering Sales Co., State & City Bank Bldg.

## WASHINGTON
Seattle: Thomas Greenless, 1149 Henry Bldg.
Spokane: Building Supplies, Inc., Ide Ave.

## WEST VIRGINIA
Charleston: Angus Gillis, 508 Maryland Ave.
Wheeling: W. E. Britt, 86 12th St.

## WISCONSIN
Green Bay: Duncan Equipment Company, 807 South Quincy St.
Milwaukee: S. A. Smith, 1012 N. Third St.
Superior: F. E. Johnson, 1026 Tower Ave.

## WYOMING
Casper: Harry E. Champion

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Illustrating how suitable Sanymetal Office Partitions are for the creation of attractive office environments — Director's Room of the Ohio Power Company, Newark, Ohio.



Sanymetal Office Partitions can be utilized for practically any arrangement desirable — as for example, at the Shell Petroleum Corporation, Cleveland, Ohio.

*For Today's Buildings*

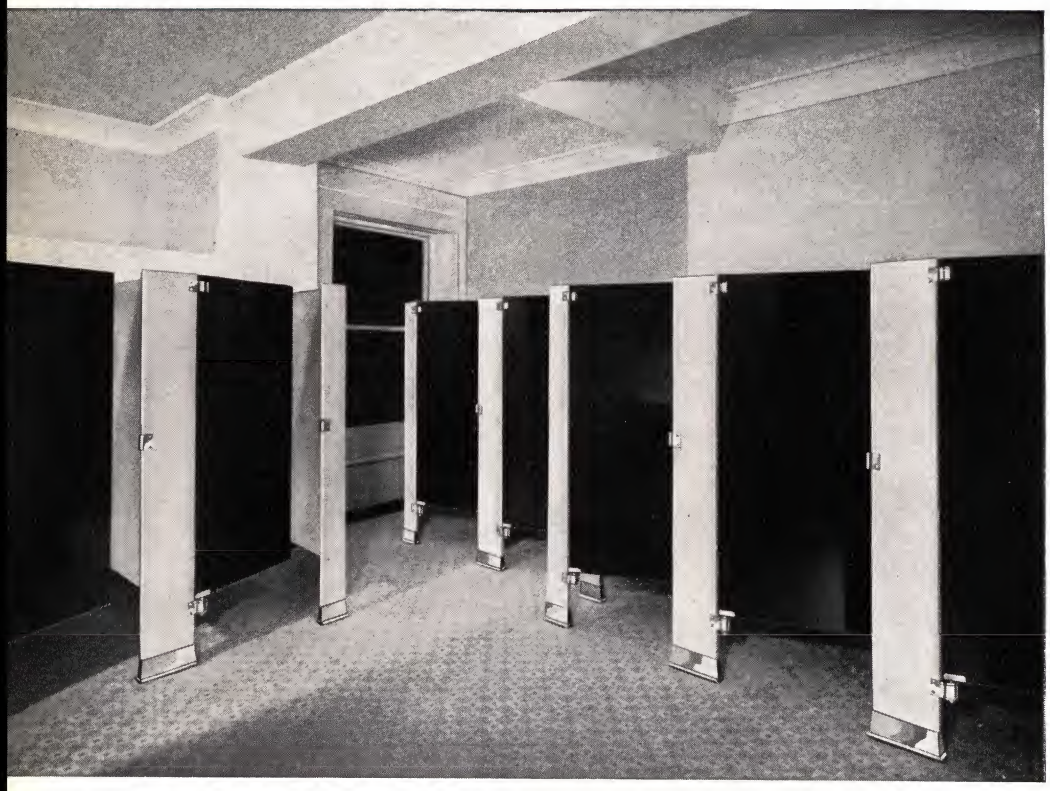
# WEISTEEL COMPARTMENTS



**HENRY WEIS**
MANUFACTURING COMPANY·INC·
*Elkhart·Indiana*

*Outstanding Construction*

# WEISART FLUSH COMPARTMENTS



## FOR CLASS "A" BUILDINGS • • •

Successful as have proven WEISTEEL and WEISALLOY panel and flush toilet compartments, there has been an insistent demand for a still better construction which, in both design and finish, would harmonize with the materials and finish of the surrounding walls and floors customarily used in toilet rooms in the highest Class A types of buildings.

With the new WEISART construction the manufacturers sought and are receiving the same acceptance and commendation which has attended each previous progressive step made to meet a specific demand.

### • • NO HEADRAILS

Due to the new, rigid flush stile construction between the doors and at corners and walls, the customary posts and headrails are entirely eliminated. With the exclusive Weis gravity type cut-out top hinge (see page 5), stiles need not extend above door. Thus doors, stiles and partitions are in line at top.

### • • RIGID CONSTRUCTION

The sanitary stile shoes in contact with the finish floor are of heavy cast nickel alloy—absolutely non-corrosive and extremely sturdy. Stile shoes are rigidly anchored to the sub-floor with concealed expansion bolts. The stiles are inserted into the stile shoes and securely bolted to them—a rigid supporting construction superior in strength to anything hitherto presented.

The flush partitions are firmly locked to the rigid stiles and are braced and supported by heavy fittings at the wall. Wall stiles are supported in similar manner at wall contacts.

### • • SUPERIOR APPEARANCE

Finished in a durable natural or rubbed enamel of selected colors, these compartments with their simple rectangular lines and plain surfaces harmonize thoroughly with the highest class of floor and wainscot material.

Any selected solid color or combination of colors to match a particular color scheme is available when specified. Full hand rubbed finish furnished as an extra when specified.

### • • SANITARY

Doors, stiles and partitions are of the highest class of flush steel construction, with edges locked and sealed, finished with the most durable baked-on synthetic gum enamel, natural or rubbed to a piano finish—a construction and finish wholly sanitary, easily cleaned and maintained.

Partitions and stiles are supported clear of the walls ¾ inch—thus there are no unsanitary corners at these vital points.

### • • HARDWARE

Supporting hardware is of heavy brass, chromium plated over full polished nickel plating. Hinges, latches and miscellaneous trim are special Weis design similar to that described in detail on page 5, including the permanently trouble-free Weis universal, inclined ball-bearing gravity type bottom hinge and the exclusive Weis cut-out type top hinge permitting doors and stiles to line at top.

# FLUSH COMPARTMENTS WEISART

## ARCHITECT'S SPECIFICATIONS

**Note:** Whenever words or phrases occur in italics and parentheses, select the single word or phrase desired.

**General**—Toilet compartments shall be WEISART as made by the Henry Weis Manufacturing Company, Inc., Elkhart, Indiana. Panels, stiles and doors shall be flush construction with fiber board cores. There shall be no posts or headrail.

**Materials**—Steel sheets and strips shall be cold rolled furniture stock, annealed and process leveled with smooth clean surfaces. Faces of stiles, partition panels and doors shall be 22 gauge, except for panels 54 inches and wider, when they shall be 20 gauge. Strips for edges of doors, stiles and panels shall be 20 gauge.

Cores shall be laminated, corrugated fiber board approximately 1 inch thick for doors and partition panels and 1¼ inches thick for stiles.

Shoe fittings at bottom of stiles shall be cast government formula nickel alloy with *(satin finish) (chromium plated finish).* Manufacturer to supply ⅜ in. machine bolts with expansion shields extending 2 in. into sub-floor. Other fittings shall be cast brass *(enameled to match partitions) (chromium plated).* All fittings adjustable to variations in floors and walls.

**Workmanship**—Doors, panels and stiles shall be made up of two side members with U-formed edges cemented over the core and assembled by interlocking the edges with drive locking strips mitered and welded at corners. Locking strips shall be die drawn with rounded face and designed to lock the plates with tension grip. To assure uniform adhesion, after cementing the side members to core, units shall be subjected to 500 pounds per square foot pressure for twenty-four hours.

Stiles shall be adequately reinforced to receive dividing partition panels and door hardware. Partition panels shall be anchored to stiles by three hooks designed to draw the stile and panel together in a tension grip. Stile end of panel shall be provided with a casting designed to hold front stile in rigid alignment. Top of dividing panels shall be ½ inch below front stiles.

The wall end of panels and stiles shall be kept away from face of wainscot or wall finish ¾ in. Stirrup wall supports near top and bottom shall be through bolted to panel with two bolts in wall.

**Finish**—All material shall be thoroughly cleaned and given one coat of rust resisting primer baked at 350 degrees F. on all exposed and interior surfaces. *(Follow with method No. 1, No. 2 or No. 3 for final finish).*

(1) Finish painting to be done after installation. See painting specification.

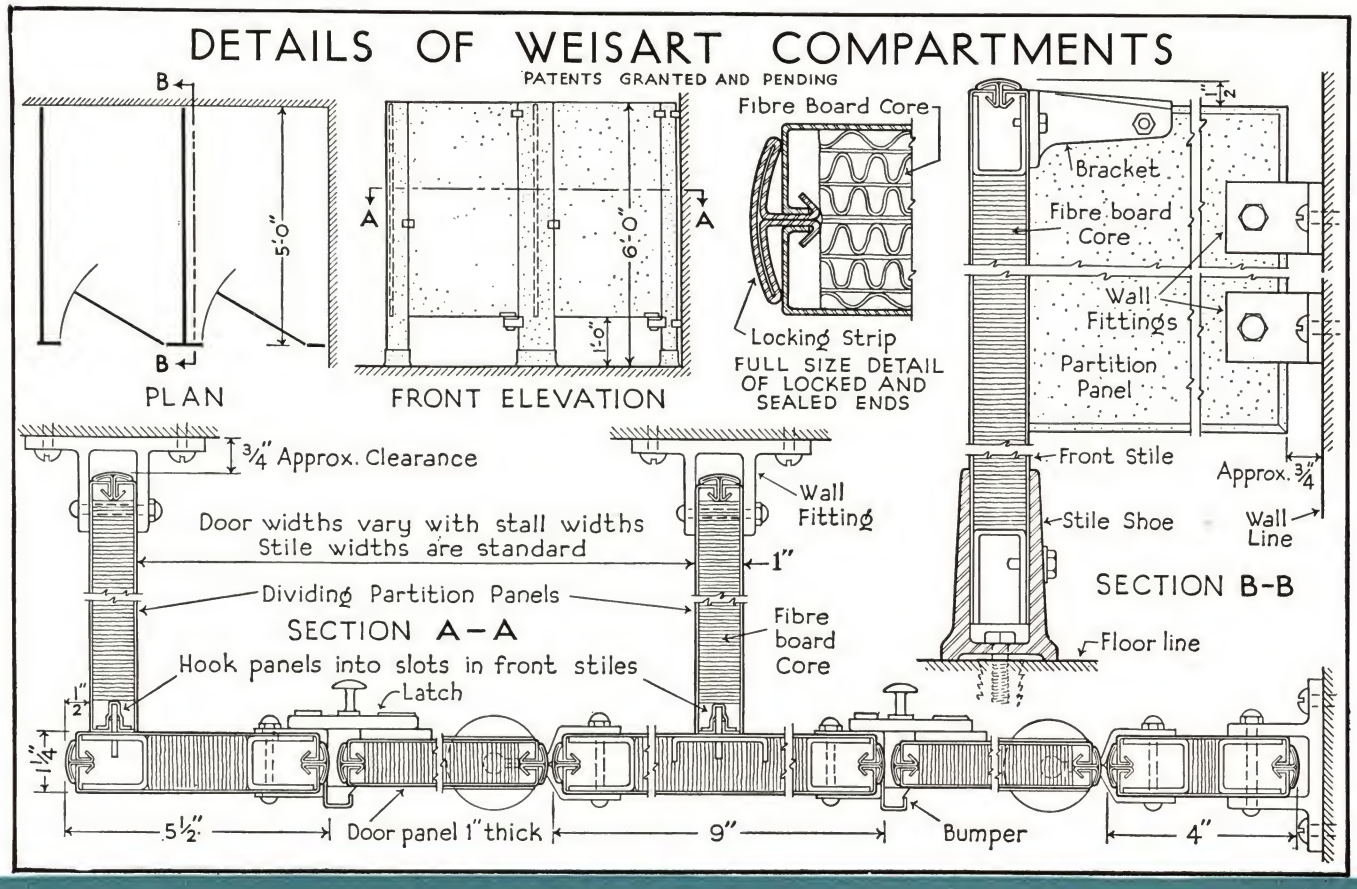
(2) All material to be finally finished at factory in natural, not rubbed *(specify color)* high-baked synthetic gum enamel. Each enamel coat shall be baked on separately.

(3) All material to be finally finished at factory in full rubbed enamel finish consisting of two coats *(specify any solid color)* high-baked synthetic gum enamel. First coat enamel shall be baked on, sanded smooth, and the final coat enamel shall be baked on and rubbed to a piano finish.

Protective paper covers shall be applied over each unit at factory.

**Hardware**—Doors shall be mounted on hardware as specified below to line up with tops of stiles with no parts extending above the top line. Doors shall be hung on Weis inclined ball-bearing gravity type double acting hinges with concealed stainless steel ball-bearing rollers on hardened stainless steel cams, adjustable to permit doors to be made self-opening, self-closing or ajar at time of installation; and on an upper pivot guide pin set into top of door concealed by the top hinge case mounted in a recess in the edge of the door. Each door shall be fitted with combination keeper and bumper, heavy throw latch and combination coat hook with rubber-tipped bumper.

All hardware shall be of plain, heavy pattern brass applied with screws, through bolts and cap nuts, all finished in chromium plate over full polished nickel plate, except working parts of gravity hinge.



# WEISTEEL FLUSH DOORS and HARDWARE

## for MARBLE, GLASS and SIMILAR PARTITIONS

Flush WEISTEEL doors and hardware for toilet stalls of marble or glass provide the architect with a means of creating a new treatment of line, color and quality in such toilet room equipment in Class A and monumental buildings.

• • **Advantages**—No warping or swelling from moisture absorption . . . doors cannot easily be defaced . . . no absorption of odors and dirt . . . smooth flush surfaces assure utmost sanitation and easy cleaning . . . color treatment to harmonize with any decorative scheme . . . gravity hinge gives quiet operation with no slamming . . . gravity hinge mounting and light weight of door eliminates strain on marble or glass stiles.

• • **Construction**—The appearance appeal of these units is found in exclusive features of design and construction which also lend themselves to economical production. Doors are 1 inch thick, combining desired mass appearance with essential rigidity. Each is made up of two steel sheets spaced and insulated with a laminated corrugated fiber board filler cemented to their inner surfaces, which are given a coat of baked primer before assembly. At edges the two side sheets are bound and interlocked under tension by a rolled steel moulding. Thus the entire length of edges is reinforced by three thicknesses of metal. There are no exposed raw edges of metal and no open seams.



• • **Hardware**—Flush WEISTEEL doors are furnished complete with the Weis stall door hardware set shown opposite. As illustrated below, two types of top hinges may be used: (1) the regular top pivot requiring extension of marble stile at least 4 inches above door, or (2) the new Weis Cut-Out Top Hinge permitting mounting top of door on line with top of partition stiles.

• • **Efficiency**—The specification of Flush WEISTEEL doors and hardware assures undivided responsibility from manufacturer and saves the architect time and inconvenience as the one specification eliminates the necessity for selecting individual items and coordinating the respective trades.





FLUSH WEISTEEL DOOR ON MARBLE WITH PIVOT TYPE TOP HINGE

### ARCHITECT'S SPECIFICATION

All toilet stall doors, of sizes shown on plans, with hardware shall be Flush WEISTEEL doors and hardware as manufactured by the Henry Weis Manufacturing Company, Inc., Elkhart, Indiana.

Doors shall be flush type, 1 inch thick, and made of 22-gauge select furniture steel sheets in strict accordance with manufacturer's standard construction specifications.

Hardware consisting of Weis Universal inclined ball-bearing gravity hinge assembly, throw latch, combination keeper and bumper and combination coat hook and bumper, shall be brass *(nickel) (chromium)* plated. *(Specify type No. 1 or No. 2 top hinge.)* (1) Top hinge shall be Weis cut-out type inset into edge of door for mounting top of door on line with top of partition stiles. (2) Top hinge shall be regular pivot type for mounting on partition stile above top of door.

All material shall be thoroughly cleaned and given a coat of metal primer baked on at 350 degrees F., followed by *(specify method No. 1 or No. 2)* (1) two coats *(sage green) (light grey) (specify other specal color)* baked-on enamel. (2) two coats full-rubbed *(specify color)* high-baked synthetic gum enamel with final coat rubbed to a piano finish. Protective paper covering shall be applied over all rubbed finish units at factory. All stall doors and hardware shall be erected in strict accordance with manufacturer's instructions. All drilling of glass or marble for application of hardware shall be done by glass or marble contractor from a template furnished by door and hardware manufacturer.

NOTE: Flush WEISTEEL doors are also available in aluminum alloy, monel, bronze or stainless steel. Any finish suitable for any of these metals will be furnished.



FLUSH WEISTEEL DOOR ON GLASS WITH WEIS CUT-OUT TYPE TOP HINGE

Henry Weis Manufacturing Company, Inc.

# STALL DOOR HARDWARE BY WEIS

## for TOILETS, DRESSING ROOMS, SHOWERS and DOORS on MARBLE

The Weis stall door hardware set illustrated below embodies new principles of design and construction. It combines beauty of line and harmony of parts with practical strength.

• • **Weis Universal Gravity Hinge**—Outstanding among the features of this hardware set is the Weis universal gravity hinge. The ball-bearing roller is so mounted on the pintle that in operation geometrical continuity of contact is maintained between the roller and its race (see illustration); thus side thrusts and wear are eliminated. This new principle of construction definitely removes the cause of trouble which frequently develops in gravity hinges. Ball-bearing roller and race are case hardened steel. These with the pintle are cadmium plated. All interior working parts available in stainless steel at small extra cost. Hinges so equipped are permanently rustproof—especially suitable for operation under any water, steam or moisture condition.

• • **Weis Cut-Out Top Hinge**—An exclusive Weis development is the cut-out type top hinge illustrated below. The hinge case and pivot guide pin are mounted in a recess in the edge of the door, thus permitting mounting top of door on a line with top of partition stiles. This provides noiseless, easy, trouble-free operation and new freedom of design as extended stiles and headrails are eliminated; doors and partitions aligned at the top.

• • **For Doors of Other Make**—The attractive appearance and many desirable service features—quiet operation, absence of stile strain, freedom from trouble—of Weis hardware has created a large demand for it as a separate hardware set for wood doors or metal doors of other make. Standard sets are available to fit any thickness of marble or glass stiles up to 2½ inches. Door weight should not exceed 80 pounds.

## ARCHITECT'S SPECIFICATIONS

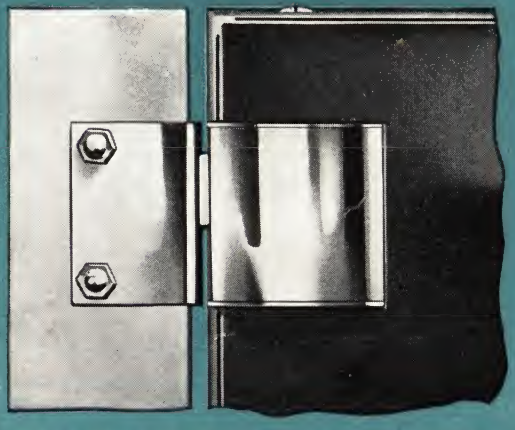
(For stall door hardware set for wood doors or metal doors of other make.)

All stall door hardware for attaching doors to *(state material)* partitions *(state thickness)* in. thick shall be Weis stall door hardware manufactured by Henry Weis Manufacturing Company, Inc., Elkhart, Indiana.

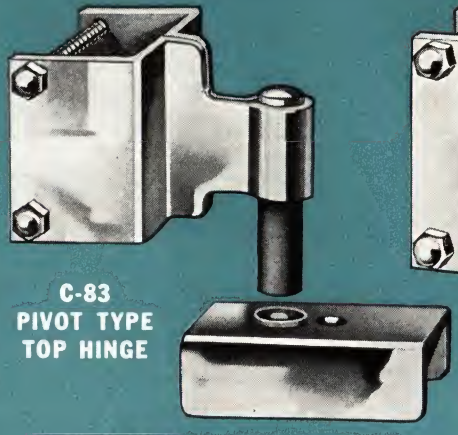
Hardware set shall consist of universal gravity hinge assembly, throw latch, combination keeper and bumper, and combination coat hook and bumper. All exposed parts to be brass *(nickel) (chromium)* plated. All interior working parts to be *(steel cadmium plated) (stainless steel). (Follow with type No. 1 or No. 2 top hinge.)* (1) Top hinge shall be Weis Cut-Out type inset into edge of door for mounting top of door on line with top of partition stiles. (2) Top hinge shall be regular pivot type for mounting to partition stile above top of door.

NOTE: Two prong coat hook and pull substituted for combination coat hook and bumper if doors swing out.



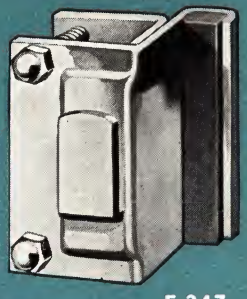


C-320 WEIS CUT-OUT TYPE TOP HINGE

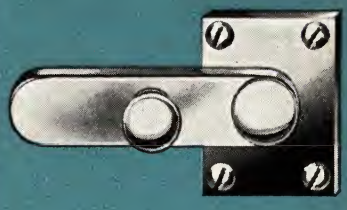


C-83 PIVOT TYPE TOP HINGE

C-86 TOP HINGE FITTING
C-90 BOTTOM HINGE FITTING



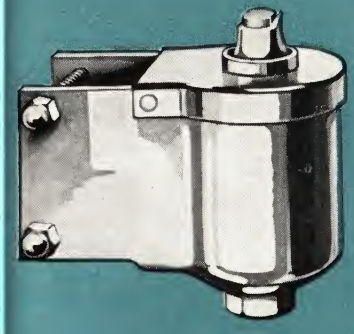
E-347 COMBINATION KEEPER AND BUMPER



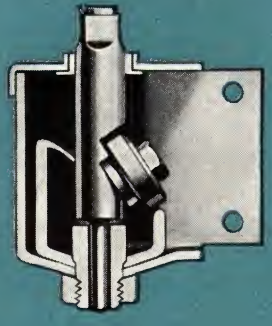
B-23 THROW LATCH



B-35 TWO-PRONG COAT HOOK







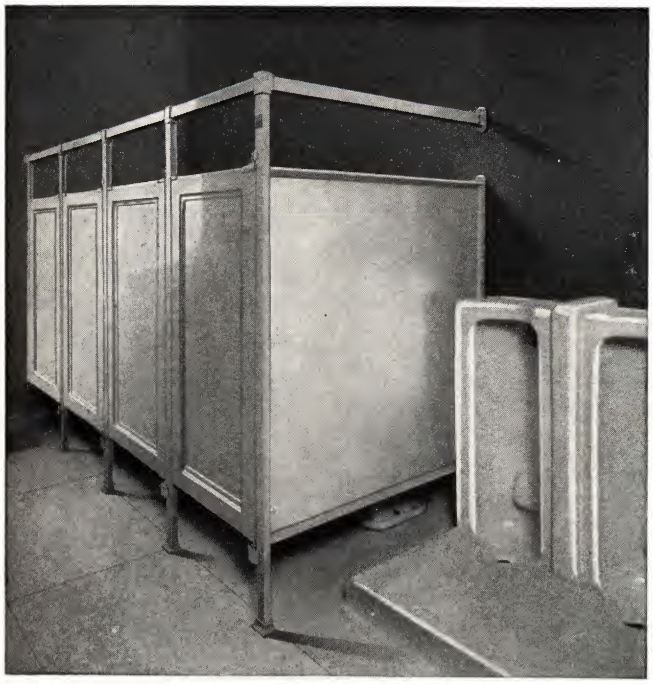
C-84 WEIS UNIVERSAL INCLINED BALL-BEARING GRAVITY TYPE BOTTOM HINGE



C-34 PULL



C-7 COMBINATION COAT HOOK AND BUMPER



## ARCHITECT'S SPECIFICATIONS

All Toilet Stalls, Shower and Dressing Room Compartments shall be *(Panel WEISTEEL) (Panel WEISALLOY)* as manufactured by the Henry Weis Manufacturing Company, Inc., Elkhart, Indiana.

Design, construction and finish of partitions, doors and hardware shall conform to manufacturer's standard panel type specifications.

**Insert For PANEL WEISTEEL**

Partitions, posts and headrails shall be 16 U.S. gauge and doors shall be 18 U.S. gauge full-pickled, cold-rolled furniture steel. Steel wall and top post fittings and brass foot castings shall be adjustable to variations in walls and floors.

**Insert For PANEL WEISALLOY**

Partitions shall be 14 B&S gauge, doors 16 B&S gauge and headrails 12 B&S gauge aluminum alloy. Aluminum alloy wall and top post fittings and government formula nickel alloy foot castings shall be adjustable to variations in walls and floors.

Hardware consisting of universal gravity hinge, heavy slide bar latch, pull and coat hook shall be brass *(nickel) (chromium)* plated.

All material shall be thoroughly cleaned and given a coat of grey metal primer baked on at 350 degrees F. *(Follow with method No. 1 or No. 2, for final finish.)* (1) Finish painting to be done after installation. See painting specifications. (2) All material to be finished at factory with *(sage green) (light grey) (specify other special color)* enamel baked on at 285 degrees F.

● ● ●

● ● **Erection**—The erection is simple and fool-proof. Three bolts only are required to erect a partition—one in the floor and two in the wall fittings. All units are made accurately to dimensions. No fitting, cutting or drilling is necessary at the job. Detailed erection drawings and instructions are furnished.

For more than twenty-five years these compartments have met all the requirements of discriminating architects and builders. In appearance, quality of material and workmanship, they harmonize with any adjacent materials. They have established a new standard of utility value where sanitation, durability and economy are primary considerations. Besides their adaptablity for toilet stalls and dressing rooms, they are recommended for shower enclosures in batteries.

**Panel WEISTEEL**—Full pickled, cold rolled furniture steel.

**Panel WEISALLOY**—All parts and fittings are aluminum alloy, which is rustproof and impervious to moisture and odors.

## CONSTRUCTION FEATURES

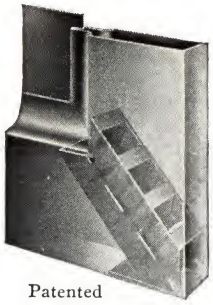
● ● **Sanitary**—All joints are closed and sealed. Design of mouldings, floor fittings and hardware, and the absence of projecting screws or bolt heads prevent the accumulation of dust and dirt. Metal is non-absorbent and is not easily defaced.

● ● **Substantially Constructed**—Each partition with its integral front and rear post is a single substantial unit. Panels and posts are interlocked and welded. Partition top and bottom V-rails are formed as an integral part of the partition panels. Each V-rail has joint on one side only which is locked and sealed at intersection with panel, affording maximum rigidity, sanitation and pleasing appearance.



V-Rails Partition Top and Bottom

Phantom View of Door Construction



Patented

● ● **Doors**—Panel doors are made by an exclusive process whereby the four corner joints of the mitered stiles and rails are electrically welded with interior reinforcements that become an integral part of each corner. The fused joints are finished flush and smooth. This joint construction and the moisture-proof method for assembly of the panel with the stiles and rails results in a door that is rigid, pleasing in appearance and practically proof against damage under the most severe abuse.

● ● **High Quality**—There are no exposed or raw edges of metal or open seams. All fittings are small and fit the partitions and doors snugly. With average care, these compartments should last as long as the building.

● ● **Hardware**—Doors are equipped with the Weis Stall Door Hardware illustrated on page 5, including the permanently trouble-free Weis universal, inclined ball-bearing gravity hinge.

● ● **Finish**—Compartments are finished with the most durable primers and baking enamels in accordance with the latest advanced and tested practices developed in the art of metal finishing. Resulting finishes in appearance and long life have been for many years one of their outstanding characteristic values.

# WEISTEEL FLUSH COMPARTMENTS WEISALLOY

The service record, good appearance and economies of Standard Panel WEISTEEL and WEISALLOY compartments, described and illustrated on page 6 created a demand for a still more finished flush type compartment partition and door which would harmonize with the characteristics found in types of buildings where more expensive materials are generally used. This resulted in the development of Flush WEISTEEL and WEISALLOY compartments which for the past several years have received the commendation of and acceptance by discriminating architects and builders throughout the United States.

**Flush WEISTEEL**—Full pickled, cold-rolled furniture steel.

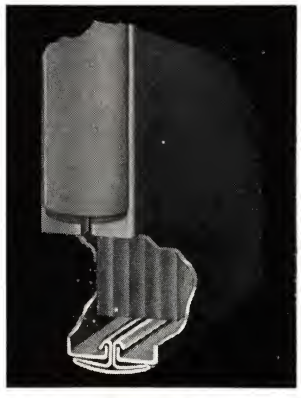
**Flush WEISALLOY**—All parts and fittings are aluminum alloy which is rustproof and impervious to moisture and odors.

## CONSTRUCTION FEATURES

● ● **1.** Flush WEISTEEL is a combination of pleasing rectangular design.

● ● **2.** Partitions and doors are 1 inch thick—combining desired mass appearance with essential rigidity.

● ● **3.** Each partition and door made up of two sheets spaced and insulated with laminated corrugated fiber board filler cemented to their inner surfaces.



Patented

● ● **4.** Inner surfaces of side members coated with a high-baked primer before assembly.

● ● **5.** Edges of partitions and door are bound and interlocked under tension with drawn moulding which is welded at corners.

● ● **6.** Each edge of partition and door is reinforced by three thicknesses of metal—see illustration.

● ● **7.** No exposed raw edges of metal or open seams.

● ● **8.** The above method of assembly provides permanent, uniform rigidity and strength along the entire length of sides of all partitions and doors.

● ● **9.** Supporting posts interlocked and welded to panels forming an integral rigid partition unit.

### IMPORTANT

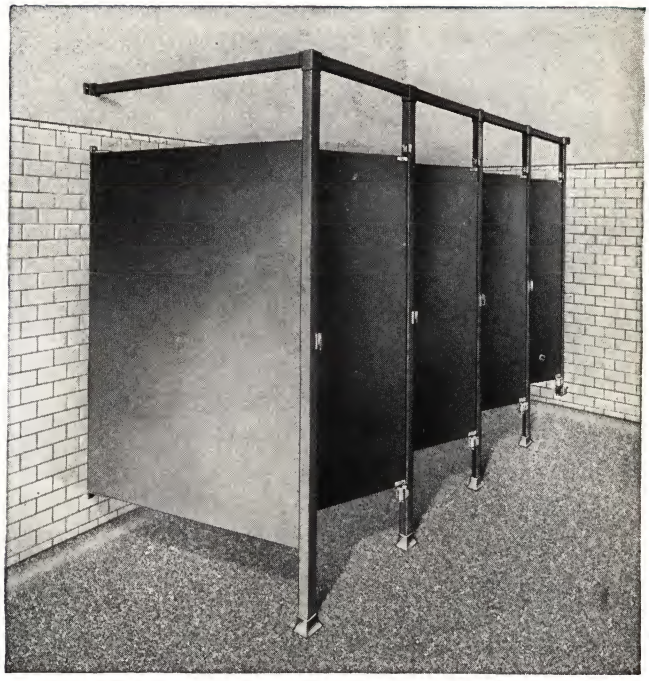
Flush construction is not recommended for shower stall enclosures for the following reasons:

● ● **1.** Observation and test indicate that no suitable flush panel construction can be uniformly and permanently sealed against shower water.

● ● **2.** Adaptable filler material, while moisture resistant, is not waterproof.

● ● **3.** Water temperature changes are conducive to condensation inside the flush panels.

Only single sheet panel construction—Panel WEISTEEL or Panel WEISALLOY—is recommended for shower enclosures.



## ARCHITECT'S SPECIFICATIONS

All Toilet Stalls and Dressing Room Compartments shall be *(Flush WEISTEEL) (Flush WEISALLOY)* as manufactured by the Henry Weis Manufacturing Company, Inc., Elkhart, Indiana.

Design, construction and finish of partitions, doors and hardware shall conform to manufacturer's standard flush type specifications.

**Insert For FLUSH WEISTEEL**

Partitions and doors shall be fabricated from 22 U.S. gauge full-pickled, cold-rolled furniture steel. Partitions 54 inches and wider shall use 20 U.S. gauge furniture steel. Posts and headrail shall be 16 U.S. gauge rectangular tubing not less than 6¼ inches in girth. (Backs, vent tops, end plates and utility doors where shown shall be 16 U.S. gauge steel single sheet panel construction.) Steel wall and top post fittings and government formula nickel alloy foot-castings shall be adjustable to variations in walls and floors.

**Insert For FLUSH WEISALLOY**

Partitions and doors shall be fabricated from 18 B&S gauge aluminum alloy. Posts and headrail shall be 12 B&S gauge aluminum alloy rectangular tubing not less than 6¼ inches in girth. (Backs, vent tops, end plates and utility doors where shown shall be 14 B&S gauge aluminum alloy single sheet panel construction.) Aluminum alloy wall and top post fittings and government formula nickel alloy foot castings shall be adjustable to variations in walls and floors.

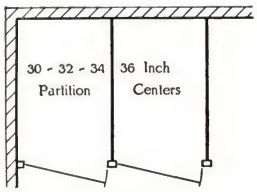
Hardware consisting of universal gravity hinge, heavy slide bar latch, pull and coat hook shall be brass *(nickel) (chromium)* plated.

All material shall be thoroughly cleaned and given a coat of grey metal primer baked on at 350 degrees F. *(Follow with method No. 1 or No. 2 for final finish.)*
(1) Finish painting to be done after installation. See painting specifications.
(2) All material to be finished at factory with *(sage green) (light grey) (specify other special color)* enamel baked on at 285 degrees F.

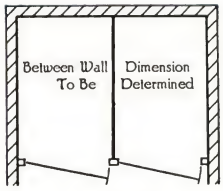
# DETAILS OF PANEL AND FLUSH

# WEISTEEL

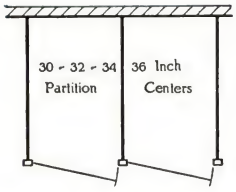
# TOILET STALLS AND TUB COMPARTMENTS




Series 1 - Illustrated
Series 2 - Opposite

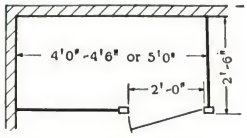



Series 3 - Between Walls

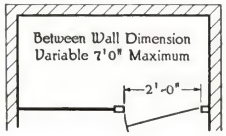



Series 4 - No Walls At Sides

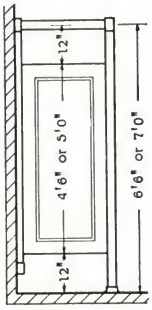
Series 5 - Illustrated
Series 6 - Opposite



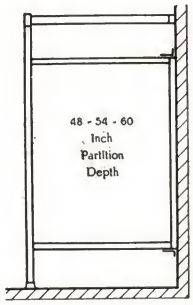

Series 7 - Illustrated
Series 8 - Opposite



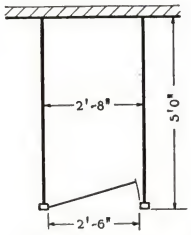

Series 1-2-3 and 4 Furnished in Batteries of Any Number Stalls Required.
Door Sizes Approximately 2" Less Than Partition Centers.



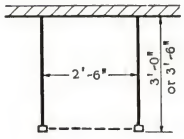

Typical Front Elevation



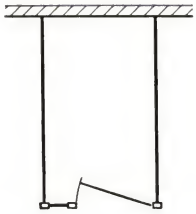

Typical Side Elevation



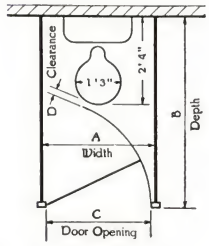

Recommended Standard Size Metal Toilet Stall With Inswinging Door. If Door Swings Out Depth of Stall May be Reduced to 54" or 48". An Economical Size Stall Sufficiently Large for all Types of Buildings.




Recommended Size for Stalls Without Doors. Doors are Not Recommended for Stalls Under 48" Deep.

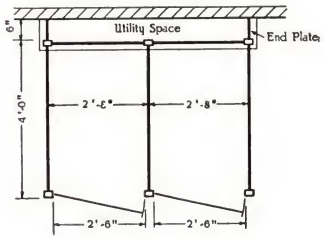


Front Partition Required With Door When Depth of Stall Will Not Permit Inswinging Full Width Door, See Door Clearance Schedule at Right. Front Partition and Door Assembly as Shown is Recommended to Provide Maximum Room for Occupant Entering

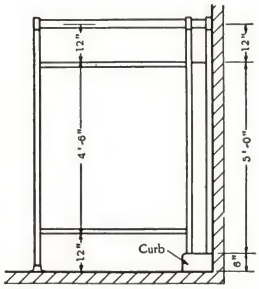



| A | B | C | D |
|---|---|---|---|
| 30" | 54" | 28" | 1⅛" |
| 32" | 54" | 30" | * |
| 32" | 60" | 30" | 5⅛" |
| 36" | 60" | 34" | 1¾" |

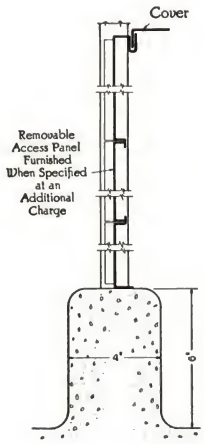
*Short of Clearance



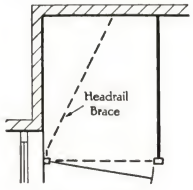

Standard Stall Units Combined With Backs and End Plates to Enclose Utility Space



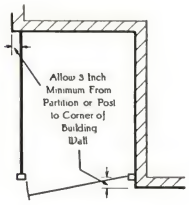

Side Elevation



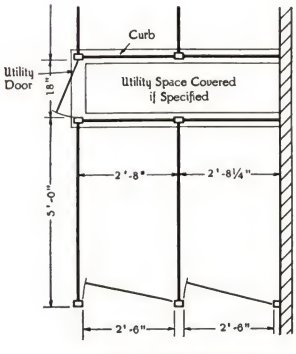

Section Thru Curb Under Backs



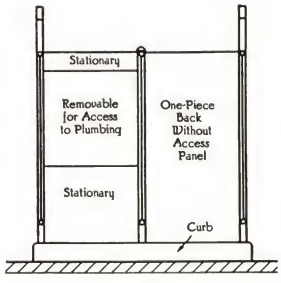

Wall Post Bracing At Window




Space Required for Corner Attachment

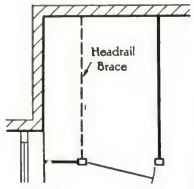



Detail of Utility Space With Stalls on Each Side

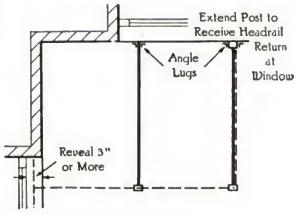



Elevation of Backs

For Sanitation and Economical Maintenance Curb Recommended Under All Backs



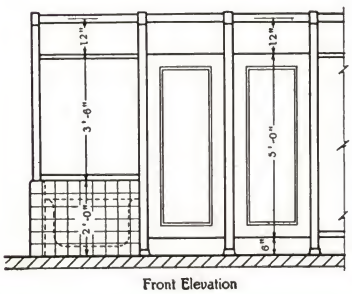

Partition Bracing At Window



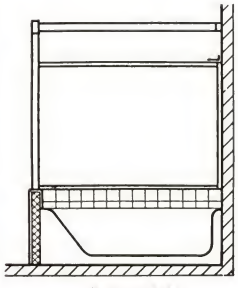

Headrail Across Window If Not Over 5' Wide—If More Than This Width Architect to Detail Bracing

Steel partitions and doors are frequently specified as enclosures for tub bathrooms, or compartments, especially where more than one private bath is desired in a group bathroom. Steel enclosures for free-standing tubs present no special problems. The built-in-type of tub, however, does require special treatment to assure uniformly satisfactory results. The wall side and end, or ends, of a built-in tub are designed to permit an integral combination with adjoining walls. Hence, square and accurately ground tub edges are unnecessary. Full height steel partitions are, therefore, not readily adaptable to the built-in-type of tub.

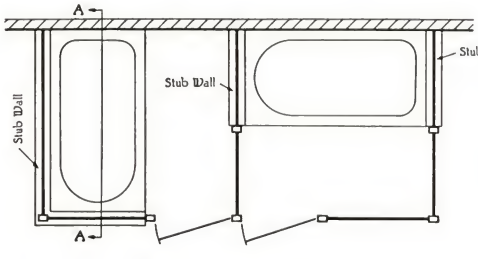
A combination of tile or other kinds of walls and steel partitions, as detailed, assures not only good construction but also one that is economical in first cost and upkeep, as well as pleasing in appearance.



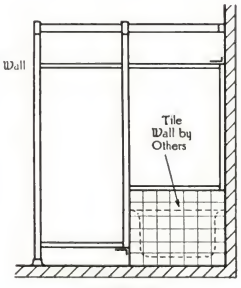

Front Elevation



Section -A-A-




Tub Compartment Layout

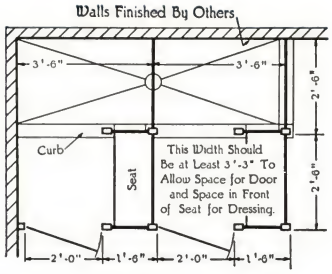



Side Elevation

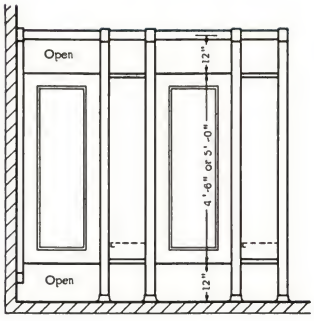
# DETAILS OF PANEL SHOWER COMPARTMENTS

# WEISTEEL

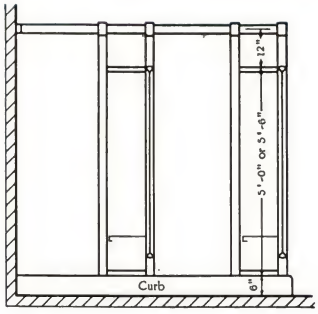
# COMBINED WITH PANEL OR FLUSH DRESSING ROOMS



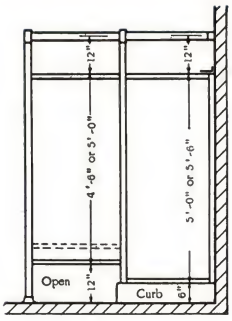

Individual Shower and Dressing Room



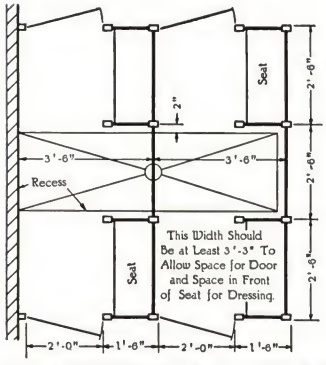

Front Elevation



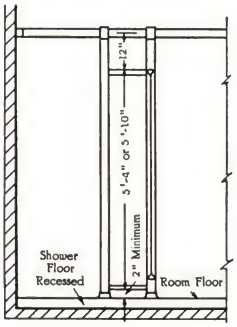

Section Thru Dressing Room



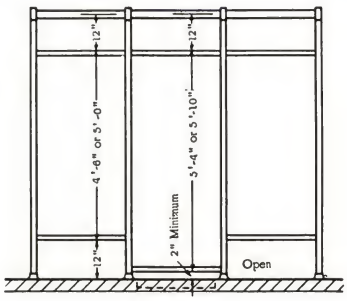

Side Elevation



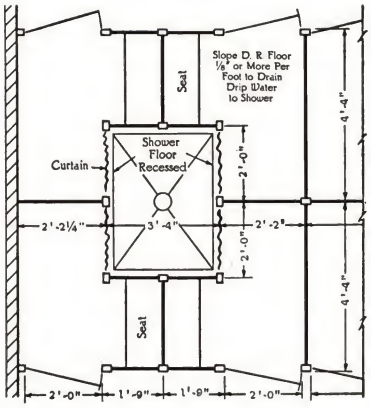

Shower With Dressing Room on Each Side



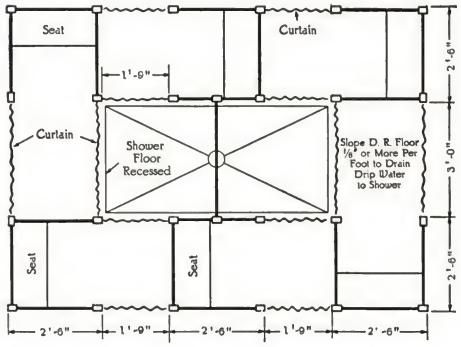

Section Thru Shower




Side Elevation




Layout of Single Shower With Four Dressing Rooms




Combination Layout of Two Adjoining Showers and Six Dressing Rooms

Suggested shower and dressing room layouts detailed are to be used with tile, terrazzo or concrete recessed receptors or built up curbs.

When making layouts, determine first if one, two, three or four dressing rooms for each shower is desired. For high school girls three dressing rooms are generally suitable. One drain for one to four showers is usually sufficient.

The use of metal sides and backs against masonry walls is not recommended.

Allow sufficient space for stool or seat in dressing room. Allow minimum of 28" in front of seat for door swing and space for dressing.

Either doors or curtains may be used for entrance to dressing rooms.

A more sanitary installation is assured by not extending shower partitions to the floor. Doors must be at least 6" above floor to enable use of Weisteel gravity hinge. If doors are less than 6" above floor, special hinges of either spring type or half surface butts must be used.

If unit temperature control is not used, locate valves so temperature of shower can be regulated before entering and shower spray directed toward rear. Place shower head for girls and women not over 5'0" to 5'6" above floor. For men's gang showers, head may be placed 7'0" above floor.

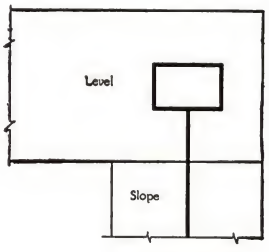
Recessed floor construction for showers is recommended as most satisfactory. Floor of dressing room should be sloped so that drip water from bather will drain from dressing room into shower.

Depth of recess should be 2" or more and partitions should be set on the dressing room level at least 2" away from edge of recess.

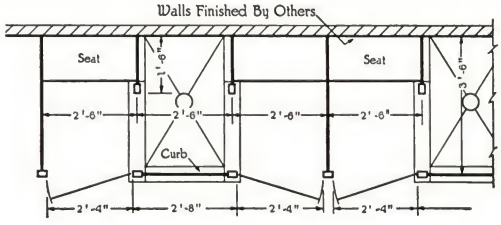
Built-up curbs should be at least 4" wide and 4" to 6" high. Curbs under partitions should slope at an angle as shown in section. Under posts and at entrances to shower, curbs should be level on top. Under dividing shower panels each side of curb should be built at an angle as shown in section.



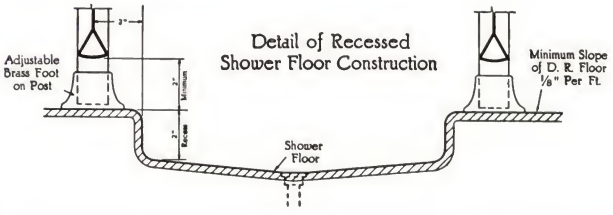

The Weisteel roller bearing curtain hanger is specially designed for use with standard Weisteel headrail and eliminates necessity of a special curtain rod. Shower curtains and hangers when specified are furnished as a part of standard Weisteel equipment at an extra charge.

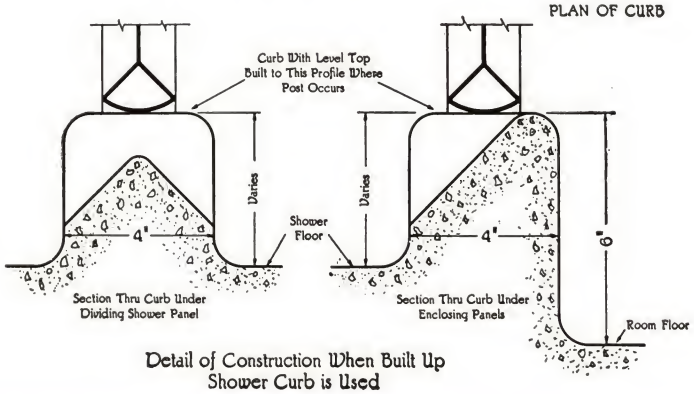



PLAN OF CURB




Shower With Two Dressing Rooms




Detail of Construction When Built Up Shower Curb is Used

# PANEL and FLUSH WEISTEEL HOSPITAL CUBICLES







### • • PURPOSE OF CUBICLE SYSTEM

Every hospital patient wants privacy, whether he can afford a private room or not. WEISTEEL Cubicles are satisfactorily solving this problem in many well-known hospitals throughout the country. They provide many of the advantages of private rooms—from the patients' viewpoint—yet they retain the economies and advantages of open wards which permit the hospital to make lower rates.

### • • ADVANTAGES OF CUBICLE SYSTEM

Control of cross infection . . . Permit greater classification . . . Segregation according to condition and ailment . . . Cross ventilation without draft . . . Reduction of nurses' travel as compared with private room nursing service . . . Greater privacy as compared with open wards . . . Promotion of quietness . . . Wider latitude in visiting regulations . . . Patients' satisfaction and goodwill increases income for hospital.

### • • ADAPTABILITY OF CUBICLE SYSTEM

WEISTEEL Cubicles are adaptable for use in maternity wards, children's wards, general wards, surgical and examination wards, and as waiting booths in hospital waiting rooms for out-patient departments and children's clinics.

### • • CONSTRUCTION

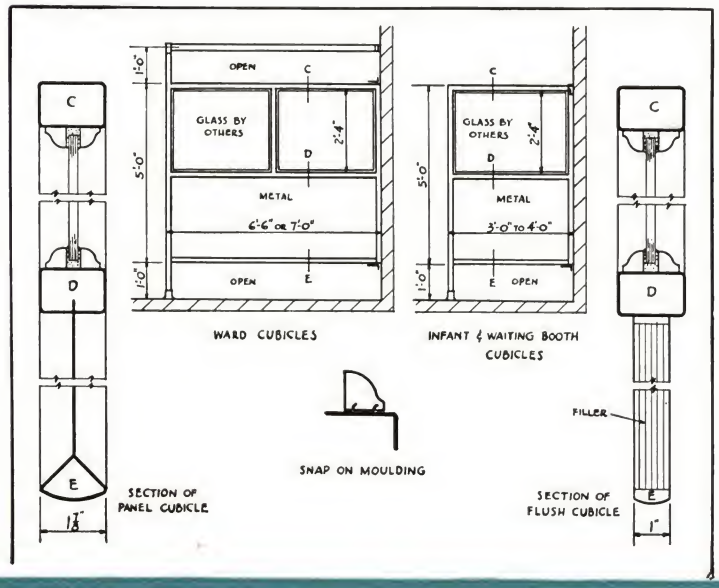
WEISTEEL Cubicles are fabricated from the best cold-rolled furniture steel sheets and are made in two types of construction—PANEL type and FLUSH type. These are the same high quality constructions described on the preceding pages for WEISTEEL toilet compartments.

### • • INSTALLATION

The simplicity of erection insures a satisfactory installation with a minimum amount of interruption to surrounding hospital activity.

### • • PLANNING SERVICE

A corps of experienced engineers is available for the convenience of hospital architects and executives in planning cubicle installations.



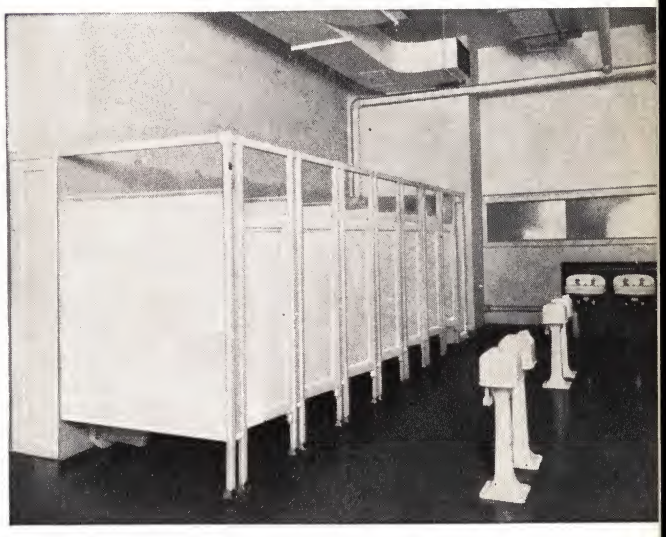
## • • THE COMPANY

The Henry Weis Manufacturing Company, Inc., was founded in 1876 and has been in business continuously since that time. This company originated metal toilet, shower and dressing room compartments. It has continuously contributed to the industry outstanding improvements in design and construction. Its products have always been known for quality of materials and workmanship. Growth of the company, its financial rating and its reputation and standing with the architectural profession and building trade are proof of its responsibility and dependability.



## • • MANUFACTURING FACILITIES

More than 60,000 square feet of expertly planned floor space in a new and modern factory are required for the production of Weis products. Special manufacturing equipment and production methods have been developed and are constantly improved to provide volume of quality production at economical cost. Supervision of manufacturing is in charge of men of ability and with broad experience.



## • • SALES AND SERVICE ORGANIZATION

Weis products are sold and serviced in more than 100 principal cities in the United States. (See list on back cover.) The organization of each representative is experienced and favorably known in its building trade territory.

## • • ENGINEERING SERVICE

Architects, engineers, builders and owners are invited to avail themselves of the company's facilities for detailed information on specific requirements. Weis engineers will offer suggestions for practical adaptation of Weis products without obligation.

Due to variations in types of layouts and dimensions, it is advisable to submit rough sketches of the requirements contemplated, showing location of the building walls, height and depth of dividing partitions and width of compartments.



# WEISTEEL COMPARTMENTS

## SALES REPRESENTATIVES

For Addresses See Local Telephone Directories

| | |
|---|---|
| **ALABAMA** | |
| BIRMINGHAM | Birmingham Ornamental Iron Co. |
| MOBILE | Reliance Equipment Company |
| **ARIZONA** | |
| PHOENIX | Walter Dubree |
| **ARKANSAS** | |
| LITTLE ROCK | Clippard Builders Supply Co. |
| **CALIFORNIA** | |
| LOS ANGELES | J. E. Dwan, Inc. |
| SAN DIEGO | Charles H. Lentz |
| SAN FRANCISCO | Dwan & Co. |
| **COLORADO** | |
| DENVER | R. T. MacCracken Co. |
| **CONNECTICUT** | |
| NEW HAVEN | A. R. Kirschner |
| WEST HARTFORD | Laurence R. Smith & Co. |
| **DELAWARE** | |
| WILMINGTON | J. Francis Blaine, Inc. |
| **DISTRICT OF COLUMBIA** | |
| WASHINGTON | Harry Schnabel |
| **FLORIDA** | |
| JACKSONVILLE | Dawkins Building Supply Co. |
| MIAMI | Frank R. Allen |
| TAMPA | Stovall & Archer |
| **GEORGIA** | |
| ATLANTA | Industrial Equipment Co. |
| AUGUSTA | W. E. Raines |
| **ILLINOIS** | |
| AURORA | T. L. Miller |
| CHICAGO | John H. Brodt |
| DECATUR | C. J. Gandy |
| PEORIA | Samuel J. Smith & Co. |
| ROCKFORD | Central Iron Works |
| SPRINGFIELD | Wm. H. Brown |
| **INDIANA** | |
| EVANSVILLE | J. C. Vaught |
| FORT WAYNE | Carl H. Penningroth |
| GARY | Builders Service & Equipment Co. |
| INDIANAPOLIS | Hoover Bros. Company |
| **IOWA** | |
| BURLINGTON | C. D. Barngrover |
| DAVENPORT | Austin Crabbs, Inc. |
| DES MOINES | Hawkeye Engineering Co. |
| SIOUX CITY | Paul V. Ellis |
| **KANSAS** | |
| WICHITA | C. L. Anderson Co. |
| **KENTUCKY** | |
| LEXINGTON | Clay-Ingels Company |
| LOUISVILLE | Stearns Coal Company |
| PADUCAH | Paducah Iron Company |
| **LOUISIANA** | |
| NEW ORLEANS | J. R. Quaid |
| SHREVEPORT | Simmons Bldg. Material Co. |
| **MAINE** | |
| PORTLAND | W. O. Hutchins |
| **MARYLAND** | |
| BALTIMORE | |
| CUMBERLAND | Builders Paint & Supply Co. |
| HAGERSTOWN | Joseph Lyon |
| **MASSACHUSETTS** | |
| BOSTON | Construction Supply Co. |
| SPRINGFIELD | Don-Law Company |
| **MICHIGAN** | |
| DETROIT | Acme Wire & Iron Works |
| GRAND RAPIDS | S. A. Morman & Co. |
| LANSING | James E. Payne |
| MENOMINEE | Ben B. Holmes Co. |
| **MINNESOTA** | |
| DULUTH | Dunlop-Moore Company |
| ST. PAUL | Builders Engineering Co. |
| **MISSISSIPPI** | |
| JACKSON | Fred Thrasher |
| **MISSOURI** | |
| KANSAS CITY | C. S. Hawley Co. |
| ST. JOSEPH | Mannan-Smith Supply Co. |
| ST. LOUIS | Len Maune |
| **NEBRASKA** | |
| HASTINGS | R. W. Kerr |
| OMAHA | D. B. Porter |
| **NEW YORK** | |
| ALBANY | Harding Bldg. Specialties Co. |
| BINGHAMTON | Babcock, Hinds & Underwood |
| BUFFALO | Shults Engineering Co. |
| ELMIRA | Elmira Bldg. Units, Inc. |
| NEW YORK CITY | Philadelphia Fire Retd. Co. |
| ROCHESTER | Geo. A. McNerney |
| SCHENECTADY | Fireproof Materials, Inc. |
| SYRACUSE | B. R. Johnson |
| UTICA | American Hard Wall Plaster Co. |
| **NORTH CAROLINA** | |
| ASHEVILLE | General Bldg. Products Co. |
| CHARLOTTE | Edwin C. Boyette, Jr. |
| GREENSBORO | J. D. Wilkins |
| RALEIGH | Engineering & Sales Co. |
| **NORTH DAKOTA** | |
| FARGO | Clay Products & Material Co., Inc. |
| **OHIO** | |
| CINCINNATI | Cincinnati Builder's Supply Co. |
| CLEVELAND | Chas. J. Cassell |
| COLUMBUS | H. H. Leukart |
| CUYAHOGA FALLS | O. G. Knoske |
| DAYTON | A. C. Harris |
| TOLEDO | Hausman Steel Co. |
| **OKLAHOMA** | |
| OKLAHOMA CITY | H. C. Geatches |
| TULSA | Murray R. Womble & Co. |
| **OREGON** | |
| PORTLAND | Cress & Company |
| **PENNSYLVANIA** | |
| ALLENTOWN | Halteman Company |
| ERIE | Geo. H. Kraft & Son |
| HARRISBURG | Metal Building Products Co. |
| PHILADELPHIA | Philadelphia Fire Retd. Co., Inc. |
| PITTSBURGH | James R. Pitcairn |
| SCRANTON | Harvey R. Allen |
| WILKES-BARRE | Harry W. Poust |
| WILLIAMSPORT | Robert W. Ebur |
| WYOMISSING | Daniel F. Yost |
| **SOUTH CAROLINA** | |
| COLUMBIA | Columbia Steel Co. |
| GREENVILLE | J. MacRabb |
| **TENNESSEE** | |
| CHATTANOOGA | Currin-Andrews Co. |
| KNOXVILLE | Chas. M. Allen Corp. |
| MEMPHIS | Tri-State Iron Works |
| NASHVILLE | John Williams Company |
| **TEXAS** | |
| AMARILLO | Jenkins Mantel & Brick Co. |
| DALLAS | Maisey & Paige |
| EL PASO | C. C. Gaines |
| FORT WORTH | Chas. F. Williams Co., Inc. |
| LUBBOCK | J. T. Magee |
| MIDLAND | C. R. Sewell |
| HOUSTON | Maisey & Paige |
| SAN ANTONIO | John A. Williamson Co. |
| **UTAH** | |
| SALT LAKE CITY | Williams & Richardson |
| **VIRGINIA** | |
| NORFOLK | Hall-Hodges Company |
| RICHMOND | L. C. Tolson Company |
| ROANOKE | Stone-Tile & Supply Co., Inc. |
| **WASHINGTON** | |
| SEATTLE | Tourtellotte-Bradley, Inc. |
| SPOKANE | Fryer-Ford Company |
| **WEST VIRGINA** | |
| CHARLESTON | Standard Brick & Supply Co. |
| **WISCONSIN** | |
| GREEN BAY | H. J. Martin |
| MADISON | Theo. Kupfer Fdry. & Iron Wks. |
| MILWAUKEE | Jackson & Fahey Company |

**HENRY WEIS**
MANUFACTURING COMPANY·INC·
*Elkhart·Indiana*

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# SECTION 20

CONTINUED ⟶

# HORN FOLDING PARTITION CO.

MAIN OFFICE AND FACTORY

FORT DODGE, IOWA

SALES REPRESENTATIVES

ALBANY, N. Y., Austin F. Loucks, Jr., 483 Central Avenue
ATLANTA, GA., L. J. Bombardier, 152 Nassau Street
BALTIMORE, MD., Edward Rasch, 1102 No. Charles Street
BIRMINGHAM, ALA., C. S. Caldwell, 1914 First Avenue No.
BOSTON, MASS., Construction Supply Co., 6 Park Street
BUFFALO, N. Y., Hawkins & Howlett, 243 Capen Boulevard
BUTTE, MONT., Archie W. Adams, 618 Metals Bank Building
CATAWISSA, PA., S. F. Rarig
CHARLOTTE, N. C., R. Galloway Ross, P. O. Box 846
CHICAGO, ILL., C. C. Colvin, 1849 Greeenleaf Avenue
CINCINNATI, OHIO, See Newport, Ky.
CLEVELAND, OHIO, George E. McNeal, 201 Union Building
DALLAS, TEX., R. K. McLaury Company, 3201 Worth Street
DETROIT, MICH., Building Accessories Co., 199 Tennyson Avenue
FARGO, N. D., Fred R. Tharalson, 616 North Second Avenue
GRAND RAPIDS, MICH., S. A. Morman & Co., 36 Pearl Street N. W.
HOUSTON, TEX., Robert Voigtlander, 1612 Miller Street
INDIANAPOLIS, IND., Hoover Brothers, 630 Architects & Builders Building
JACKSON, MISS., Fred Thrasher
KANSAS CITY, MO., T. L. Bruton, 2918 Parkwood Boulevard
KNOXVILLE, TENN., Charles M. Allen Corp., 712 S. Gay Street
LANSING, MICH., C. M. Van Auken, 1717 Inverness Avenue
LOS ANGELES, CAL., Bradfield Building Products Co., 619 East 3rd Street
LOUISVILLE, KY., The Frey Planing Mill Co., 418-30 E. Breckenridge St.
MEMPHIS, TENN., C. R. Cochran, Specialty Dept., Tri-State Iron Works
MENOMINEE, MICH., Ben B. Holmes Company
MILWAUKEE, WIS., See Chicago, Ill.
MINNEAPOLIS, MINN., Hauenstein & Burmeister, Inc., 614 Third Ave., So.
MONROE, LA., L. B. Ferguson, Box 157
NASHVILLE, TENN., Hoover & O'Hara, 149 Fourth Avenue, N.
NEW ORLEANS, LA., Ole K. Olsen, Inc., 823 Perdido Street
NEWPORT, KY., H. K. & C. C. Reeves, 1029 Saratoga Street
NEW YORK, N. Y., M. Malcolm MacGregor, 103 Park Avenue
OMAHA, NEB., Write Fort Dodge Office.
PHILADELPHIA, PA., James A. Clancy, Harrison Building
PITTSBURGH, PA., James R. Pitcairn, 1052 Century Building
PORTLAND, ORE., Cress & Company, 2145 N. W. Pettygrove Street
PROVIDENCE, R. I., See Boston Mass.
ROCHESTER, N. Y., See Buffalo, N. Y.
SALT LAKE CITY, UTAH, T. C. Stayner Co., 66 E. Fourth South Street
SAN DIEGO, CAL., Modern Building Specialties Co., 78 Sefton Building
SAN FRANCISCO, CAL., Fred E. Turner, 557 Market Street
SCRANTON, PA., See Philadelphia, Pa.
SEATTLE, WASH., Walter S. Keith, 520 Denny Way
STERLING, ILL., W. W. Scovill, 14-16 West Third Street
ST. LOUIS, MO., August Court Company, 302 Rialto Building
ST. PAUL, MINN., Hauenstein & Burmeister, Inc., 707 Minnesota Mutual Building
SIOUX FALLS, S. D., Carl W. Forslund, 115 No. Main Avenue
SYRACUSE, N. Y., A. P. Madden, 246 Harrison Street
TULSA, OKLA., J. R. Bjorklund, P. O. Box 631
WASHINGTON, D. C., Lally-Rohlader, Inc., 1756 M Street, N. W.
WICHITA, KAN., Grabendike Engineering Sales Co., 335 No. Market Street

Should you find it difficult to reach our representatives in your territory, write or wire direct to our Fort Dodge Office.

## Products

FOLDING PARTITIONS (Top-hung or Floor-track)
FOLDING BLEACHER SEATS
SOUNDPROOF DOORS
VERTICAL SLIDING PARTITIONS (Counterbalanced)

## Experience

Established in 1909 and operated successfully and continuously by same management. All products are designed by Horn Engineers and amply protected.

## Facilities

A large, well-equipped plant, complete with all wood and iron working machinery. Everything is manufactured complete in this modern daylight factory.

## Engineering

Horn Engineers are prepared to solve the most intricate problem pertaining to any of the above products. Layouts prepared without obligation.

## Sales—Service

Horn Sales Offices are located at strategic points from Coast to Coast. Every Horn Representative is thoroughly trained to render helpful service.

## Installation

Dependable factory-trained mechanics usually install all Horn equipment, unless otherwise specified. Factory installations insure trouble-free operation for many years. Other arrangements can be made for installation if desired.

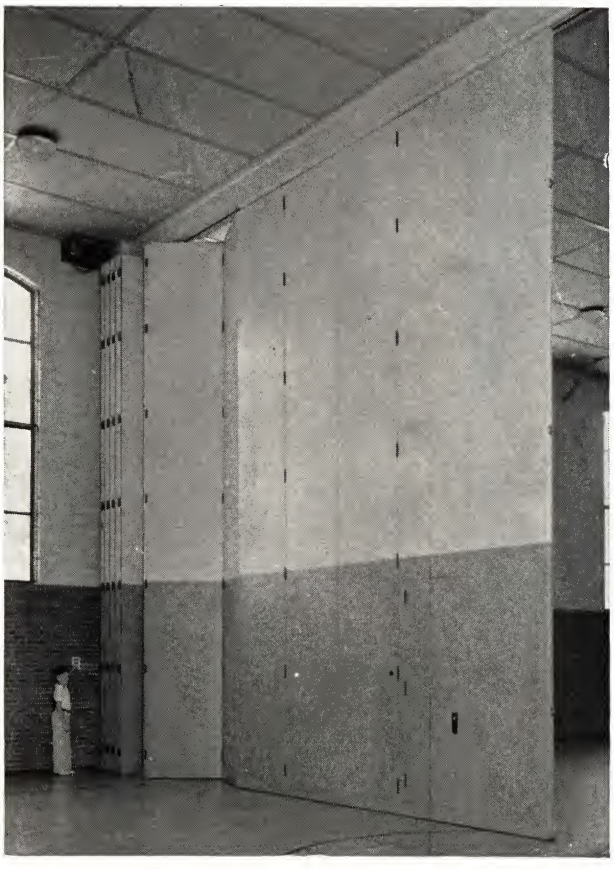
## Guarantee

All Horn equipment is guaranteed against faulty workmanship and operation for a period of five years. Only the highest quality material and workmanship could be so liberally protected.

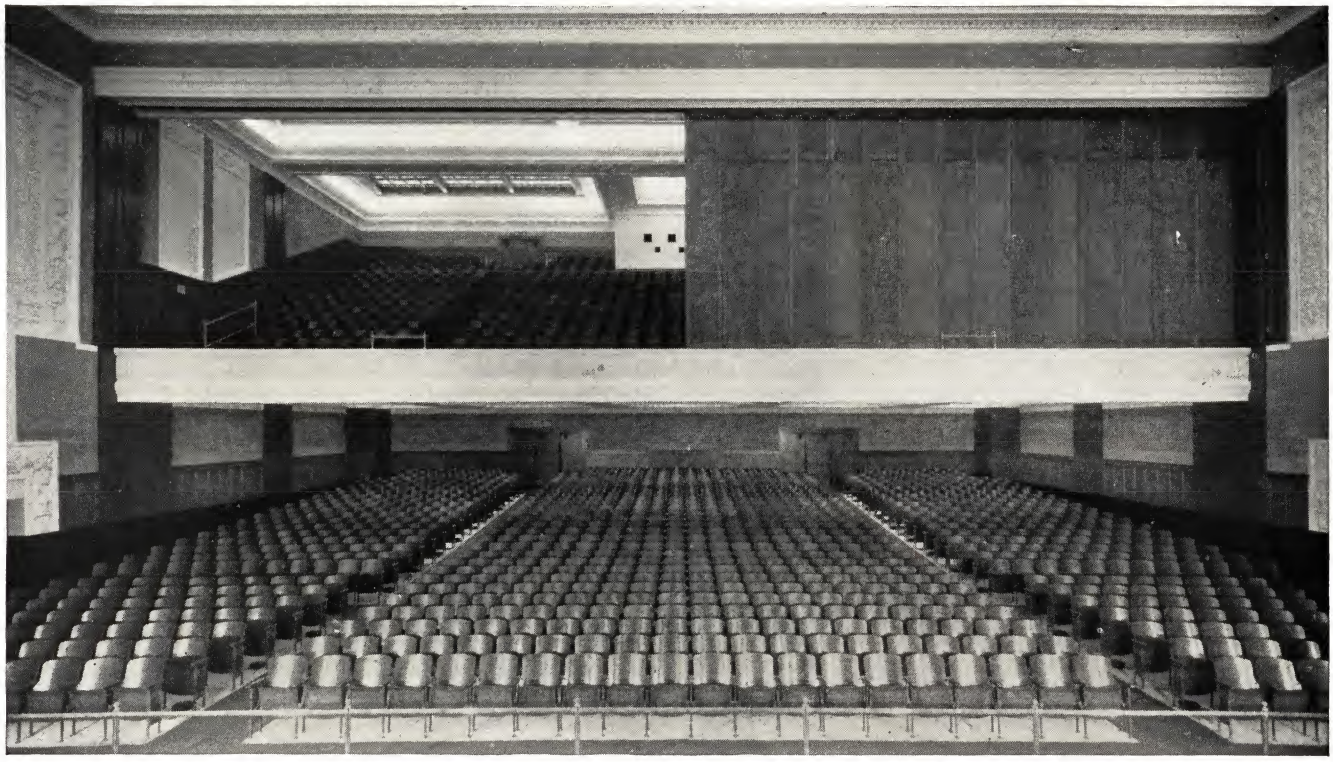
*NOTE: Illustration at right shows DeLuxe Fully Automatic Partition installed in World War Memorial Armory at Des Moines, Iowa. Entire partition operates without effort, from a key switch.*

## PARTITION TYPES

Horn Folding Partitions are now furnished in either the top-hung, mechanically operated type, or the floor-track type, which is manually operated. Whenever possible the top-hung type is recommended because it is more easily operated and will give trouble-free service over a longer period of time. Details on the following pages feature the top-hung partitions. Write for special floor-track details when your requirements call for this type.



*"Turn the Key——that's DeLuxe"*



**Horn DeLuxe Fully Automatic Electric Partition 96x19 ft. on Balcony, Washington High School—Sioux Falls, S. D.**
PERKINS & McWAYNE, Architects, Sioux Falls
*Note:* This school also has two Horn Partitions in the gymnasium.

## HORN DELUXE FULLY AUTOMATIC ELECTRIC



The DeLuxe principle of operation is especially adapted to large partitions for auditoriums and gymnasiums. It is completely automatic in every respect. By turning the key control switch, the partition smoothly, quietly and easily opens or closes. When the partition has reached the closed position, the space between the bottom of the partition and the floor is automatically sealed by the telescoping floor seal, an exclusive feature on Horn Partitions.

The floor seal is in contact with the floor only when the partition has reached the final closed position. A heavy cushion of molded sponge rubber is tightly compressed against the floor, not only sealing the space, but also locking the partition in place. Lateral movement of the partition is impossible. This is accomplished without the use of floor keepers, flush bolts or floor tracks. The partition sections are all equal, full size, eliminating the necessity of the half door which requires the "breaking" of the first joint. Since this partition is fully automatic in every respect, no experience or skill is required to operate it efficiently. Automatic recess doors can be furnished as optional equipment.

*"Turn the Key—that's DeLuxe"*

*See Details next page.*

## HORN STANDARD ELECTRIC

Many times architects prefer to include an alternate covering the folding partition equipment. The Horn Standard Electric Partition is similar in operation to the DeLuxe but is not fully automatic. The floor seals are of the self-balancing type and are used together with flush bolts. This method of operation has proven successful in many installations from coast to coast, and is highly efficient.

## HORN STANDARD MECHANICAL

The Horn Standard Mechanical operator consists of the hand crank mechanism and is recommended for partitions over 20 ft. wide if all sections fold toward one jamb, or 40 ft. wide if the sections fold toward both jambs. (On openings smaller than this, operators are usually omitted.)

## HORN MANUAL

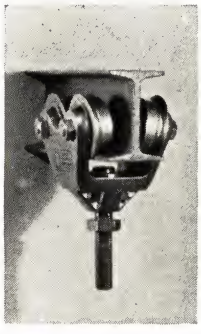
On small partitions used to divide classrooms, clubrooms, etc., it is not necessary to have either of the above methods of operation, as the partitions operate so easily that they can be moved by hand without difficulty.

*Note: The foregoing methods of operation can be used only on top-hung partitions. Under no conditions can a floortrack partition be operated by mechanical means.*

## CABLE DRIVE

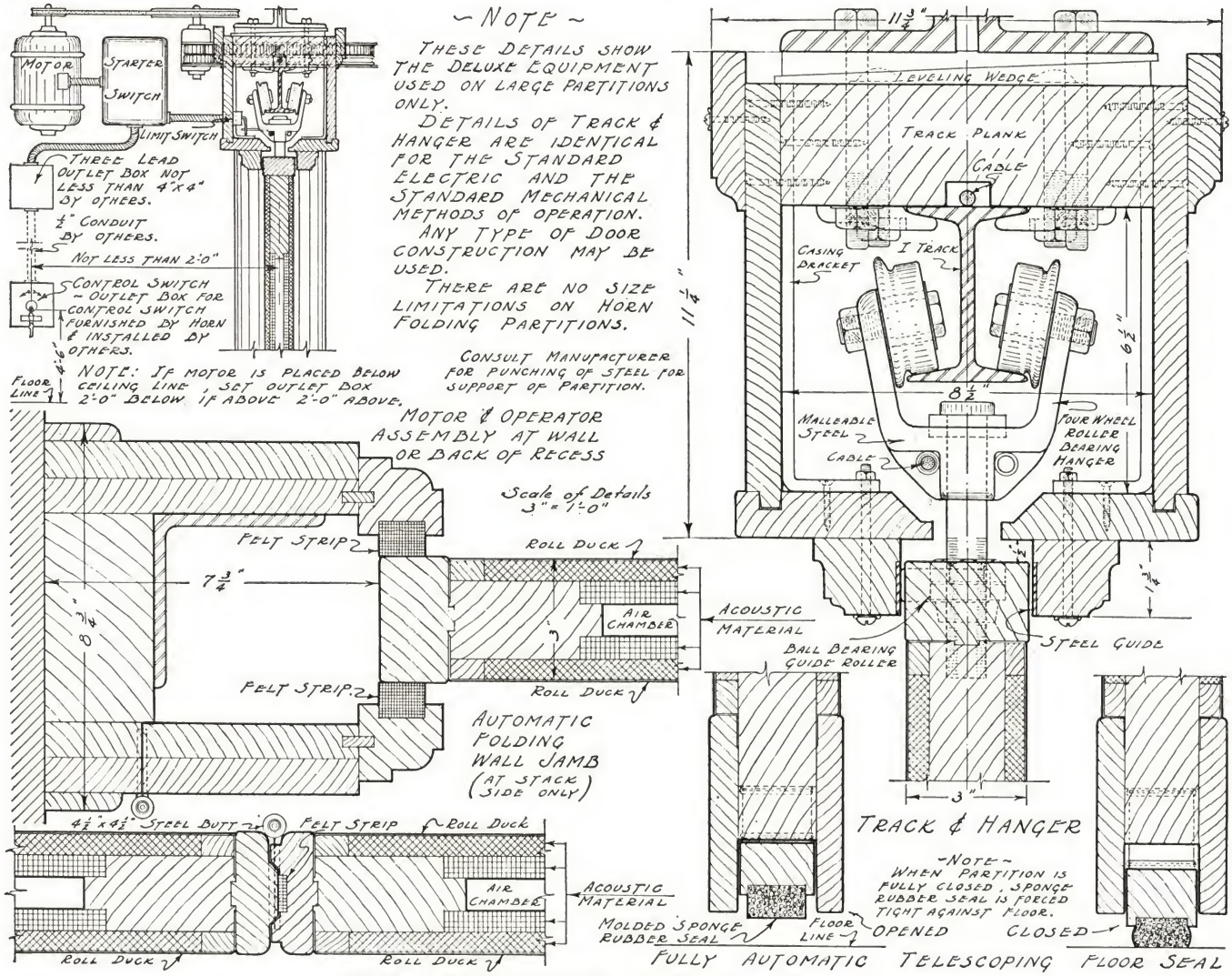
All methods of operation, except manual, use the exclusive Horn cable drive. This is a patented feature and is used only on Horn Partitions. It makes possible a smoother, easier operating partition than any other method. After experimentation with various types of operating equipment it was found that the cable drive was far superior. All cable is pre-stretched and never requires adjustment after the installation has been completed.

## I-BEAM TRACK AND HANGER



All top-hung partitions are equipped with the specially designed four-wheel roller-bearing I-beam hangers. There are two sizes, for both small and large partitions. These hangers have been designed for exclusive use on Horn Partitions and have a rated capacity many times greater than actually required. I-beam track is superior to any other type because of its great strength and uniformity.

*See specifications on following pages.*




**TYPICAL DETAILS OF HORN DE LUXE EQUIPMENT (ABOVE)**

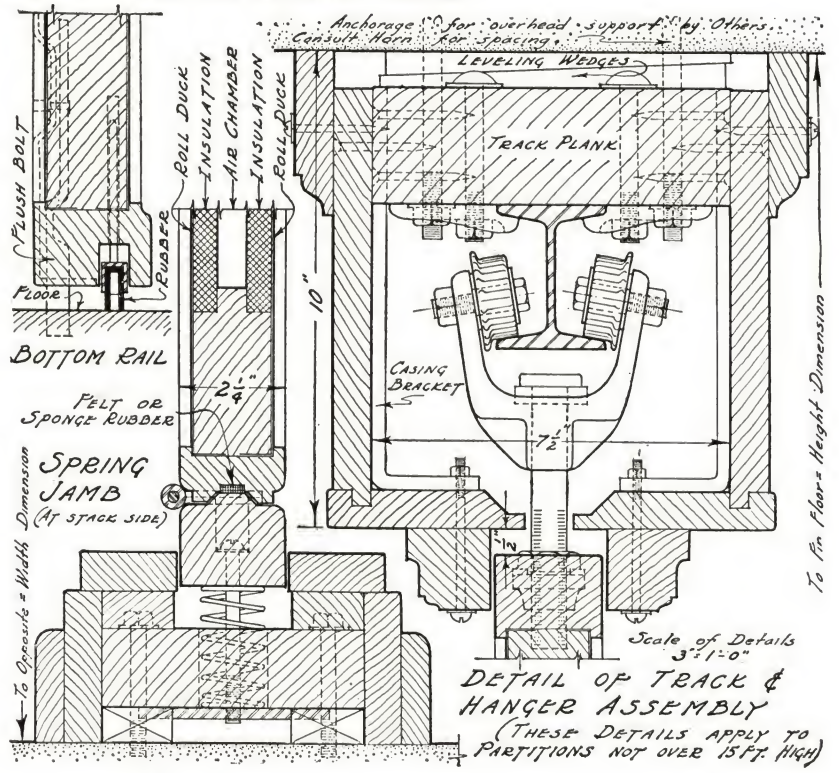
*Right:*

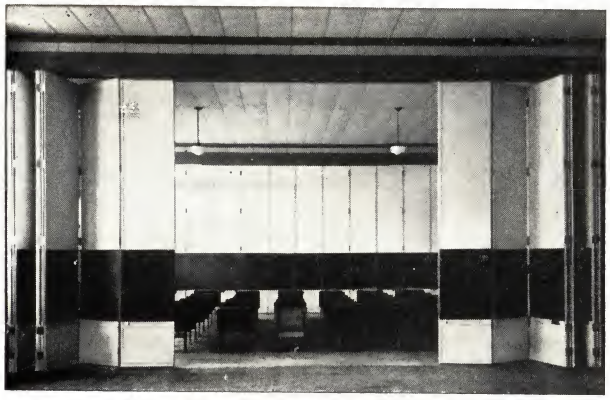
**Typical Details of Light Type "A"**
(For Small Openings Only)

*Note:* These details may also be used for Types "C," "D" and "E."

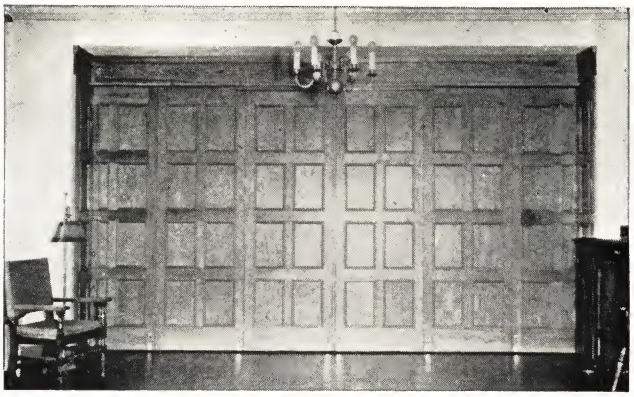
For small opening, such as in classrooms, Sunday School rooms, funeral parlors, etc., the manual operation as shown in the details at the right, is recommended. These details may be used in connection with any type of construction, but usually types Light A, C, D, and E are used. The Light Type A is shown because it is most commonly used for small openings.

Manual operation employs the half-door principle with overhead track. No floor tracks are required. Flush bolts are used to lock the partition in place. Slate blackboard with flush chalk rails may be had on any type of construction. For data on equipment for large partitions, see preceding pages. Write to the Horn Engineering Department for specific data regarding your particular problem. There is no obligation.





Horn Manual Type SA for Classrooms



Horn Manual Type C—for Hotels, etc.

## DESCRIPTION OF VARIOUS TYPES

**Type A**—Soundproof construction, 3 in. thick, roll duck, flush surface two sides. Recommended for dividing gymnasiums. High soundproofing efficiency.

**Type AW**—Soundproof construction 3 in. thick, wood panels both sides. Recommended for gymnasiums. Acoustic value lower than Type A.

**Type AM**—Soundproof construction, 3 in. thick. Same as Type A, but with Presdwood, cork, plywood or linoleum wainscoting. Recommended for gymnasiums.

**Light Type A**—Similar to Type A but lighter, 2¼ in. thick. Acoustically constructed. For small openings only.

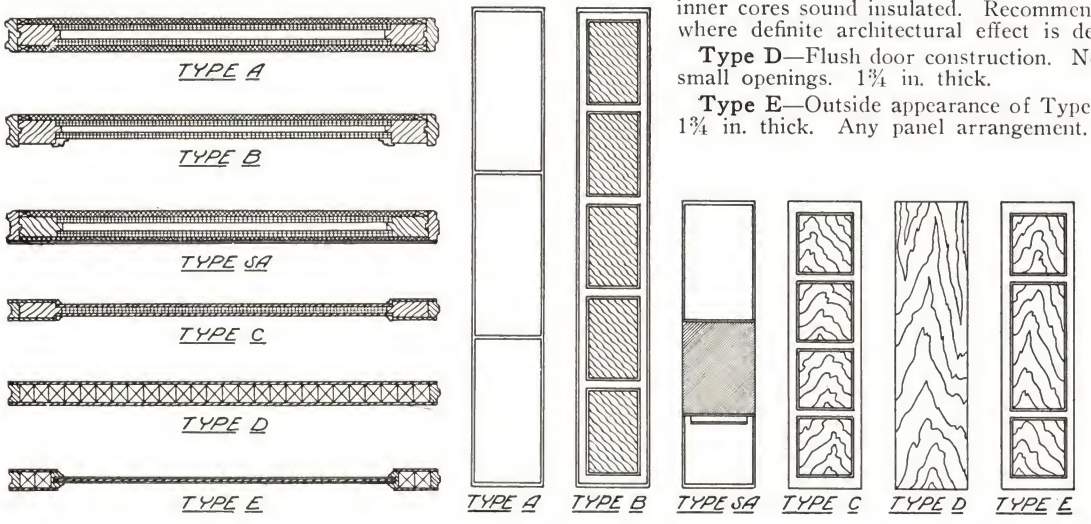
**Type SA**—Same as Type A, blackboard one side. Type SSA, blackboard two sides. Recommended for classrooms.

**Type B**—Soundproof construction, 3 in. thick, art cloth panels one side, roll duck other side. Recommended for auditoriums and gymnasium combinations. Highly acoustic.

**Type C**—Outside appearance same as ordinary wood doors; inner cores sound insulated. Recommended for small openings where definite architectural effect is desired. 1¾ in. thick.

**Type D**—Flush door construction. No soundproofness. For small openings. 1¾ in. thick.

**Type E**—Outside appearance of Type C but not soundproof. 1¾ in. thick. Any panel arrangement.




*Note: The prefix "S" signifies slate blackboard one side. The prefix "SS" signifies blackboard two sides. Blackboard can be used in connection with any of the above types. For example, specify Type SA, meaning A with blackboard on one side.*

*Note: Special types, other than above, can be designed for exacting conditions. Yellow pine astragals and dull brass hardware furnished unless otherwise specified.*

## SPECIFICATIONS—FOLDING PARTITIONS

**DeLuxe Fully Automatic Electric**—The folding partition as shown on plans shall be Horn DeLuxe Fully Automatic Electric, as manufactured, installed and guaranteed by the Horn Folding Partition Co., Fort Dodge, Iowa.

The principle of operation shall provide automatic and electric folding and unfolding of the partition, and automatic locking and unlocking with complete electrical control of all operations from the key switch conveniently located. It shall provide a one-inch clearance between the bottom of the partition and the floor when the partition is opening or closing, but the final closing movement shall cause the entire partition to automatically seal the space against transmission of sound by compressing the heavy molded sponge rubber against the floor, and automatically locking all sections in their fully closed position.

The operating mechanism shall include the cable drive, electric motors, magnetic switches, speed reducers, limit switches, control switch, and all necessary equipment to make a partition of this type.

The partition shall be supported on I-beam track running on four-wheel roller bearing I-beam hangers designed especially for use on folding partitions. Each hanger shall have a capacity of not less than three tons.

The partition shall be constructed of Horn type (specify Types A, AW, AM or B). The sections shall be 3 in. thick and of soundproof construction. (If recess doors are required, specify, "Recess doors shall be of similar construction as partition proper.") Pass doors shall be included as shown on plans.

Supporting steel to be drilled or punched by others according to manufacturer's directions.

The entire equipment shall be installed by factory trained mechanics and guaranteed by manufacturer for a period of five years.

**Standard Electric**—The folding partition as shown on plans shall be the Horn Standard Electric as manufactured, completely installed, and guaranteed by the Horn Folding Partition Co., Fort Dodge, Iowa.

The principle of operation shall include electric equipment consisting of motors, limit switches, speed reducers, key control switch and magnetic relay. It shall provide that the space at the floor line be sealed with self-balancing type floor seals. Flush bolts shall be furnished to hold the partition rigidly in place. (For partition construction, etc., see preceding specification.)

**Standard Mechanical**—If hand crank mechanism is desired instead of electric equipment, outlined in Horn Standard Electric, specify Horn Standard Mechanical.

**Manual**—For small partitions where no operators of any kind are required, specify Manual. For type of partition construction, see preceding details. All top-hung Horn Partitions, regardless of principles of operation or type, are furnished without floor tracks.

### Floor Track Partitions

Perhaps you have a particular requirement in which it is impossible to use a top-hung, mechanically operated partition. In such cases a floor-track type may answer your requirements.

Floor-track partitions are operated in individual pairs and therefore cannot be operated by mechanical means. Whenever such a problem presents itself, you are invited to call on the Horn Engineering Department for specific layouts. They will recommend the proper type of partition from an unbiased angle as all types are now manufactured by Horn.

# HORN ACCORDION FOLDING BLEACHERS

*"The Original 'Telescoping' Bleacher"*



Modern gymnasiums need modern equipment. Accordion Folding Bleachers by Horn are the newest and most practical solution to the gymnasium seating problem. In designing these bleachers, Horn engineers carefully considered all the features which make modern gymnasium seating practical.

The entire steel understructure is electrically welded by the latest and most efficient methods. Rivets, bolts, and screws are not depended upon at the vital loading points. The smooth "telescoping" action, originated by Horn, is accomplished by folding arms, not slides, to insure against binding and sticking. This also allows the bleachers to fold in the least possible space. (See Space Requirements.)

Safety for the operator and spectators has not been overlooked, as the seats and footboards are supported directly from the floor, no load being supported from the wall. In operation, the entire bleacher simply telescopes, making it unnecessary to raise the seats, thus entirely eliminating the possibility of the unit falling down on the operator due to broken springs or failure of parts.

Seats and footboards are of genuine vertical grain Douglas Fir, with edges neatly rounded. The seats are 9½ in. wide and the footboards 11½ in. wide. Because of the telescoping action, the bleacher is no higher in the folded position than when in use. High windows are, therefore, unnecessary.

If desired, the Horn Standard Bleacher may be equipped with enclosure panels, which are counterbalanced. (See illustration on following page.) When panels are not furnished, the rubber-tired wheels roll directly on the gymnasium floor. Since the sections are pre-assembled at the factory, the installation is very simple. Just attach the seats and footboards, and the bleacher is ready to operate.

**SPACE REQUIREMENTS***

| Rows | Floor space | | Height folded** |
|---|---|---|---|
| | In use | Closed | |
| 3 | 4 ft. 6 in. | 1 ft. 6½ in. | 3 ft. 4 in. |
| 4 | 6 ft. 3 in. | 1 ft. 9¾ in. | 4 ft. 1 in. |
| 5 | 8 ft. 0 in. | 2 ft. 1 in. | 4 ft. 10 in. |
| 6 | 9 ft. 9 in. | 2 ft. 4¼ in. | 5 ft. 7 in. |
| 7 | 11 ft. 6 in. | 2 ft. 7½ in. | 6 ft. 4 in. |
| 8 | 13 ft. 3 in. | 2 ft. 11 in. | 7 ft. 1 in. |
| 9 | 15 ft. 0 in. | 3 ft. 2½ in. | 7 ft. 10 in. |
| 10 | 16 ft. 9 in. | 3 ft. 6 in. | 8 ft. 7 in. |

* If panels are desired, add 2 in. to closed dimension and 1 in. to height dimension.
** Height when in use same as when folded.

## GUARANTEE

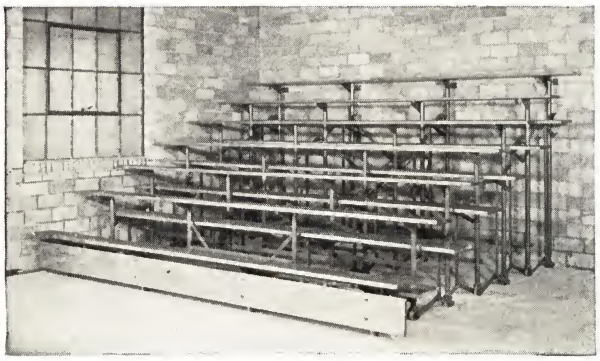
Each Horn installation is guaranteed for a period of 5 years against faulty operation, materials, and workmanship. This guarantee also includes free service, should same ever become necessary.

This liberal guarantee is possible only because Horn Bleachers are manufactured complete in one plant and installed by factory-trained mechanics.

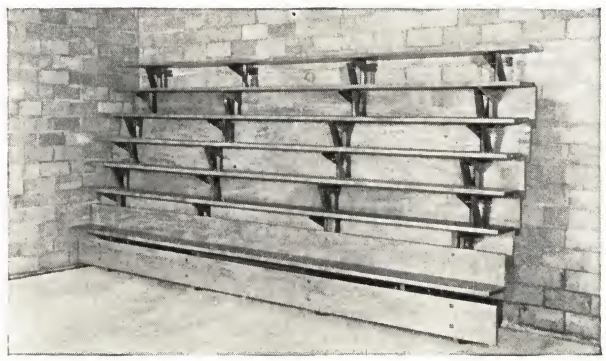
## INSTALLATIONS

A few cities in which one or more Horn Bleacher installations are in use:

Climax, Colo.
Durango, Colo.
Houston, Tex.
Angola, N. Y.
Pavilion, N. Y.
Kendall, N. Y.
Watervliet, N. Y.
Morrisville, N. Y.
Holland Patent, N. Y.
Rushford, N. Y.
Odessa, N. Y.
New Berlin, N. Y.
Churchville, N. Y.
Mt. Holly, N. J.
Kermit, Tex.
Fort Worth, Tex.
Moorhead, Minn.
Baltimore, Md.
Conneaut, Ohio
New Orleans, La.
Lexington, Ky.
Worcester, Mass.
Gainesville, Tex.
Tulsa, Okla.
Topeka, Kan.



7-Row Standard Bleacher—Open



7-Row Standard Bleacher—Closed



HORN FOLDING BLEACHERS are superior because they require less wall space, load directly to the floor, and need no special wall reinforcements. There are no heavy lifting springs, as the unit remains on the floor at all times and can easily be operated by one man.

The entire steel understructure is based on the requirements of the American Institute of Steel Construction. Standard finish includes two coats of enamel on the steelwork, and all woodwork is stained and shellacked.



## SPECIFICATIONS

Furnish and install complete, as shown on plans and as hereinafter specified, Horn Accordion Folding Bleachers, as manufactured by the HORN FOLDING PARTITION CO., Fort Dodge, Iowa.

Folding Bleachers shall consist of the following quantities:—(state length of section and number of rows.)

Bleachers shall be designed and constructed to safely support when in use, in addition to their own weight, a live load of 120 lbs. per linear foot of seatboard, plus 120 lbs. per linear foot of footboard, and a horizontal swaying force applied to the seats of 24 lbs. per linear foot of seats, plus a factor of safety of 4.

Bleachers shall operate on the telescoping principle, whereby all seats are folded below the top seat. Units shall be fitted with heavy duty rubber rollers to prevent marring of floor. Foot and seatboards shall be genuine vertical grain Douglas Fir, 1¼-in. thick, and edges neatly rounded.

Steel understructure shall receive two coats of approved School Furniture Brown enamel. Seats, footboards, (and enclosure panels, if desired) shall be given one coat of oil stain and shellac, color to be as selected.

(If closure panels are desired, add, "Closure panels shall be 5-ply ⅝-in. Douglas Fir, with all edges protected by steel angles, said panels to be counterbalanced to permit ease of operation.")

## HORN SOUNDPROOF DOORS

Many times problems in soundproof doors, which cannot be solved by so-called standard built-up doors that are sold as stock units, present themselves to architects. To take care of such problems, the Horn Engineering Staff will design special doors to meet the requirements.

Recently, such unusual problems as soundproof doors for Testing Laboratories, Automobile Factories, Sound Stages, Radio Studios, Private Homes, Hospitals, Offices, etc., have been solved by Horn Engineers.

The design of the Horn Soundproof Door is based on all of the recommendations of the Bureau of Standards. It is suggested that the jambs and hardware be purchased complete with the door, in order to insure greatest possible satisfaction.

If you have a special problem, let Horn Engineers solve it for you. Horn Doors cost more, but are worth more, because they are custom built and serve a very definite purpose.

## HORN VERTICAL SLIDING PARTITIONS

Horn Vertislide Partitions are used mostly in large stage openings where it is possible to slide the entire unit up into the stage loft.

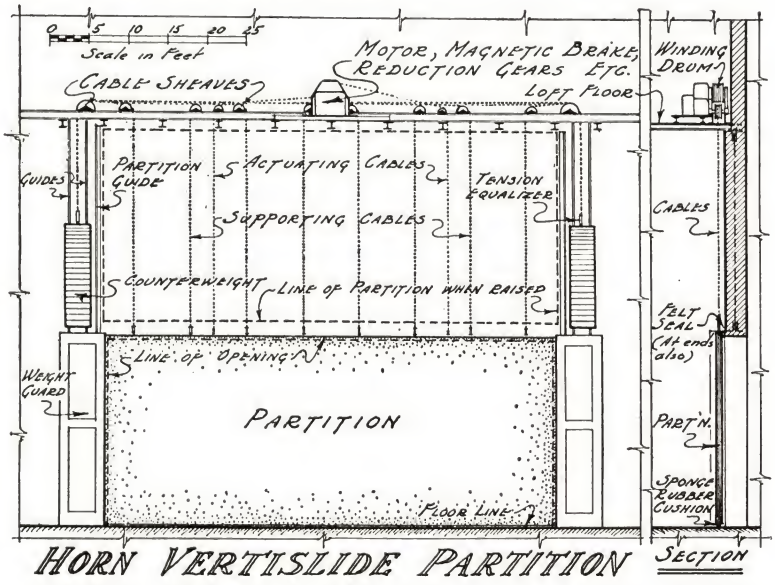
With this type of partition it is possible to get nearly perfect soundproof results as the sections are built of acoustic material and vary from 5 to 7 in. in thickness. The framework is heavily constructed of steel and the surface may have any desired treatment as the Vertislide Partition is actually a solid wall which can be moved vertically.

Since every application is a special problem, we would ask you to permit our Engineering Department to prepare layouts for your particular problem. The proper steel can then be determined and the electrical provisions can also receive attention.

Drawing illustrates the application of a Vertislide Partition behind a proscenium arch.

All Horn Equipment is guaranteed for five years against faulty workmanship, operation and material.

*Specify Horn Products—They Are Better.*




Consult the Horn Representative located in your vicinity. The complete list, together with addresses, may be found on page 1 of this catalog.

# NEWCASTLE PRODUCTS, INC.

654 So. 25th Street
NEWCASTLE, IND.
NEW YORK OFFICE, 56 West 45th Street
AGENTS IN PRINCIPAL CITIES

MODERNFOLD PARTITION
FOLDING PARTITION
ROLLING PARTITION

The A Line

SCHOOL WARDROBES
SOUNDPROOF DOORS
PORTABLE BLEACHERS

## OFFICE PARTITION

Circle A Partitions are the efficient and economical answer for virtually any place where subdivision is needed. Built to be attractive as well as useful, Circle A Partitions give the warmth and charm of fine wood to every interior—beauty that cannot be imitated. They give ease of erection and solidity that comes only from sound construction and careful building. Sections are few, and they fit simply and securely together by the tongue and groove method. No connecting hardware is visible. Only two screws (invisible in the erected wall) hold each section to the next "solid as a rock." There is no hint of movability—yet, when desired, these versatile walls may be taken down without damage; quickly removed, and re-erected with little trouble or expense. New offices can be built over night.

Circle A Partition is available in Railing, Seven-foot and Ceiling Height construction.

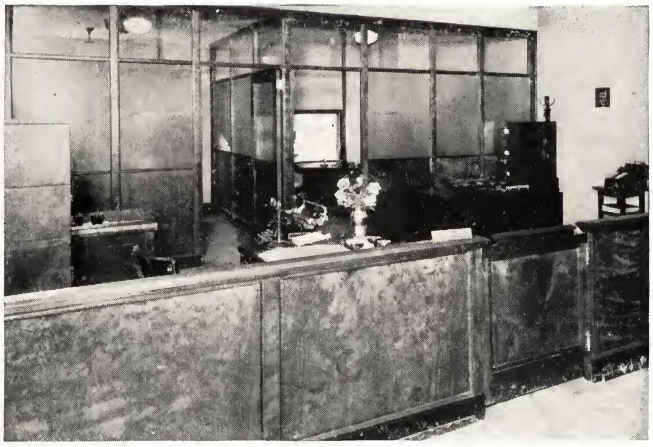
### Imperial Design

Simple in design, stronger in construction, Cabinet Imperial, we claim, stands without an equal. Yet its price is surprisingly low. A new and more efficient method of construction is the reason. A prominent architect created the design. Its beauty is apparent. Lines are simple, fresh. All tendency to ornateness has been avoided. Solid hardwoods throughout give beauty of graining and coloring that cannot be found in painted substitutes. Construction is the result of twelve years' experience in building office partitions. There are fewer pieces, and they fit more perfectly. Erection is faster. Taking down, and re-erection is easier.

Cabinet Imperial has character that distinguishes it from less carefully built partitions. The posts, in ceiling height, form a clean line to the ceiling—unmarred by joints and cracks.

### Commercial Design

When costs must be cut to the minimum, and yet a good appearance is required, Commercial Design is the answer. Somewhat different in lines and construction, and built of less expensive woods, Commercial Design still offers fine appearance and same efficient method of erection—at a lower price. Seven-foot is easily converted into Ceiling Height by the addition of the upper section. A smooth, perfectly fitting joint at walls and floor is assured. Hardware of good quality gives reliable action through years of service. The economy of Circle A Partitions is doubly appreciated at moving time when they can soon repay their original cost, by saving the expense of tearing out and building new walls of tile and plaster. They are moved and re-arranged swiftly, quietly, without the need for skilled labor.



Circle A Imperial Design



Circle A Commercial Design

## ROLLING PARTITION

Where a dividing partition is needed between smaller rooms and where effective sound insulation is not of vital importance Circle A Rolling Partition provides a means of sub-dividing space at relatively low cost. Available in manual, hand crank. Lightproof. Circle A Rolling Partitions are built up to the highest standard and of the finest materials suitable for the purpose, insuring ease of operation and reliability. The wood slats are threaded on metal ribbons with spring takeups in the bottom rail to maintain proper tension.

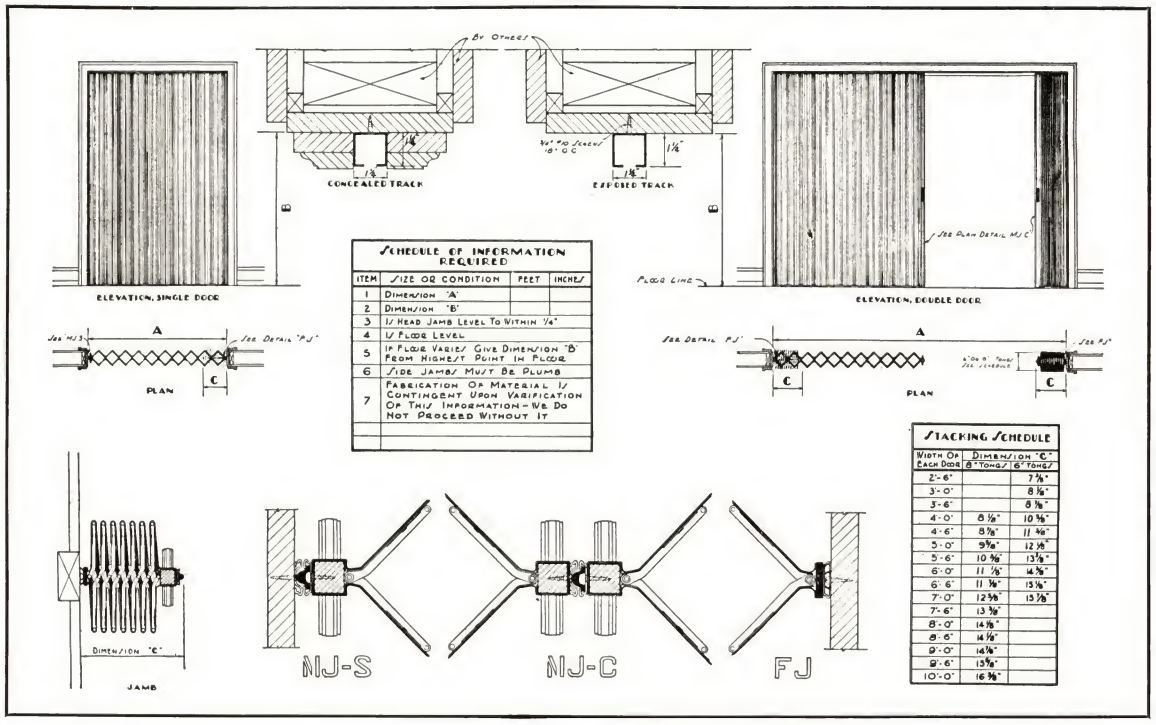
## SOUNDPROOF DOORS

Where effective sound retardation is required between rooms Circle A Soundproof Doors are exceptionally efficient. Particularly adaptable for Broadcasting and Music Studios, Schools, Churches, and Hospitals. They are available in Standard types, any veneer or finish and with special hardware, stops, gaskets and floor closers. Sizes may vary to suit conditions. X-ray Rooms and specially designed doors also furnished.

## BLEACHERS

Circle A Bleachers and Grandstands are designed by seating engineers for every type of need. They are heavier, stronger, more comfortable. Practical for use inside or out, Circle A Bleachers may be quickly and easily assembled and dismantled. Safe and rigid, the safety of the onlookers is assured. Circle A Bleachers have been used successfully by many leading schools, universities, parks, associations and fairs for more than a decade. May be readily moved from one location to another, indoor or out of doors, for all sports and entertainment events, where crowds are to be accommodated.

# MODERNFOLD The (A) Line PARTITION




**SCHEDULE OF INFORMATION REQUIRED**

| ITEM | SIZE OR CONDITION | FEET | INCHES |
|---|---|---|---|
| 1 | DIMENSION "A" | | |
| 2 | DIMENSION "B" | | |
| 3 | IF HEAD JAMB LEVEL TO WITHIN 1/4" | | |
| 4 | IF FLOOR LEVEL | | |
| 5 | IF FLOOR VARIES GIVE DIMENSION "B" FROM HIGHEST POINT IN FLOOR | | |
| 6 | SIDE JAMBS MUST BE PLUMB | | |
| 7 | FABRICATION OF MATERIAL IS CONTINGENT UPON VARIFICATION OF THIS INFORMATION - WE DO NOT PROCEED WITHOUT IT | | |

**STACKING SCHEDULE**

| WIDTH OF EACH DOOR | DIMENSION "C" 8" TONGS | 6" TONGS |
|---|---|---|
| 2'-6" | | 7 5/8" |
| 3'-0" | | 8 1/8" |
| 3'-6" | | 8 3/4" |
| 4'-0" | 8 1/2" | 10 1/4" |
| 4'-6" | 8 7/8" | 11 1/8" |
| 5'-0" | 9 5/8" | 12 1/8" |
| 5'-6" | 10 1/8" | 13 1/8" |
| 6'-0" | 11 1/8" | 14 1/8" |
| 6'-6" | 11 1/8" | 15 1/8" |
| 7'-0" | 12 3/8" | 15 7/8" |
| 7'-6" | 13 3/8" | |
| 8'-0" | 14 1/8" | |
| 8'-6" | 14 1/8" | |
| 9'-0" | 14 7/8" | |
| 9'-6" | 15 7/8" | |
| 10'-0" | 16 7/8" | |

## General

Modernfold Doors have solved some of the most difficult door problems. As a closing member, it eliminates the area required for the swing of doors, of the wide and unsightly stacking of exposed folding doors. It can be used in any opening where a closing member is necessary. This exclusive construction fulfills the requirement for a door that meets the needs of today for a limited space. Convenience, ease of operation, beauty and utility are ever present factors. There can be no question of its space-saving ability. The accordion folding on itself, as a self-contained unit, eliminates the objectionable feature of other kinds of closing units. It is a decorative as well as a closing member in the layout of rooms, large or small, in which it is used due to the effect achieved by the great variety of the fabrics obtainable for its covering. Harmony with any general color scheme is possible without limitation. Each side of the opening may have a different color to match the decorative scheme of the room it faces. Washable and easily cleaned materials in a wide variety of textures and finishes are available. Recovering is simple and can be easily accomplished.

## Where Used

These quiet, strong and durable "movable walls" are being used in Hotels, Clubs, Homes, Restaurants, Offices, Stores, Schools, Churches and Beauty Parlors.

## Fabrics

A wide range of colors in leatherettes and velours is available as standard covering. Fabrics are applied at the factory only and guarantees a complete, finished product. Special fabrics may be used.

## Construction

The accordion type metal frame is made of tested parts forming a firm foundation to which the fabrics are attached. Uniformity and precision is acquired in each door from accurately made metal parts and the assembly and application of materials by experts.

## Advantages

It is not necessary to change an opening to install Modernfold Doors, nor is it necessary to confine Modernfold to new construction. Where the constant increased demand for elimination of waste space has created a vexing problem, Modernfold Doors furnish a positive solution. These doors exemplify all that is modern, new and individual. They express charm and good taste. They are distinctive and beautiful. Installation is easily accomplished by owners.

## Specifications

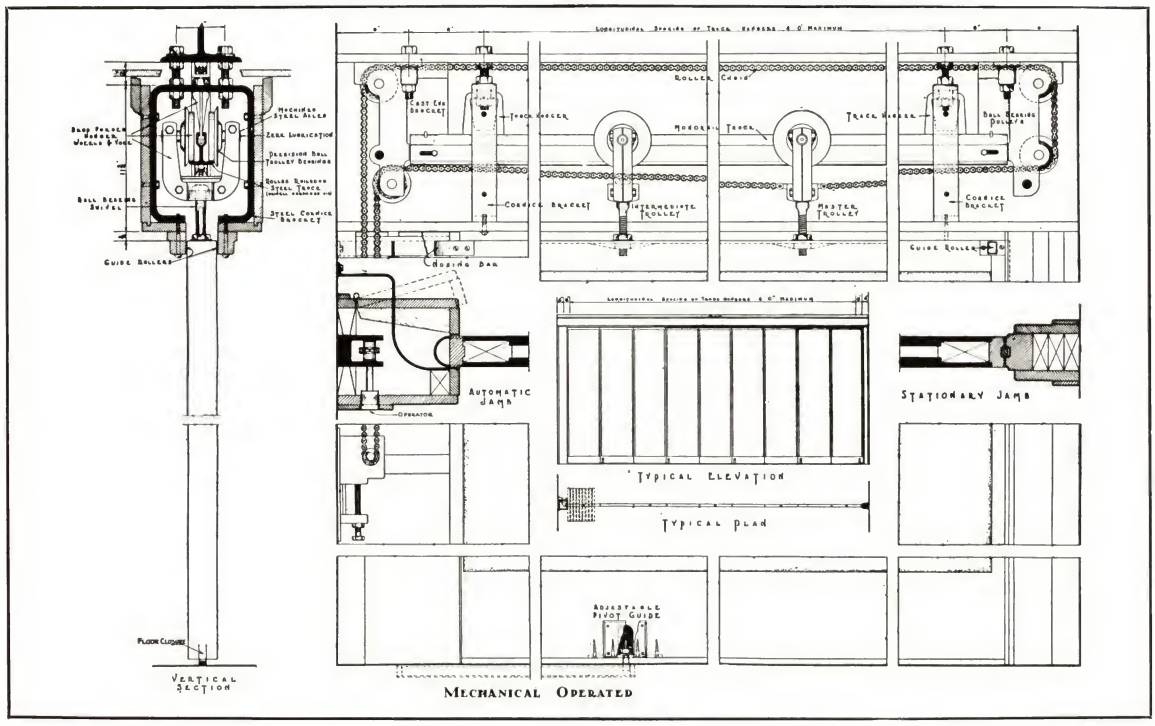
Where indicated on plans contractor to install Circle A Modernfold Doors as furnished by NEWCASTLE PRODUCTS, INC., Newcastle, Indiana. Fabric to be (leatherette, velour, or others) applied at the factory.





NEWCASTLE PRODUCTS, INC.

# AUTOMATICFOLD—STANDARDFOLD The Ⓐ Line FOLDING PARTITIONS




## AUTOMATICFOLD

This type used for large openings where overhead support is available. They may be either motor driven or have hand-crank operation. Doors may fold to one side or be divided to fold at both sides. They are of the accordion type and hinge together. Trolleys occur on the door at the stacking end and on the odd numbered doors in the run. If the partition consists of one run folding to one side only, an odd number of doors must be used. If folded to both sides, an even number of doors will result, each side having an odd number of doors. On the stacking side, an automatic swing jamb is required to allow the first door to assume its stacked position. These occur at each end when folding both ways. When partition folds one way, a stationary or spring jamb is also required at the wall opposite the stacking end.

Various floor sealing methods are available to secure positive rigidity of the partition. Where an entirely automatic partition is desired the automatic floor closer is used, consisting of a sponge rubber seal compressed to the floor upon closing of the doors. A positive floor closer of similar construction to the automatic type but of manual operation is highly successful and used on smaller size openings. Flush bolts may also be used.

Ease of propelment and quiet operation are attained in the design of track and trolleys used. Large size two wheel forged ball bearing trolleys permit easy and quiet operation that has no superior. A smooth rolled hardened steel track adds the assurance of safety.

### Specifications

**Automaticfold Electric** — Where shown on plans, folding partition shall be Circle A Automaticfold type as manufactured, installed and guaranteed by the NEWCASTLE PRODUCTS, INC., Newcastle, Indiana. The opening and closing of the doors shall be entirely automatic. Operating equipment shall include electric motors with speed and brake control, relay, limit and key control switches composing all electric mechanism. Outlets for this equipment and connections to be made by electrical contractor. Hardware shall include hardened steel track, forged track hangers, forged two wheel roller bearing trolleys, roller chain drive, door butts and all hardware in connection with doors to make a complete installation. Over head construction or supporting steel to be prepared for folding partition track by others at this manufacturer's instructions. The doors shall be of sound retarding construction according to manufacturer's design, thickness and type. (Specify duck covered, wood veneer, flush or panelled.) Floor closers in bottom of doors to be sponge rubber automatic closing type, sealing opening at floor. All wood trim at head and jambs to make a complete installation shall be furnished by folding partition manufacturer.

**Automaticfold Hand Crank**—If operation by hand crank is desired eliminate the electrical controls specified above and mention Automaticfold with Hand Crank Operation.

## STANDARDFOLD

This type of overhead supported partition differs from the Automaticfold in construction only by the use of a half door at the stacking end which must be broken out of line by hand.

This partition may be hand crank or manually operated. It requires no swing jamb as the half door is hinged to the stationary jamb at the stacking end. For small openings, usually manually operated.

### Specifications

**Standardfold Hand Crank**—Specifications same as Automaticfold Hand Crank type, using flush bolts or manually operated sponge rubber floor seals.

**Standardfold Manual**—Specify same as above with operation entirely manual.

## DOORS

**General**—Many designs in various woods, duck covered, paneled, flush panel and other surfaces are available in thicknesses up to 3 in. The size of the partition determines the thickness. The average weight is about 8 lbs. per sq. ft.

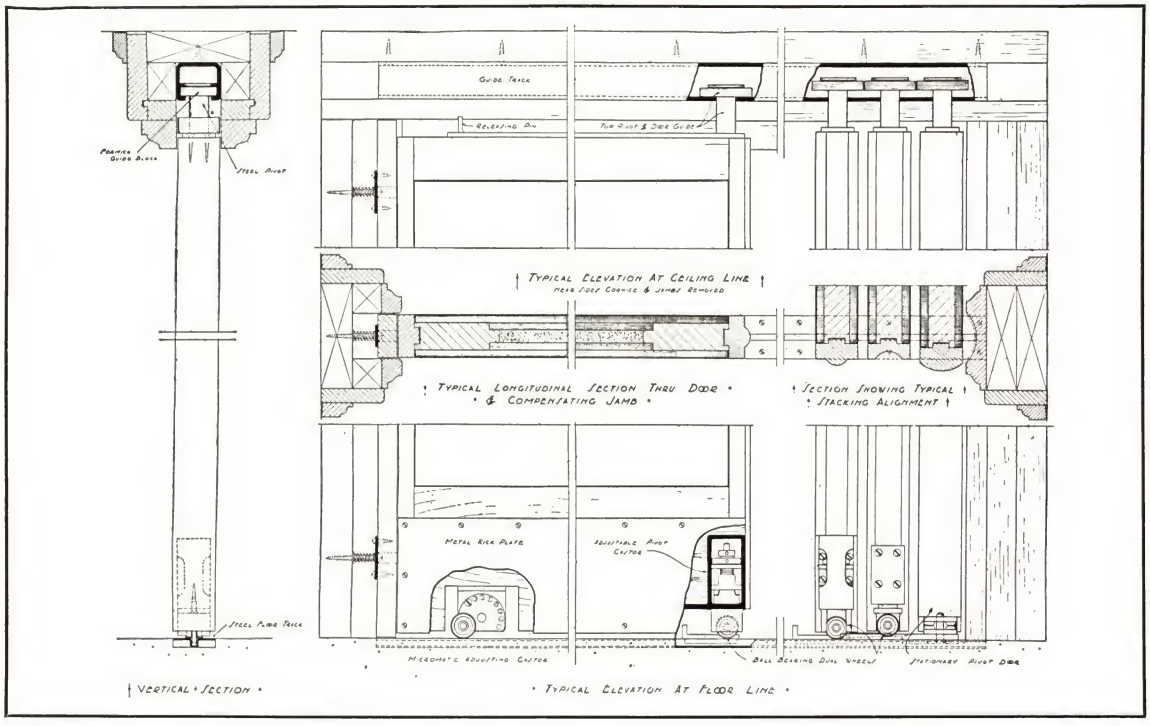
**Sound Insulation**—Nearly all types of doors, 2½ to 3 in. thick, can be sound insulted. As one of the manufacturers of Soundproof Doors, this experience is used advantageously in designing folding partition as sound retardent as such openings will permit.

**Pass Doors**—Pass doors may be cut into one of the full door units to permit access to adjoining rooms. Pass doors eliminate the necessity of opening folding partition.

**Pocket Doors**—Recessed pockets into which the doors may fold and thus be concealed are a desirable but not always a necessary feature. Pocket doors may also be obtained.

**Blackboards and Corkboards** — Blackboards are with ground edges at meeting lines metal angles top and bottom. Corkboards metal bound all four edges.

# SINGLEFOLD—PAIRFOLD The Ⓐ Line FOLDING PARTITIONS




## SINGLEFOLD

Where impossible to secure overhead support and floor bearing track is required, Singlefold may be used. These doors are manually operated individually in single door units. The end pair which performs the breaking operation have concealed hinges. Odd sizes and numbers of doors are possible. Rolling Hardware consists of adjustable pivot caster and an auxiliary caster of micromatic adjustment. In stacking the doors the auxiliary caster is lifted from the floor by the cam in the pivot caster. Both casters being adjustable allows perfect alignment. Ease of operation obtained by ball bearing rollers. Positive control and safety is assured by formica shoe and pivot plate operating in heavy gauge guide track at top. Floor track may be used in conjunction with any type of floor.

### Specifications

**Singlefold**—Where shown on plans, folding partition shall be Circle A Singlefold type as manufactured, installed and guaranteed by Newcastle Products, Inc., Newcastle, Indiana. Doors shall be manually operated using ball bearing casters rolling in hardened steel track at floor and supported laterally by sliding pivot shoe in steel track overhead. Each door but the end pair at stacking point to operate individually. Hardware to be adjustable to permit levelling.

## PAIRFOLD

Where an even number of doors in pairs and floor bearing track is required Pairfold should be used. Each pair of doors are hinged together and manually operated. An adjustable pivot caster with ball bearing rollers occurs on each door. Ease of operation, control and safety is secured by similar hardware as is used on Singlefold type.

### Specifications

**Pairfold**—Specifications to be the same as Singlefold but all doors to operate in pairs.

**Optional Features**—Mention in specifications above for Singlefold and Pairfold; finish of hardware; type and thickness of doors; blackboards or corkboards, if used; pass and pocket doors were required.

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## INFORMATION REGARDING CIRCLE A FOLDING PARTITIONS

**General**—It is not possible always to indicate in standard details or description that which would apply to special problems. Newcastle Products, Inc., maintains an Engineering Department capable of solving your problems and a representative in your nearest city to advise you. By contact direct to the factory, giving pertinent informaiton of your requirements, specifications, details and suggestions will be offered without obligation. Other features common to all types of folding partitions require special mention.

**Construction**—The Newcastle Products, Inc., organization has operated in the building construction field for more than twenty years with a capable and recognized staff. It has the most modern plant of its kind available for the fabrication of these products with craftsmen skilled in cabinet work and design.

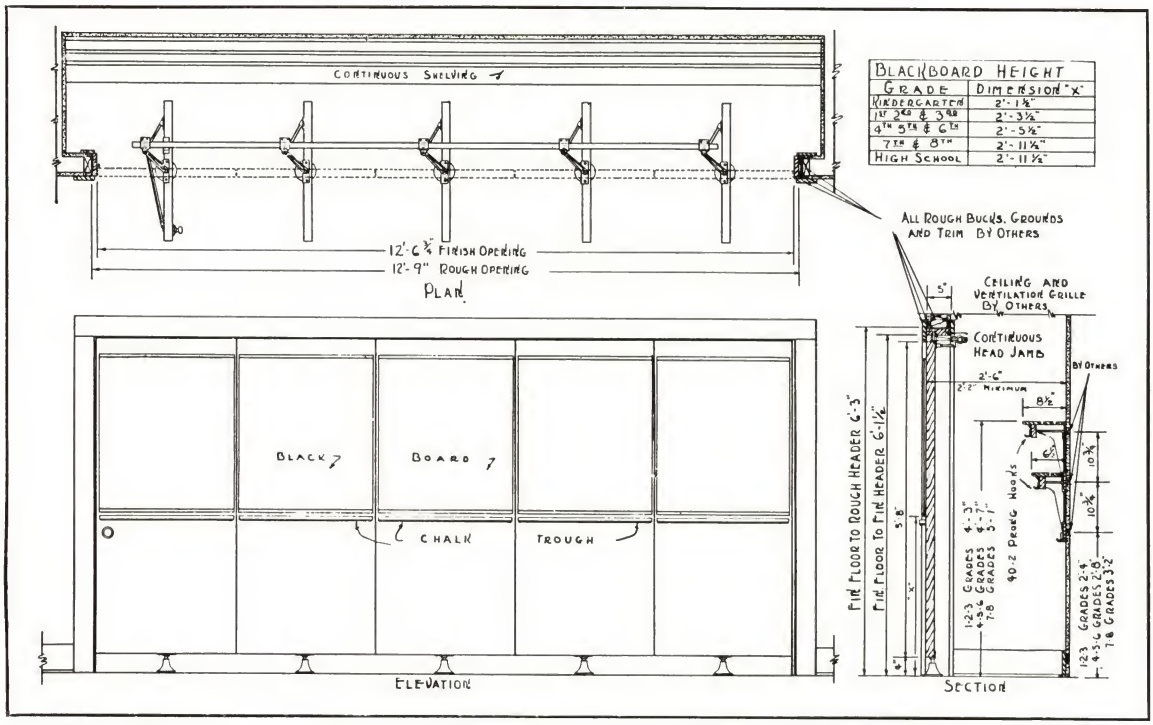
**Installation**—Work may be done by factory trained mechanics or local erection depending largely on the size of the partition and the demands of the specifications. Complete details are furnished for all operations.

**Guarantee**—All partitions are guaranteed against faulty parts and operation. This is possible due to the excellence which has been obtained in the design and fabrication and the ability of Circle A Folding Partitions to serve with a maximum of satisfaction.

**Service**—Knowing that each individual problem requires its respective detail and it is impossible to present more than standard practices, Newcastle Products, Inc., will gladly help you through their Architectural and Engineering Departmnet as well as their many leading representatives throughout the country. The Circle A Line is a standard for comparison.

NEWCASTLE PRODUCTS, INC.

# MULTIPLE OPERATED The Ⓐ Line SCHOOL WARDROBES




| BLACKBOARD HEIGHT | |
|---|---|
| GRADE | DIMENSION "X" |
| KINDERGARTEN | 2'-1⅝" |
| 1ST 2ND & 3RD | 2'-3½" |
| 4TH 5TH & 6TH | 2'-5½" |
| 7TH & 8TH | 2'-11¼" |
| HIGH SCHOOL | 2'-11½" |

## General

Circle A Wardrobes incorporate the use of Sargent & Greenleaf multiple operating hardware exclusively. This type of hardware meets the most exacting specifications where quality of material is of importance. It permits the maximum of flexibility in door and opening sizes. The continuous shelving allows a saving in space unobtainable in other types. Positive alignment of doors and future adjustability may be accomplished with ease. Wardrobes are furnished complete only, delivered or installed from our factory or authorized representative. All wardrobes guaranteed against faulty parts and operation.

## Construction

All group operating hardware, including continuous operating bar, of solid bronze with exposed or visible parts polished and interior or operating members sandblast finish. One knob type latch on the master door operates the entire group. Felt lined cast bronze bumpers occur at end doors for silence in closing. Ball bearing top and bottom pivots assure ease of operation. Top pivot thrust bearings furnished complete inset in hardwood head jamb simplifies erection. Cast iron coat hooks and shelf brackets with brown finish furnished with wood slat shelving. Doors and optional items furnished in accordance with requirements.

## Specifications

Where shown on plans, wardrobes to be group operated from one master control door. Operating hardware to be solid bronze throughout. Hat and coat racks to be continuous full length of wardrobes with black finish double prong coat hooks and brackets supporting two shelves.

## Optional Features

In addition to the specifications the following other parts, if required, should be clearly defined. The type, thickness and wood used for doors; locks; umbrella racks; blackboards and corkboards; special shelving, bookcases and teachers' closets.





# SECTION 20

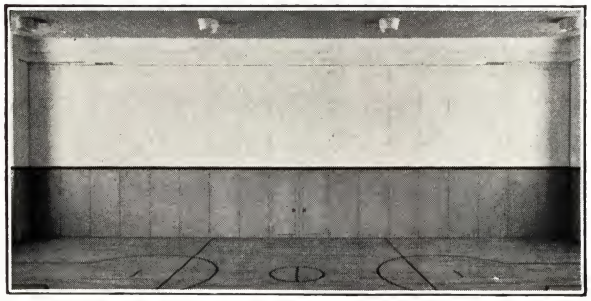
CONTINUED ⟶

# RICHARDS-WILCOX MANUFACTURING CO.

## Manufacturers of the Original Fully Automatic Folding Partition

AURORA, ILL.

REPRESENTATIVES IN ALL PRINCIPAL CITIES
FOR OTHER R-W PRODUCTS, SEE FILE INDEX



The "FoldeR-Way" line includes a standard type of folding partition to meet all conditions

### Fully Automatic Electric FoldeR-Way Partition

This deluxe equipment is designed especially for use in gymnasiums and auditoriums where the openings are wide and high. The partition is fully automatic in operation; uses full width doors across the entire opening; does not require any floor tracks or floor guides; provides effective fully automatic soundproofing; insures safe foolproof operation; folds gymnasium doors and pocket doors automatically; is one hundred percent electric; eliminates all manual work. To operate the partition, it is merely necessary for the attendant to turn the switch key. All subsequent operations are controlled by the electric operator. When the partition is in operation, no part of the door or sealing device is in contact with the floor. When the partition is closed, it is in tight contact with the floor and definitely locked to prevent lateral movement. This type of partition is foolproof and its satisfactory operation is in no way dependent upon the experience or skill of the attendant in charge.

### Crank Operated FoldeR-Way Partition

This type of FoldeR-Way partition is exactly the same as the fully automatic electric type, except that it is crank operated instead of electrically operated. It can be used in all large openings.

### Manually Operated FoldeR-Way Partitions

For classroom partitions and other small openings, the No. 135 manually operated type as specified below is recommended. This type generally uses a half door at the jamb, does not require floor tracks, is overhead hung, and may be arranged with doors folding toward one or both jambs.

When the doors must fold entirely into one room, we recommend the No. 535 type, which provides for pair operation with the load supported from the floor track. If proper overhead support can be provided, then we recommend the use of the No. 237 type. These various types are fully described, illustrated, and detailed in our standard catalog A-63.

### Doors

**No. 368 Design**—Soundproof, 3 in. thick, duck covered with plywood backing, double sound insulation, built-up core, and metal angle edges. Recommended for gymnasium and auditorium use.

**No. 368-A**—Same as No. 368, except with cork wainscot.

**No. 368-B**—Same as No. 368, except with presdwood wainscot.

**No. 368-C**—Same as No. 368, except with plywood wainscot.

**No. 368-D**—Same as No. 368, except with linoleum wainscot.

### Wood Veneered Doors

Wood doors will be made to suit design of the architect.

### Installation

It is recommended that all FoldeR-Way partitions be installed under the supervision of R-W factory trained erectors.

### Guarantee

All FoldeR-Way partitions are fully guaranteed.

## SPECIFICATIONS

### Gymnasium Type—Fully Automatic Electric Operation

The soundproof folding partitions shall be R-W Fully Automatic Electric FoldeR-Way Type as manufactured, installed, and guaranteed by the RICHARDS-WILCOX MANUFACTURING CO., Aurora, Illinois.

The principle of operation shall provide automatic and electric folding and unfolding of all partition and pocket doors, automatic locking and unlocking, and automatic soundproofing with complete electrical control of all operations from the key switch located where shown on the plans. The principle of operation shall also provide a 1⅛-in. minimum space between the bottom of the partition and the floor when opening or closing, but the final closing movement shall cause the entire partition to automatically seal this space against the transmission of sound by compressing the heavy continuous molded gum rubber cushion against the floor and automatically locking all doors in their fully closed position.

The operating equipment shall include roller drive chain operating over ball-bearing sprockets, heavy duty lock-joint track with 4-wheel ball-bearing hangers using 3-in. diameter wheels. Equipment shall also include electric operator complete with motor, speed reducer, friction clutch, magnetic brake, relays, limit switches, key control switch, and manual release mechanism with emergency crank operating unit.

The partition doors shall be R-W No. 368 design (or No. 368-A, No. 368-B, No. 368-C, No. 368-D). The doors shall be 3-in. thick, of soundproof construction using built-up stiles and rails, which shall be mortised and tenoned. All duck-covered surfaces shall be backed by plywood with a double layer of ½-in. sound insulating material.

Conduits, outlets, concealed electric wiring, painting, and punching of overhead truss shall be by others in accordance with R-W details.

The partition shall be furnished and installed complete by R-W and fully guaranteed.

### Classroom Type—Manually Operated

The folding partition shall be R-W Manually Operated FoldeR-Way Type as manufactured, installed, and guaranteed by the RICHARDS-WILCOX MANUFACTURING CO., Aurora, Illinois.

The partition shall be overhead hung and shall not require the use of floor tracks or floor guides. All doors folding toward a single jamb shall be hinged together and shall operate manually as a unit. With the exception of the half door at the jamb, each alternate door shall be supported from its center line by No. 135 4-wheel ball bearing hangers of proper size, which will operate in overhead lock-joint track. The partition shall be locked in its closed position by means of a flush bolt located on each door and engaging in standard keepers set flush with the finished floor.

The operating equipment shall be complete using R-W No. 135 hangers, track, brackets, pulls, bolts, and butts as required. All exposed hardware shall be finished to match other hardware in the room.

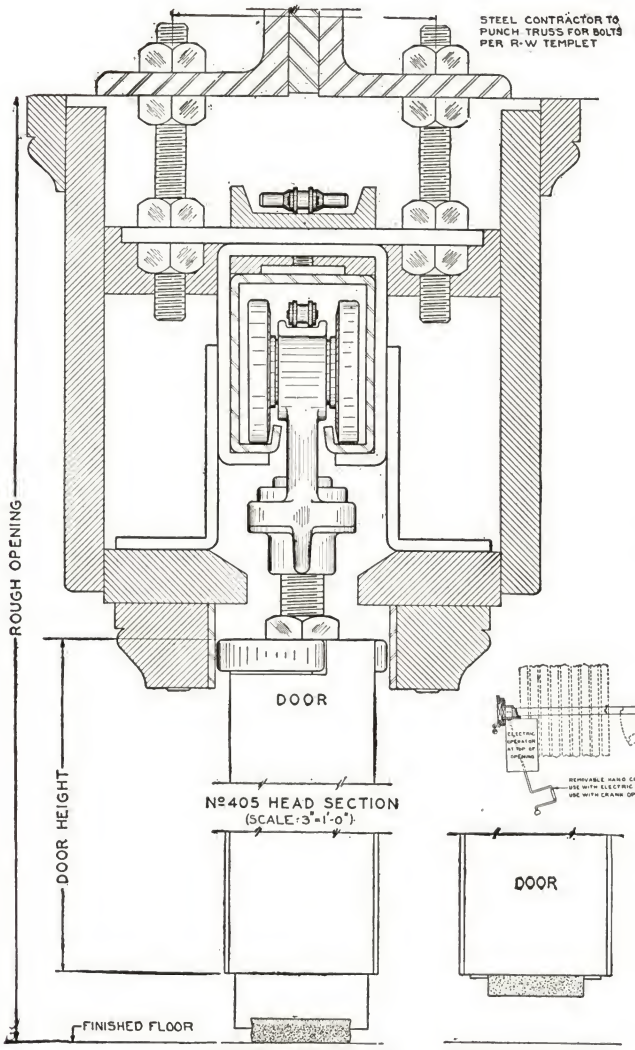
The partition shall be complete with 2¼-in. duck-covered doors using plywood backing and double layer of ½ in. interior insulation. (If wood veneered doors are required, specify either panel or flush and refer to details in R-W catalog A-63 or the architect's plans.) Whenever specified, the bottom of the doors will be equipped with full floating soundproof floor seals.

Blackboards and corkboards will be furnished whenever specified.

All rough bucks, filling, staining, painting and punching of truss shall be by others.

The partition shall be furnished and installed complete by R-W and fully guaranteed.

## GYMNASIUM TYPE — Fully Automatic Electric Operation



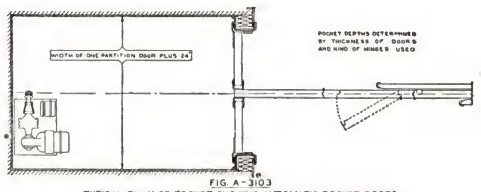




FIG. A-3103
TYPICAL PLAN OF POCKET SHOWING AUTOMATIC POCKET DOORS
ILLUSTRATING PARTITION AND POCKET DOORS CLOSED

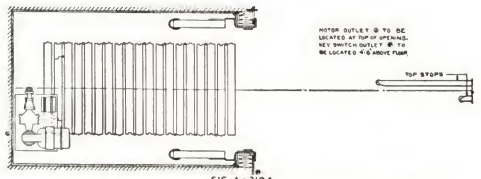



FIG. A-3104
THIS DETAIL SAME AS FIG. A-3103 EXCEPT ALL DOORS ARE FOLDED IN POCKET

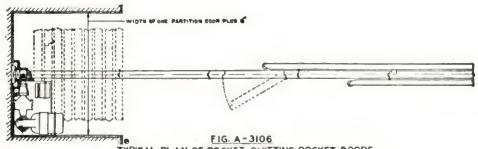



FIG. A-3106
TYPICAL PLAN OF POCKET OMITTING POCKET DOORS

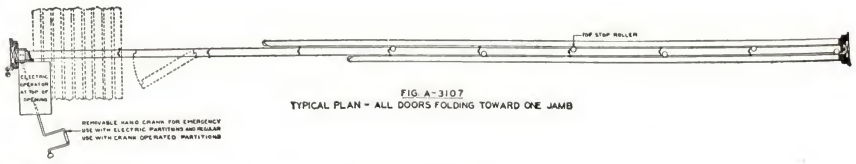
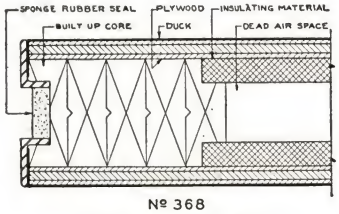



FIG. A-3107
TYPICAL PLAN - ALL DOORS FOLDING TOWARD ONE JAMB



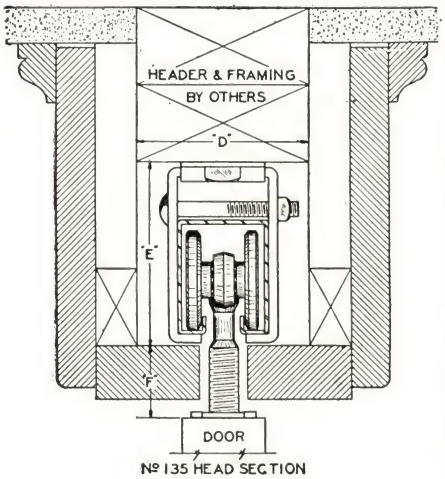

Nº 368
ENTIRE DOOR IS DUCK COVERED ON BOTH SIDES
THIS IS STANDARD DESIGN FOR THE UPPER PORTION OF DOORS Nº 368 A, B, C & D AND SIMILAR CONSTRUCTIONS

*Write for Catalog A-63*

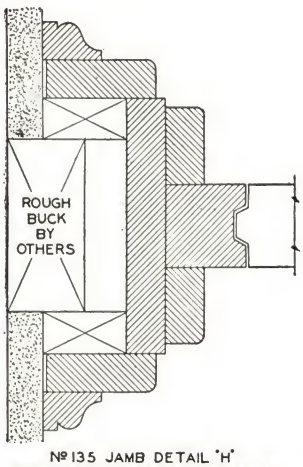
*Fully automatic.*
*100% electric.*
*Soundproof.*
*No floor tracks.*
*Automatic sealing.*
*Automatic locking.*

*You turn the switch key—R-W does the rest.*

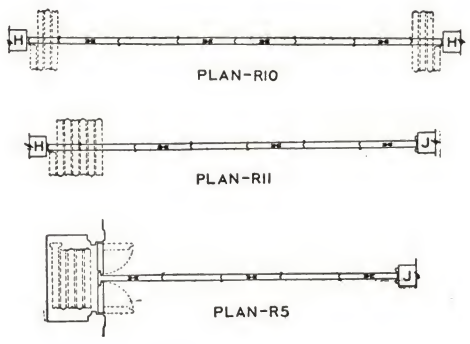
## CLASSROOM TYPE — Manually Operated




Nº 135 HEAD SECTION
SCALE: 3"=1'-0"

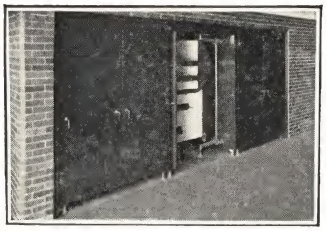


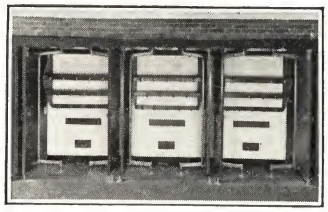

Nº 135 JAMB DETAIL "H"
JAMB WIDTH AND DESIGN DETERMINED BY HEAD SECTION
SCALE: 3"=1'-0"

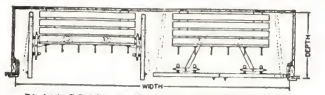



*Manually operated.*
*No floor tracks.*
*Soundproof when so specified.*
*All doors hinged together.*
*Easy, silent operation.*

# R-W SCHOOL WARDROBES



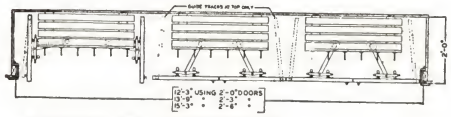




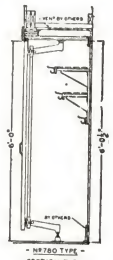
PLAN OF No. 780 – 4 DOOR WARDROBE

| WIDTH OF DOORS | DEPTH OF RECESS | WIDTH OF RECESS |
|---|---|---|
| 2'-0" | 2'-0" | 8'-3" |
| 2'-3" | 2'-0" | 9'-3" |
| 2'-6" | 2'-0" | 10'-3" |
| 2'-9" | 2'-6" | 11'-3" |
| 3'-0" | 2'-8" | 12'-3" |

DIMENSIONS FOR Nº 780-4 DOOR WARDROBE

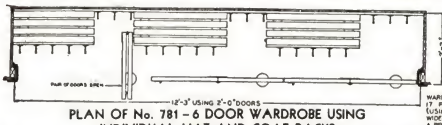


PLAN OF No. 780 – 6 DOOR WARDROBE

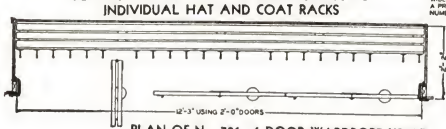


– Nº780 TYPE –
SECTION THRU PUPILS' WARDROBE

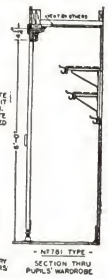




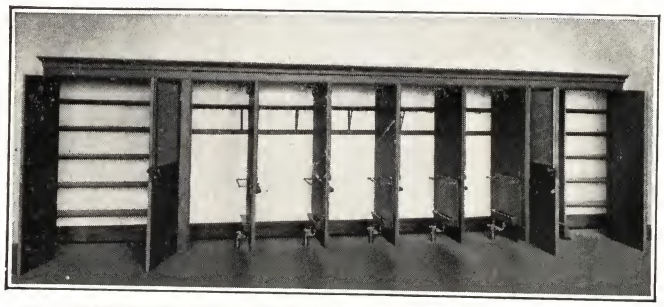
PLAN OF No. 781 – 6 DOOR WARDROBE USING INDIVIDUAL HAT AND COAT RACKS

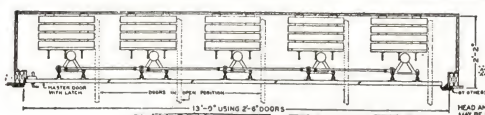


PLAN OF No. 781 – 6 DOOR WARDROBE USING CONTINUOUS HAT AND COAT RACKS

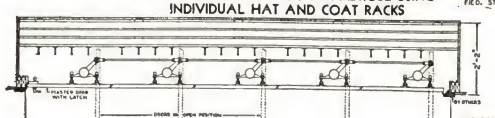


– Nº781 TYPE –
SECTION THRU PUPILS' WARDROBE

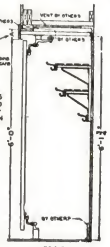




PLAN OF No. 778 – 5 DOOR WARDROBE USING INDIVIDUAL HAT AND COAT RACKS



PLAN OF No. 779 – 5 DOOR WARDROBE USING CONTINUOUS HAT AND COAT RACKS



– Nº779 TYPE –
SECTION THRU PUPILS' WARDROBE

The RICHARDS-WILCOX MANUFACTURING CO. presents a COMPLETE LINE OF SCHOOL WARDROBES, manufactured, installed, and guaranteed by R-W. The line includes individually operated, pair operated, and multiple operated wardrobe doors as outlined below in the specifications.

## SPECIFICATIONS

### Type

**1. Individually Operated (No. 780)**—Each pupil's wardrobe door shall operate independently on a single heavy duty pivot arm of the full-adjustment, offset unit type extending from the top of the wardrobe to the floor. All weight shall be carried on the floor and the pivot arm shall be constructed so as to hold the doors rigid and in perfect alignment.

**2. Pair Operated (No. 781)**—The pupil's wardrobe doors shall be arranged to operate in pairs as detailed. Each pair of doors shall be equipped with adjustable pivots, guides, offset hinges, handle, etc., as required to hold the doors rigid and in perfect alignment.

**3. Multiple Operated (Nos. 778-779)**—The pupil's wardrobes shall be multiple operated as detailed (No. 778 if with individual hat and coat racks; No. 779 if with continuous hat and coat racks). As the master door is opened or closed, all other doors in the recess shall open or close simultaneously. The operating equipment shall hold the doors rigid and in perfect alignment.

### Finish

Operating hardware shall be finished in dead black baked enamel or as specified. Exposed hardware shall be solid bronze.

### Latches (Optional)

Wardrobes shall be equipped with heavy duty latches as required.

### Locks (Optional)

Wardrobes shall be equipped with multiple locks as required.

### Doors

Shall be (two panel 1⅜ in. thick) or (flush 1½ in. thick, ¼ in. sawed face veneer to finish approximately $\frac{3}{16}$ in.) or (1⅜ in. flush steel doors, 16 gauge, reinforced and insulated).

### Jambs

Shall be wood or steel as detailed.

### Interiors

Shall include standard hat and coat racks with shelves complete with double prong hooks and shelf brackets as detailed.

### Blackboards (Optional)

Wardrobes shall include full width natural slate blackboards, ¼ in. thick with felt backing, chalk troughs, etc.

### Umbrella Racks and Pans (Optional)

Wardrobes shall be provided with umbrella racks and pans in quantity shown on plans.

### Teacher's Wardrobe (Optional)

The recess shall be provided with a single door teacher's wardrobe complete with wood division, hinges, and lock.

### Bookcase or Supply Cabinet (Optional)

The wardrobes shall contain a bookcase complete with lock, wood division, and five adjustable shelves as detailed.

### Guarantee

Upon completion of installation the RICHARDS-WILCOX MANUFACTURING CO. shall furnish its written guarantee covering satisfactory workmanship, materials, and installation.

### Work by Others

All plastering, grounds, rough bucks, baseboards, vent grilles, filling, staining, and painting shall be by others in accordance with R-W standard details approved by the architect.

*Write for Catalog A-63.*

# SECTION 20

CONTINUED ⟶

# THE RICHMOND FIREPROOF DOOR CO.

## Manufacturers of Fol-Dec Folding Doors, Partitions and Window Closures

FORMERLY MANUFACTURED BY

THE FOLDING PRODUCTS CORP., CHICAGO, ILLINOIS

RICHMOND, INDIANA

For List of Representatives, see Catalog on Fire Doors, listed in File Index

### Folding Doors and Partitions

Fol-Dec Folding Doors and Partitions are a patented means for closing off adjoining rooms or dividing one room into smaller units. Resembling draperies, they can be made to harmonize with any color scheme or decorative effect.

### Construction

Steel upright stiles, held in place by steel spacers, are covered on each side with a layer of heavy felt. Over this felt is placed a decorative material, such as velours, tapestries, silks, fabrikoid leather, etc. The decorative fabric is so attached to the frame that it may be easily removed in the event it is desired to have it cleaned or replaced. Ball bearing rollers, under each stile, assure easy and noiseless operation as they glide over a small track set flush with the floor.

### Advantages

Fol-Dec Doors when folded back give the general appearance of perfectly folded draperies, thereby eliminating the necessity of further decorations. The air pocket construction, between two layers of heavy felt, insures the greatest privacy and improves the acoustics. They conserve space, permit economy in building construction, as well as add beauty and refinement to any interior. They will not warp or stick. Fol-Dec Doors combine beauty, utility, economy and privacy.

### Installation

Fol-Dec Doors are self-contained and easily installed, needing no special construction as they are fastened to the jambs or side walls by means of vertical spring locks, which fasten in both the top and the bottom tracks.

### Color

Any color can be selected to match the color scheme or decoration, and each side can be made up in a different color if so desired.

### Fabric

Velours, tapestry, silks, fabrikoid leather, etc., are used for the decorative covering on Fol-Dec Doors.

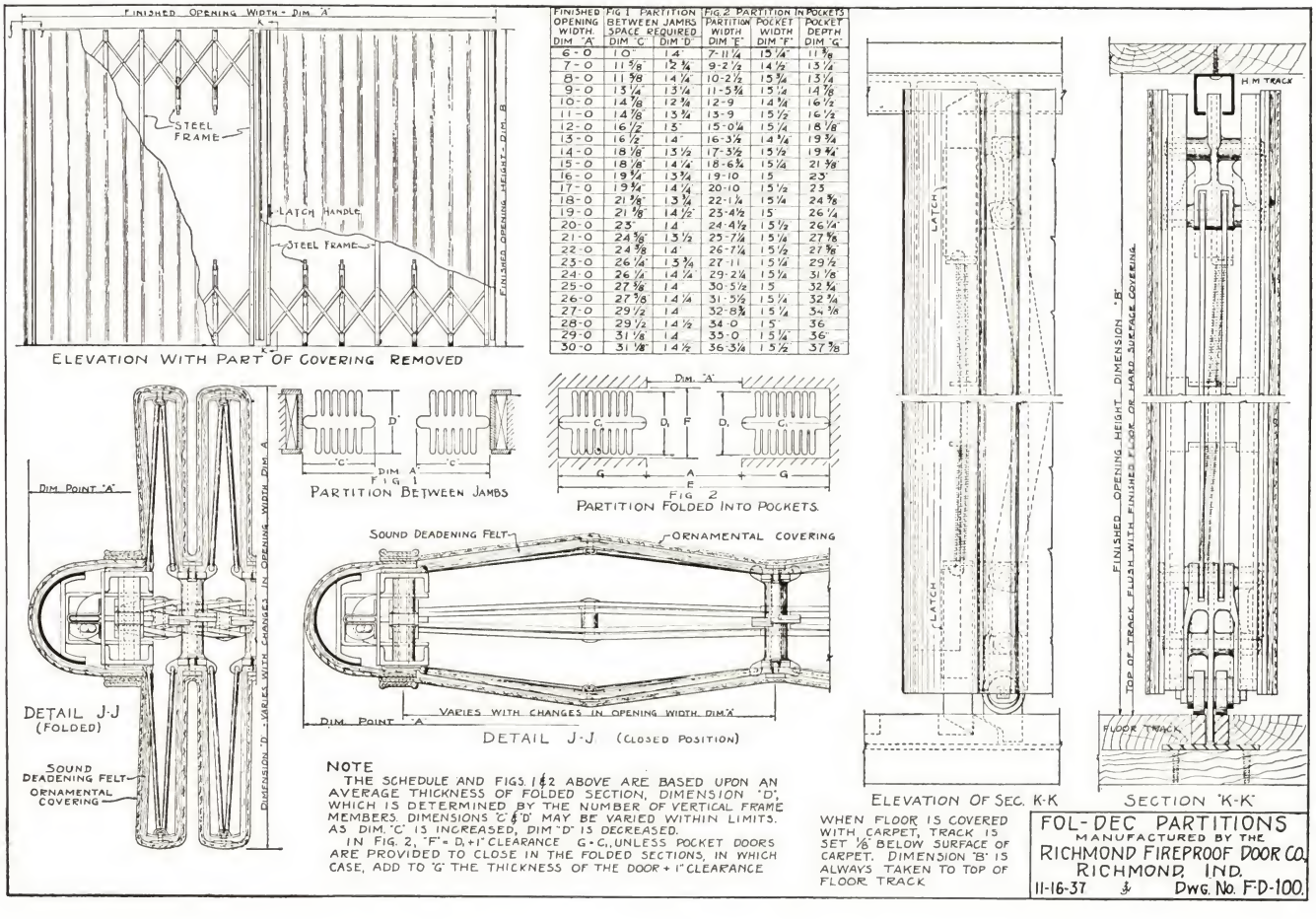
### Size

Fol-Dec Doors and Window Closures are custom built for any size opening.

### Service

Doors are shipped complete with top and bottom track and all necessary hardware ready for installation.

We will gladly submit plans, estimates or further information on request. Specify Fol-Dec Doors.




| FINISHED OPENING WIDTH DIM. 'A' | FIG 1 PARTITION BETWEEN JAMBS SPACE REQUIRED DIM 'C' | DIM 'D' | FIG 2 PARTITION IN POCKETS PARTITION WIDTH DIM 'E' | POCKET WIDTH DIM 'F' | POCKET DEPTH DIM 'G' |
|---|---|---|---|---|---|
| 6-0 | 10" | 14" | 7-11¼ | 15¼ | 11⅜ |
| 7-0 | 11⅜ | 12¾ | 9-2½ | 14½ | 13¼ |
| 8-0 | 11⅜ | 14¼ | 10-2½ | 15¾ | 13¼ |
| 9-0 | 13¼ | 13¼ | 11-5¾ | 15¼ | 14⅞ |
| 10-0 | 14⅞ | 12¾ | 12-9 | 14¼ | 16½ |
| 11-0 | 14⅞ | 13¾ | 13-9 | 15½ | 16½ |
| 12-0 | 16½ | 13" | 15-0¼ | 15¼ | 18⅛ |
| 13-0 | 16½ | 14" | 16-3½ | 14¼ | 19¾ |
| 14-0 | 18⅛ | 13½ | 17-3½ | 15½ | 19¾ |
| 15-0 | 18⅛ | 14¼ | 18-6¾ | 15¼ | 21⅜ |
| 16-0 | 19¾ | 13¾ | 19-10 | 15 | 23" |
| 17-0 | 19¾ | 14¼ | 20-10 | 15½ | 23 |
| 18-0 | 21⅜ | 13¾ | 22-1¼ | 15¼ | 24⅜ |
| 19-0 | 21⅛ | 14½ | 23-4½ | 15 | 26¼ |
| 20-0 | 23" | 14" | 24-4½ | 15½ | 26¼ |
| 21-0 | 24⅜ | 13½ | 25-7¼ | 15¼ | 27⅜ |
| 22-0 | 24⅜ | 14" | 26-7¼ | 15½ | 27⅜ |
| 23-0 | 26¼ | 13⅞ | 27-11 | 15¼ | 29½ |
| 24-0 | 26½ | 14¼ | 29-2¼ | 15¼ | 31⅛ |
| 25-0 | 27⅛ | 14" | 30-5½ | 15" | 32¾ |
| 26-0 | 27⅞ | 14¼ | 31-5½ | 15¼ | 32¾ |
| 27-0 | 29½ | 14" | 32-8¾ | 15¼ | 34⅛ |
| 28-0 | 29½ | 14½ | 34-0 | 15" | 36" |
| 29-0 | 31⅛ | 14" | 35-0 | 15¼ | 36" |
| 30-0 | 31⅛ | 14½ | 36-3¼ | 15½ | 37⅞ |

NOTE
THE SCHEDULE AND FIGS. 1 & 2 ABOVE ARE BASED UPON AN AVERAGE THICKNESS OF FOLDED SECTION, DIMENSION 'D', WHICH IS DETERMINED BY THE NUMBER OF VERTICAL FRAME MEMBERS. DIMENSIONS 'C' & 'D' MAY BE VARIED WITHIN LIMITS. AS DIM. 'C' IS INCREASED, DIM 'D' IS DECREASED.
IN FIG. 2, "F" = D + 1" CLEARANCE G = C, UNLESS POCKET DOORS ARE PROVIDED TO CLOSE IN THE FOLDED SECTIONS, IN WHICH CASE, ADD TO 'G' THE THICKNESS OF THE DOOR + 1" CLEARANCE

WHEN FLOOR IS COVERED WITH CARPET, TRACK IS SET ⅛ BELOW SURFACE OF CARPET. DIMENSION 'B' IS ALWAYS TAKEN TO TOP OF FLOOR TRACK

FOL-DEC PARTITIONS
MANUFACTURED BY THE
RICHMOND FIREPROOF DOOR CO.
RICHMOND, IND.
11-16-37 Dwg. No. F-D-100.

**Partial List of Installations Fol-Dec Doors and Partitions**

Lincoln Turner Hall, Chicago, Ill.
First Presbyterian Church, Chicago, Ill.
Macys Dept. Store, New York City.
McCann Building, Pittsburgh, Pa.
Fiss and Bills, Oshkosh Wis.
Gilligan Funeral Home, Cincinnati, Ohio.
Foreman Bank, Chicago, Ill.
Faculty Club, Harvard University, Cambridge, Mass.
Boyertown Burial Casket Co., New York City.
M. E. Church, Detroit, Mich.
Innes Dept. Store, Wichita, Kans.
Trustees System Service Bldg., Chicago, Ill.



**Boyertown Burial Casket Company—New York, N. Y.**



**Gilligan Funeral Home—Cincinnati, Ohio**



**Foreman Bank—Chicago, Illinois**



**Private Dining Rooms—Medinah Athletic Club—Chicago, Illinois**

**Partial List of Installations Fol-Dec Doors and Partitions**

Mandels Dept. Store, Chicago, Ill.
Saks Fifth Ave. Shop, New York City.
Franklin Office Bldg., Chicago, Ill.
New Southern Hotel, Jackson, Tenn.
Mundelein College, Chicago, Ill.
Medinah Athletic Club, Chicago, Ill.
St. Pauls Home, Chicago, Ill.
Hotel St. George, Brooklyn, N. Y.
Lord & Thomas, Chicago, Ill.
Hursen Undertaking Parlors, Chicago, Ill.
Hotel New Yorker, New York City.

*Manufactured under Original Patents—Beware of Infringements.*

ESTABLISHED 1856

# SWEDISH VENETIAN BLIND CORPORATION

Manufacturers of Rolling Wood Partitions

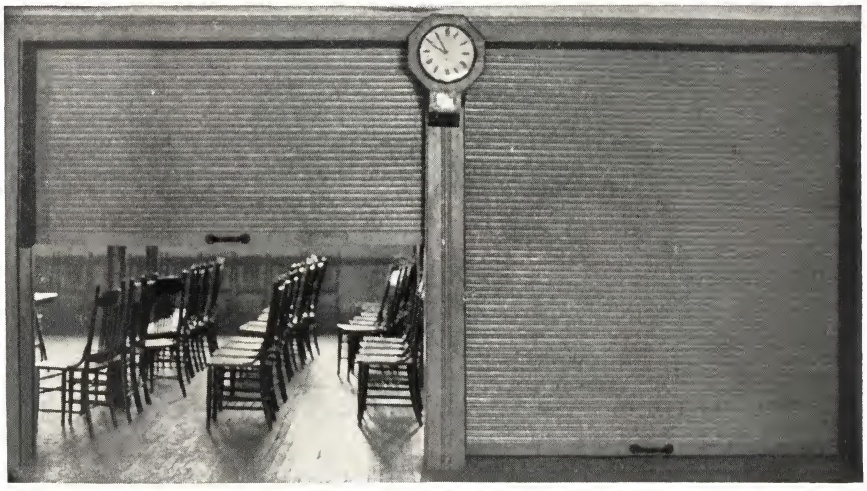
TELEPHONE
LAckawanna 4-8432-3

601 West 26th Street
NEW YORK, N. Y.

For Our Pages on Swedish Venetian Blinds, see File Index

## HORIZONTAL AND VERTICAL ROLLING WOOD PARTITIONS

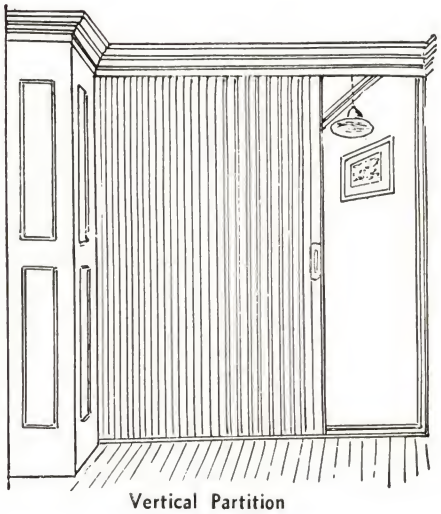
*For All Purposes Where Room Division Is Necessary*
*Schools, Churches, Clubrooms, Factories, Residences, etc.*



Horizontal Wood Partition Installed in an Assembly Room



Section Through Slats



Vertical Partition

For all purposes where room division is necessary; schools, churches, clubrooms, factories, residences, etc. By their use, convenient, economical floor arrangement can be obtained. They dispense with folding and accordion doors.

Made of the best wood obtainable. Slats are 1¾x½ in. and have non-friction joints connected by metal straps.

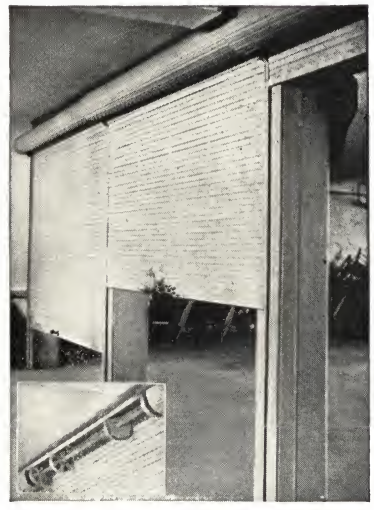
Improved ball bearing coiling device insures ease of operation and noiselessness. Furnished in any finish desired.

Openings of any width can be closed with one or more partitions. Single partitions should not be over 12 ft. wide.

Detail drawings furnished on request.

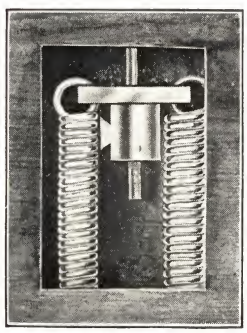
**DIMENSIONS OF ROLLING WOOD PARTITIONS**

| Height, including coil, ft. | Inside of coil box, in. square | Height, including coil, ft. | Inside of coil box, in. square |
|---|---|---|---|
| 6 | 12½ | 14 | 14½ |
| 8 | 12 | 16 | 15 |
| 10 | 13 | 18 | 15½ |
| 12 | 14 | 20 | 16 |



Several Sections of Rolling Wood Partitions

For openings wider than 12 ft., guides used between partitions may be removed after partition is coiled away. Inset shows spring roller which operates partitions



Spring in Bottom Bar



Rolling Wood Partitions on Two Floors in a Gymnasium

# THE J. G. WILSON CORPORATION

ESTABLISHED 1876

GENERAL OFFICES
1841 Broadway
NEW YORK, N. Y.

FACTORY
P. O. Box 599
NORFOLK, VA.

CABLE: "WILCORP, NEW YORK"
OFFICES IN ALL PRINCIPAL CITIES

For Overhead Type and Rolling Doors, Wardrobes and Venetian Blinds, see File Index

Wilson PARTITIONS

Established 1876 Wilson DOORS - PARTITIONS - BLINDS WARDROBES THE J.G.WILSON CORPORATION NEW YORK CITY

TRADE-MARK

## FLOOR SUPPORTED (Sectionfold)
## OVERHEAD HUNG (Multifold)
## HORIZONTAL AND VERTICAL ROLLING

For those who are interested in modernizing their present buildings and those planning new buildings with limited funds available, Wilson Partitions are a real economy. They are actually "movable walls" as they provide larger or smaller rooms as occasion demands, and eliminate the necessity of additions or alterations to present buildings. They may be designed to harmonize with any interior, old or new.

Our Engineering and Erecting Departments are at the disposal of architects, contractors or owners for the solution of any complicated installations.

Wilson Partitions are manufactured in their entirety within the confines of one plant. Wilson, *and Wilson alone,* is responsible for the quality of every part entering into the making of Wilson Partitions, be that part but a door handle or a guide track.

### SECTIONFOLD—Floor Supported

Sectionfold Partitions should not be confused with so-called "accordion" or "assembled" partitions. The doors are operated in pairs and not in large unwieldly units. The entire weight of the partition rests on the floor track and Sectionfolds do not require special overhead trusses for supporting members. The head guide, or track, is employed only to keep the partition in alignment and to provide a means of securing the unique locking features characteristic of Wilson Sectionfold.

Because of these features we feel justified in our claim that there is no comparison between our product and doors hung on ordinary hardware made to imitate the Wilson.

### MULTIFOLD—Overhead Hung

This partition has been developed to meet the needs of churches and small auditoriums where an inexpensive, sound-retarding partition of canvas-covered doors will suffice. The Multifold Partition is a relatively inexpensive partition of light construction—the entire weight of the doors being carried overhead on a roller-bearing, four-wheel trolley. It may be hand, crank, or electrically operated.

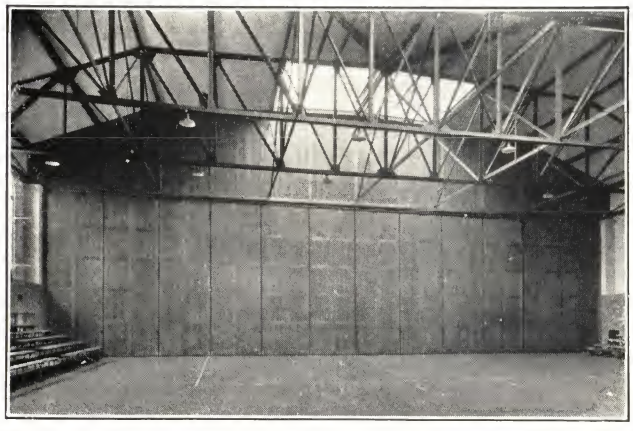
This partition can be furnished with a small, inconspicuous floor track—used only as a guide to keep the doors in alignment when traveling across the opening, or with floor bolts in alternate doors.

### ROLLING PARTITIONS—Horizontal and Vertical

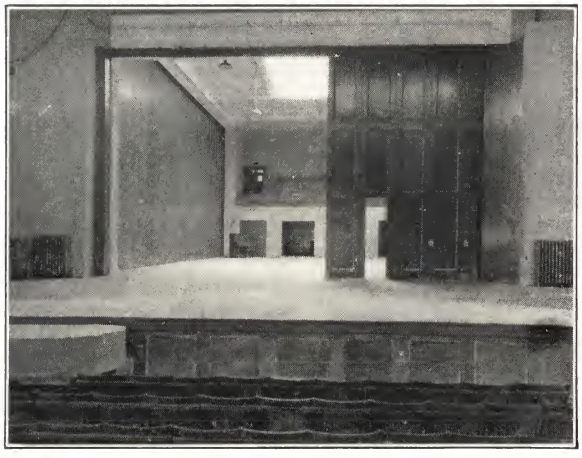
Where subdivision of rooms must be most economically accomplished, Wilson Rolling Partitions will be found superior to every other means. Simplicity of construction and lack of mechanical contrivances assure ease of operation for many years, with no maintenance cost. Little or no provision need be made for their installation. They may be made to roll up or sideways.

Wilson Horizontal (Rolling Overhead) Type may be adapted for covering kitchenettes, clothes closets, wardrobes, linen closets, etc., where swinging doors are not practical. This type may also be used as light-retarding shutters, for X-ray and photographic rooms, lecture halls, etc. They may be hand or electrically operated, individually or in groups.

Light-retarding shutters are also made of steel.



"Sectionfold" Partition Dividing Gymnasium—Doors Are 23 Ft. High



Division of a High School Auditorium and Gymnasium

*Catalogue, Giving Further Information, Details and Specifications, Furnished on Request*

MEMORANDA

# MIDDLETON METAL PRODUCTS CO.

HOSPITAL DIVISION

101 Park Avenue, NEW YORK, N. Y.

CHICAGO OFFICE: A. M. Clark Company, 329-31 South Wood Street

PITTSBURGH OFFICE: William G. Dubin, 1302 Clark Building

## MIDDLETON CURTAIN CUBICLES

A modern development in bedside screening designed for privacy, economy, maximum efficiency and convenience. Leading architects and hospital consultants specify and use Middleton Curtain Cubicle Screening Equipment in wards, private rooms, semi-private rooms, dental and surgical units, shower and bathtub enclosures and for many other purposes.

Suspended from ceiling by means of tubular hanger rods, the equipment is so constructed as to allow the curtain to pass freely all points of support along tubular track, resulting in immediate and complete privacy without gaps or other visibilities. This modern method allows maximum light and ventilation, and when not in use, curtains can be folded against walls, leaving rooms free and clear of curtain obstruction.

One of the improved features of the Middleton Curtain Cubicle Screening Equipment is the *threaded connection* of the tubular tracks; designed to eliminate drilling and tapping in field and thereby afford easy and rapid installation without the use of special tools or specially trained labor. Any carpenter or handy man can install Middleton Curtain Cubicles and can just as easily dismantle them for installation in new locations with little or no alterations.

## SERVICE TO ARCHITECTS

Middleton's experienced staff of engineers and draftsmen are always at your service, to co-operate with, and assist you in solving your screening problems, without any charge or obligation to you. Usually a rough sketch of the room or rooms, showing wall lines, windows, doors and layout of beds is all that is needed.

When we are required to install this material, it is done systematically, with a maximum of speed, diligence and care, and a minimum of disturbance and inconvenience to premises, patients and personnel; thereby permitting the usual activities in the occupied rooms to proceed in normal manner. When installation is to be done by others, we furnish simple instructions together with labeled layout drawings. All material is marked to correspond with these drawings.

## SUGGESTED SPECIFICATIONS

**Scope**—Work contemplated under this specification shall include all material, labor, equipment and services necessary for, and reasonably incidental to, the installation of Middleton Curtain Cubicles as manufactured by the Middleton Metal Products Co., 101 Park Avenue, New York, as shown on drawings and/or herein specified.

**Curtain Track**—Tubing shall be of seamless new drawn brass, 1-in. outside diameter by 14 B&S gauge, chromium plated over polished nickel. Track is to be installed 7 ft. 3 in. above the finished floor line unless otherwise called for in the plans and specifications, or as required by the physical conditions of the building.

**Bends**—All bends in curtain tracks are to be machine made to insure uniformity and are to be fabricated and shipped as separate and distinct members. Bends shall have a 5-in. radius with the tubing extending 4 in. beyond the spring line at either end. Both ends of bends are to be threaded inside and are to have solid brass threaded nipples inserted therein for connection to tracks, which shall have corresponding inner threads—*producing a hairline joint with no visible connections, such as screws, rivets, etc.*

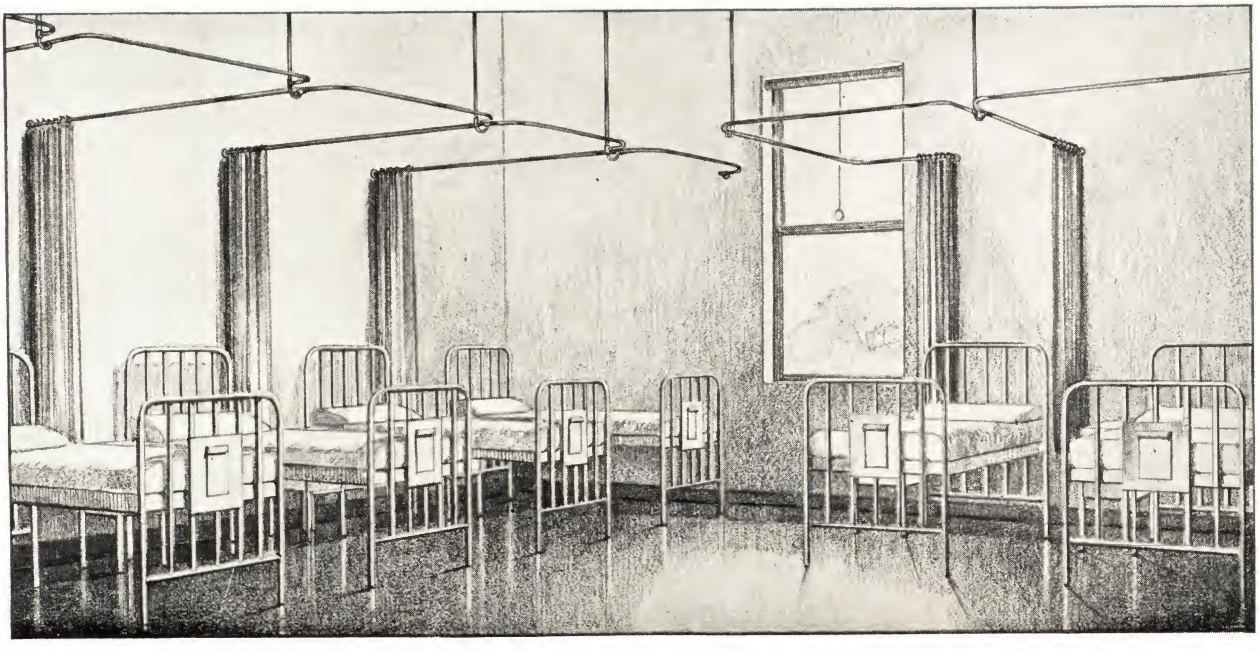
**Hanger Rods**—Hanger rods shall be of the same material and finish as specified for curtain tracks. Length of rods shall be governed by the distance between track and finished ceiling line.

**Hardware**—All fittings shall be of heavy cast brass, tooled out accurately on a lathe, to take exactly the outside diameter of the 1-in. tubing. All fittings shall be smoothly buffed and finely chromium plated over polished nickel. All screws and bolts forming a part of the equipment shall be oval headed with corresponding holes neatly countersunk. Wall and ceiling sockets shall be firmly attached to such walls and ceilings by means of toggle or expansion bolts or other suitable means.

**Fibre Wheel Roller Bearing Curtain Hooks**—Hooks shall be chromium plated brass, with compressed fibre wheels treated in a paraffin wax solution, *rendering them moisture repellent, to prevent swelling or flattening, thereby keeping their shape and noiseless qualities under any atmospheric conditions.*

**Curtains**—Curtains shall be of shadow-proof (Jean Cloth), (Twill Cloth), (Duck) in colors as selected and approved. All curtains shall be pre-shrunk equivalent to method prescribed in U. S. Navy Specifications. Cloth shall be Indanthrene dyed, and guaranteed sunproof and tubfast. Curtains shall have wide hems with specially constructed white metal grommets with rolled edges machined into the top hem 6 in. on centers. Grommets shall be so fabricated and machined as to prevent stain or pull out of the curtain. All curtains shall be at least 10% wider than the length of the tracks upon which they are used *so that there will be ample fullness to insure enclosure without gaps.*

*Special Note: It is recommended that curtains be ordered in quantities one-third greater than is actually required, for replacement while laundering.*



# ACORN WIRE AND IRON WORKS

5906 Lowe Avenue, CHICAGO, ILL.

## Products

Manufacturers of Acorn Wire Mesh Enclosure Panels; Cages for Banks and Offices; Wire Mesh Window Guards; Collapsible Folding Gates; Sani-robe Coat and Hat Racks.

Also manufacturers of Skylight Guards, Machinery Guards; Elevator Enclosures; Wire Signs; and Miscellaneous Wire Mesh Work. Complete catalogue sent on request.

## NO. 130 ACORN WIRE MESH ENCLOSURE PANELS

### Description

There is a difference between Acorn Standardized Enclosure Panels and just wire mesh partition.

No. 130 Acorn Enclosure Panels are built in standardized units. Each section or door is a complete unit and is interchangeable with every other unit. Additional units to match may be ordered at any time. The installation may be rearranged at any time by unskilled labor.

Architects who definitely specify the type and quality of partitions desired will relieve their clients of the burden of purchasing them later, which, for want of knowledge is usually done in a promiscuous manner.

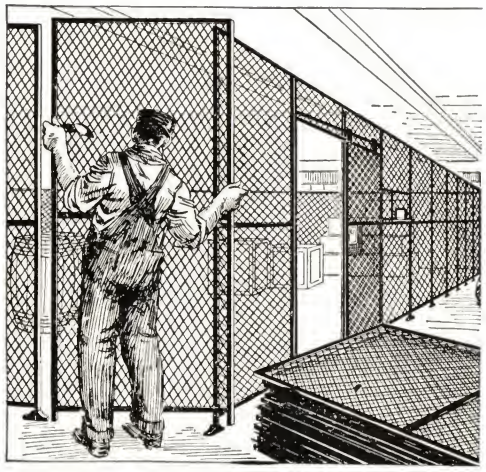
**Construction and Specification Data**—Architects may specify Acorn Standard Enclosure Panels by number, indicating type of doors and service windows desired.

**Height**—7, 8, 9 and 10 ft. carried in stock; other heights to order.

**Width of Panels**—Standard panels are 5 ft. wide. Special widths furnished.

**Door Sections**—Standard door sections are 3 ft., 3 ft. 6 in., and 4 ft. wide, and of height to match partition. Special widths when necessary. Doors are 6 ft. 6 in. high with transom panel overhead. Sliding doors up to 4 ft. wide. Self-closing without extra cost.

**Wire and Mesh**—No. 10 (⅛ in.) steel wire, 1½-in. diamond mesh. Entire web in one piece with wires passing through center stiffening bar; no unnecessary joints.



No. 130 Acorn Unit Wire Mesh Enclosure Panels

**Framing and Stiffening Bar**—Framing, 1-in. steel channel. Center stiffening bar, 1x⅜-in. steel channel securely riveted to frame.

**Capping or Top Stiffening Bar**—2x½-in. steel channel fastened to panels with U bolts, greatly simplifies installation.

**Corner Posts**—1x1-in. steel angle with floor socket. This permits the making of corner at any intersection.

**Cut-outs and Special Panels**—Cut-outs, or special size or shape panels furnished to meet special conditions.

**Bracing**—While capping or top stiffening bars will carry a reasonably long run of partition, simple methods of bracing can be arranged.

**General Hardware**—All hardware that is subject to strain is made of malleable iron or wrought steel to prevent breaking. The balance of soft gray iron.

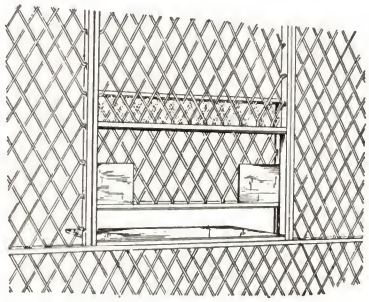
**Locks**—Heavy bronze locks, operated with cylinder from outside and recessed knob from inside. Master-keyed locks at slight additional cost. Doors equipped with a hasp for padlock may be had at a lower cost.

**Hangers**—All sliding doors equipped with ball bearing hangers.

**Floor Sockets**—2½-in. high to allow for uneven floor adjustment.

**Paint**—Standard factory green. Special colors may be had at slight additional cost.

**Installation**—Many original and exclusive features make Acorn Partitions extremely easy to erect. No experience or special skill is necessary. Diagram and complete setting instructions sent with each order.

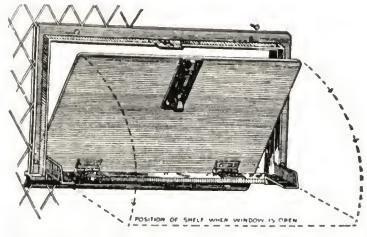


### No. 136
### Acorn Lift-up Service Window, with or Without Shelf

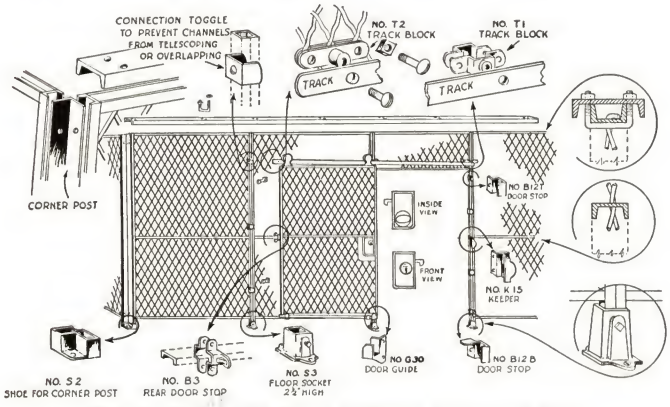
Standard size 24x15 in. Very practical and popular type of service window. Locked with spring catches in closed and open positions. Standard shelf 24x12 in. Unless shelf is specified window will be furnished without shelf

### No. 135-A and 135-B
### Combination Window and Shelf

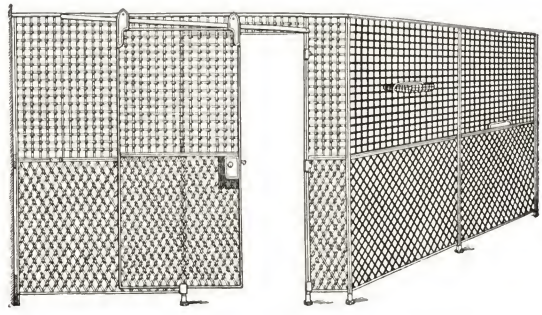
Acorn Combination service window is fitted with metal shelf extending about 2 in. on outside and 9 and 15 in., respectively, on inside. Shelf swings up closing the opening, and is locked with a shove bolt from inside. Can be installed before shipment or after partition is in place




No. 135-A. Size 15 in. wide, 9 in. high
No. 135-B. Size 24 in. wide, 15 in. high




Details of No. 130 Acorn Enclosure Panels and Doors



### Design No. 142 Bank and Office Cages

Upper portion usually made of flat or square wire, square mesh. Lower portion of round wire, diamond mesh.

Send for complete catalog showing Bank and Office Cages

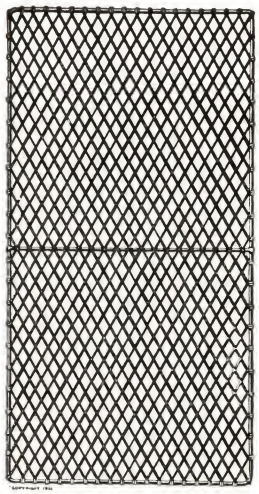
# WINDOW GUARDS

## Acorn Wire Mesh Window Guards

They protect glass against breakage and prevent entrance by stealth. They also prevent dishonest employees from passing valuable tools, etc., through the windows to confederates outside. They permit the windows to be opened for ventilation with safety. Send for catalogue.

**Material Specifications**—Made of three principal specifications: 1¼-in. mesh, No. 12 wire; 1½-in. mesh, No. 10 wire, and 2-in. mesh, No. 8 wire. No. 10 wire, 1½-in. mesh is most used, being the meeting point between burglary and glass protection. Guards can be furnished in any wire desired.

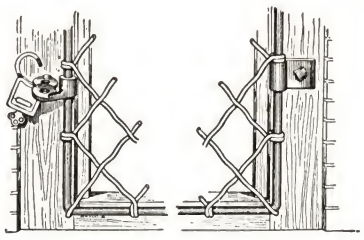
H-5 hinges and H-6 hasps, of malleable iron, are recommended. They afford an excellent means of fastening and are adaptable to any style window frame by reversing same where necessary. Hinges are fastened to window by lag screws making it difficult to remove from outside. Hasps are locked to a heavy screw-eye which can not be removed when padlock is in place.

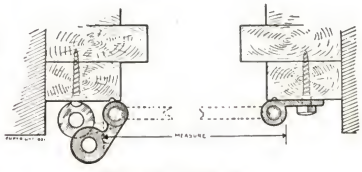


No. 121 Window Guard

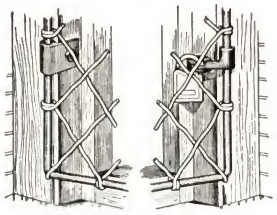
**Methods of Installing**—Where guards are used principally for burglar protection, hinged Type "A" is recommended. The hinges are fastened to window frame by means of lag screws, making it difficult to remove from outside.

When burglar protection is not an important factor, and when it is desirable to attach the guards from outside, hinged Type "B" is recommended. In this case the lag screws are exposed to the outside.





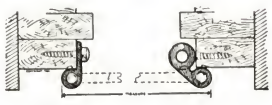
Hinged Type B





No. 122 Window Guard

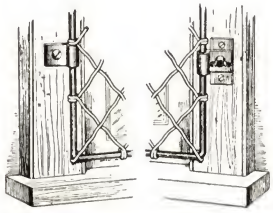
Channel frame varying from ¾ to 1 in. wide. These are satisfactory when designed to fit into opening, but are not recommended when outer grooved edge is exposed to view

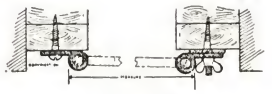


H5 Hinge H6 Hasp

No. 121 Window Guard Hinged, Type A

Round steel frame of 5/16 or ⅜-in. diameter according to size of guard. Also made in stationary type





Type K

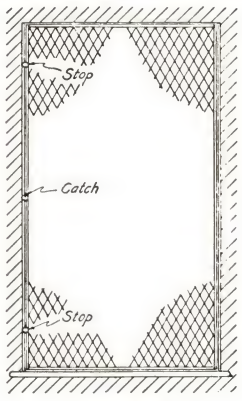
A popular type for protecting Gymnasium Windows or other windows where inside protection is desired.

Type "K" Hinged Guards are fastened on one side with H5 Hinges, and other side is held in place with thumb nuts.

## GYMNASIUM WINDOW GUARDS

While the several types of gymnasium window guards shown are recommended because of their simplicity in operation, many other types can be furnished when desired.

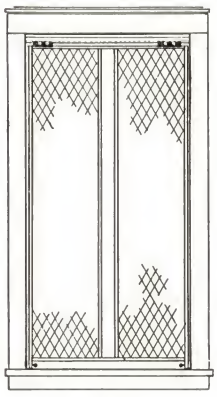
Send for catalogue if interested.




No. 122-6

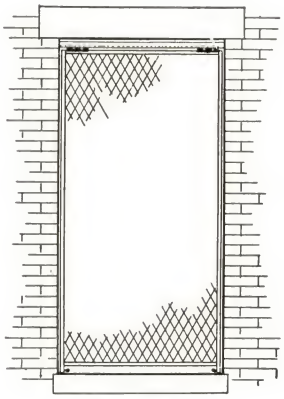
Carries 1-in. channel frame. No. 122-6 Guard is recommended because of its greater rigidity but, where an inexpensive guard is required, the No. 121 Type K will be found thoroughly satisfactory.

Quotations gladly furnished on request



No. 127

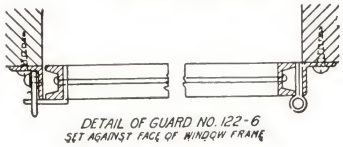
**No. 127**—Carrying channel frame and is hinged at top with slot for window pole and suitable catches at bottom. This arrangement is very desirable because windows may be opened without swinging guard



No. 128

**No. 128**—Hinged at top and suitable catches at bottom. Windows readily accessible for opening or washing

*Note:* No. 10 wire, 1½-in. diamond mesh is recommended for gymnasium window guards. Finished in green or black enamel. Specify by number and state whether fastened to brick or wood



DETAIL OF GUARD NO. 122-6 SET AGAINST FACE OF WINDOW FRAME

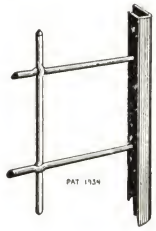
## ACORN welded weave

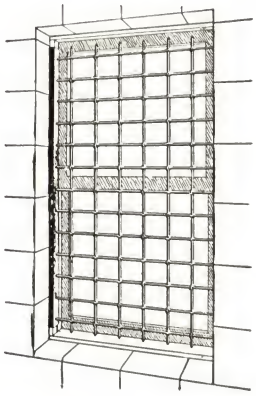
A new and better, yet inexpensive type window grille, designed for homes, public buildings, commercial buildings, etc.

Welded-Weave is made from ⅜-in. round cold drawn steel, interwoven and electrically welded into a solid unit.

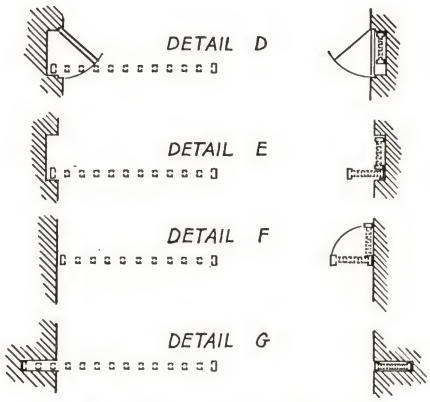
These grilles are a combination of beauty and strength, interposing a strong network of steel against any attempted forced entrance.

Welded-Weave is generally made in 4, 5, 6, and 7-in. spacings, but may be had in other spacings, either square or oblong openings, to suit architects' requirements.





# ACORN WIRE AND IRON WORKS
## COLLAPSIBLE FOLDING GATES FOR EVERY PURPOSE




Methods of Hanging Acorn Folding Gates

Acorn Folding Gates are now furnished with roller bearings throughout, without extra cost. They are more compact, afford greater ease of operation and are of improved appearance.

*Note:* If Style No. 156A gates *without pointed tops* are wanted, *please specify No. 156.*

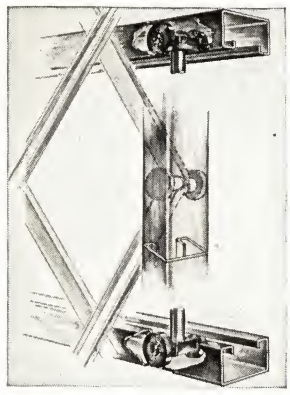
**Material Specifications**—Acorn Folding Gates are made of ¾x⅜x⅛-in. steel channels. End bars are formed of one piece of metal to receive rollers. Brass separators are used at all riveted parts.

Tracks are the enclosed type using ball bearing hangers. Note Detail D.

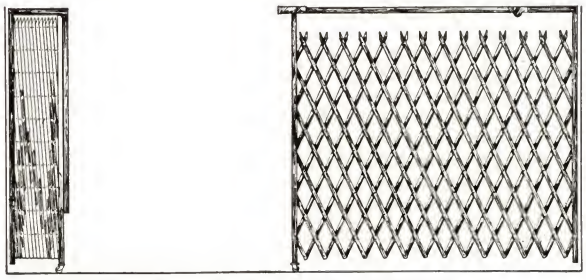
**Methods of Hanging Gates**—Any gates shown may be hung according to diagrams at left. In case of Single Type Gates, only one end of diagram will apply.

**Sizes in Collapsed Position**—All gates having no hinged tracks collapse into one-sixth of extended size. All gates having one hinged track add 1½ in. All gates having two hinged tracks add 3 in.

*Note A:* Gates No. 156A drop approximately 1½ in. to each foot in height, when extended across opening.

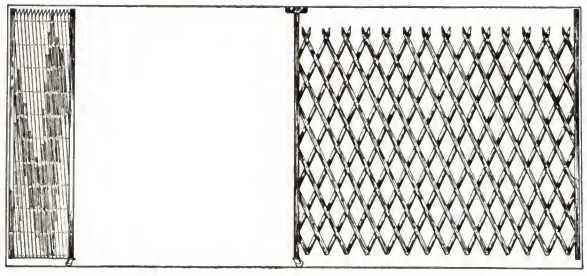


Detail D
Tracks and End Bars



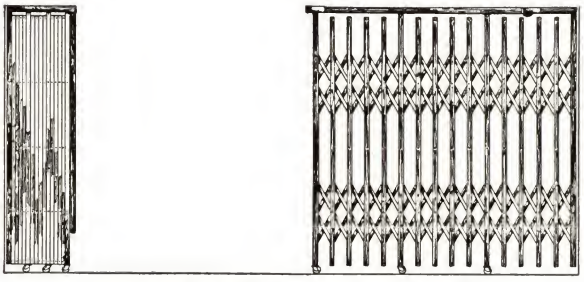
**156A Folding Gate, Fig. 40, Double Type**

Has hinged top stiffening track and rollers at bottom. *See Note A.* Swings back when in collapsed position. State whether Indestructo Cylinder Lock or hasp for padlock is desired



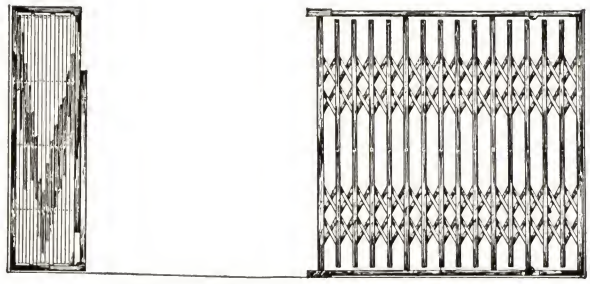
**156A Folding Gate, Fig. 41, Double Type**

End bar extends to ceiling. *See Note A.* Swings back when in collapsed position. State whether Indestructo Cylinder Lock or hasp for padlock is desired



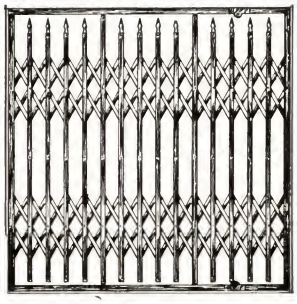
**157 Folding Gate, Fig. 42, Double Type**

Has plain tops with hinged top stiffening track and rollers at bottom. Swings back when in collapsed position. State whether Indestructo Cylinder Lock or hasp for padlock is desired



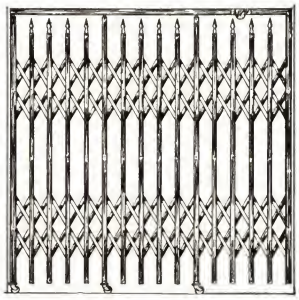
**157 Folding Gate, Fig. 43, Double Type**

Has plain tops with hinged top and bottom stiffening tracks. Swings back when in collapsed position. State whether Indestructo Cylinder Lock or hasp for padlock is desired



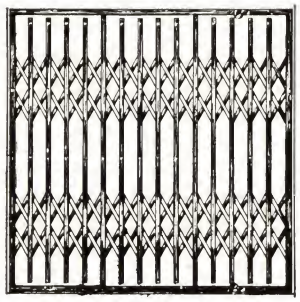
**157A Folding Gate, Fig. 44**
**Single Type**

Has ornamental picket tops with hinged top and bottom stiffening tracks. Swings back when in collapsed position. Gates must be of sufficient height to allow tracks to fold into position. State whether Indestructo Cylinder Lock or hasp for padlock is desired



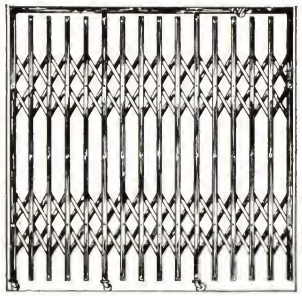
**157A Folding Gate, Fig. 45**
**Single Type**

Has ornamental picket tops with hinged top stiffening track and rollers at bottom. Swings back when in collapsed position. Gate must be of sufficient height to allow track to fold into position. State whether Indestructo Cylinder Lock or hasp for padlock is desired



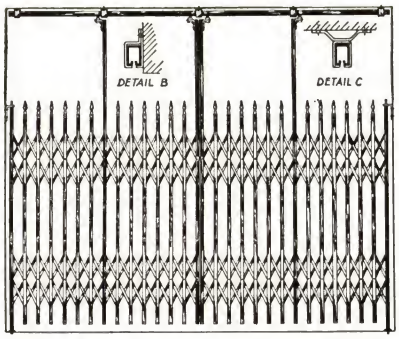
**157 Folding Gate, Fig. 46**
**Single Type**

Has plain tops with top and bottom stiffening tracks. Swings back when in collapsed position. Gate must be of sufficient height to allow tracks to fold into position. State whether Indestructo Cylinder Lock or hasp for padlock is desired



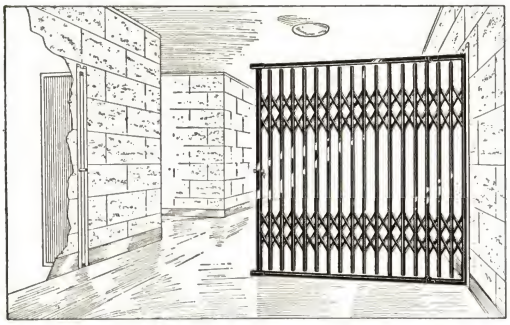
**157 Folding Gate, Fig. 47**
**Single Type**

Has plain tops with upper stiffening track and rollers at bottom. Swings back when in collapsed position. Gate must be of sufficient height to allow track to fold into position. State whether Indestructo Cylinder Lock or hasp for padlock is desired

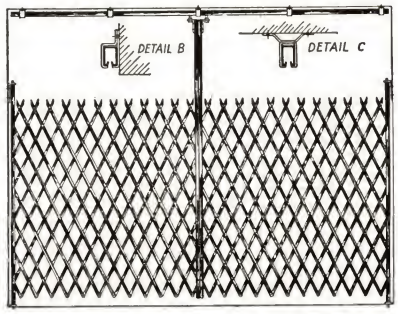



**157A Folding Gate, Fig. 48, Double Type**

Has ornamental picket tops and permanent overhead track. Cannot swing back when in collapsed position. State whether Indestructo Cylinder Lock or hasp for padlock is desired

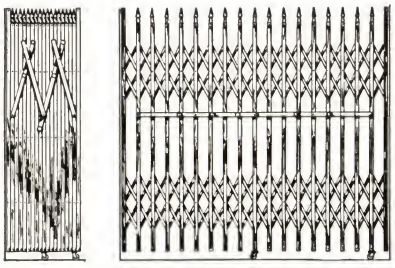


**Typical View of Acorn Folding Gate Across Corridor of School Building**



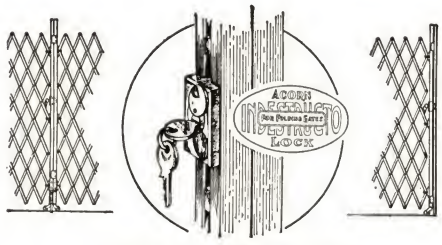

**156A Folding Gate, Fig. 49, Double Type**

Has permanent overhead track. *See Note A.* Cannot swing back when in collapsed position. State whether Indestructo Cylinder Lock or hasp for padlock is desired



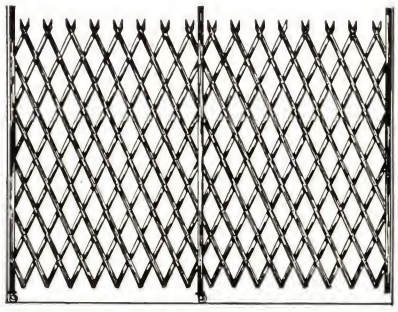
**157A Folding Gate, Fig. 50, Single Type**

Has ornamental picket tops and jackknife brace or stiffening bar. Swings back when in collapsed position. State whether Indestructo Cylinder Lock or hasp for padlock is desired



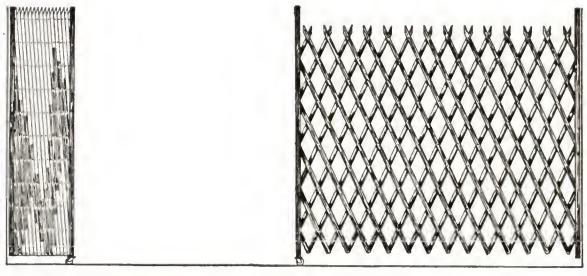

**Indestructo Cylinder Lock**
(Patented 1933)

The Acorn Indestructo Folding Gate Lock is an added safety feature which can now be obtained with Acorn Collapsible Folding Gates. It does away with the necessity of a padlock, eliminating the last undesirable feature. This lock is safe, practical and economical. It is accessible by key from either side and is unbreakable



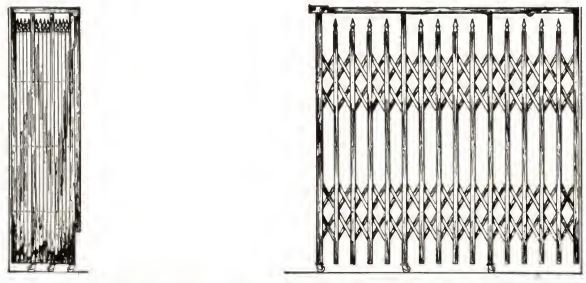
**156A Folding Gate, Fig. 51, Single Type**

Has vertical stiffening bar. *See Note A.* Swings back when in collapsed position. State whether Indestructo Cylinder Lock or hasp for padlock is desired



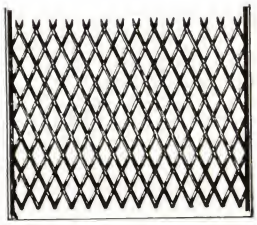
**156A Folding Gate, Fig. 52, Double Type**

Swings back when in collapsed position. State whether Indestructo Cylinder Lock or hasp for padlock is desired. *See Note A*



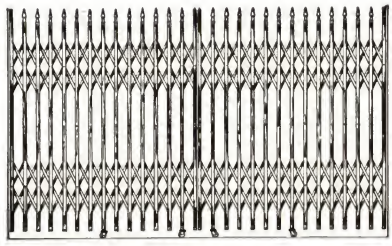
**157A Folding Gate, Fig. 53, Double Type**

Has ornamental picket tops with hinged top stiffening track and rollers at bottom. Swings back when in collapsed position. State whether Indestructo Cylinder Lock or hasp for padlock is desired



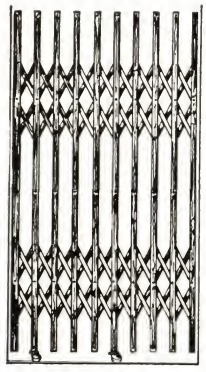
**156A Folding Gate, Fig. 54 Single Type**

Swings back when in collapsed position. *See Note A.* State whether Indestructo Cylinder Lock or hasp for padlock is desired



**157A Folding Gate, Fig. 55, Double Type**

Has ornamental picket tops with rollers at bottom. These gates will require some form of bracing at center. Swings back when in collapsed position. State whether Indestructo Cylinder Lock or hasp for padlock is desired



*Left:*

**157 Folding Gate, Fig. 56 Single Type**

Has plain tops. If ornamental picket tops are desired, specify No. 157A. Swings back when in collapsed position. State whether Indestructo Cylinder Lock or hasp for padlock is desired

*Right:*

**Acorn Ornamental Picket Top for No. 157A Gates**

These tops are made of malleable iron. To guard against breakage be sure to specify malleable iron



# THE CONSOLIDATED EXPANDED METAL COMPANIES

WHEELING, W. VA.

SALES OFFICES AND WAREHOUSES

ATLANTA, GA. BOSTON, MASS. BUFFALO, N. Y. CHICAGO, ILL. CINCINNATI, OHIO CLEVELAND, OHIO HOUSTON, TEX. NEW YORK, N. Y. PHILADELPHIA, PA. PITTSBURGH, PA.

For Other Steelcrete Pages, see File Index

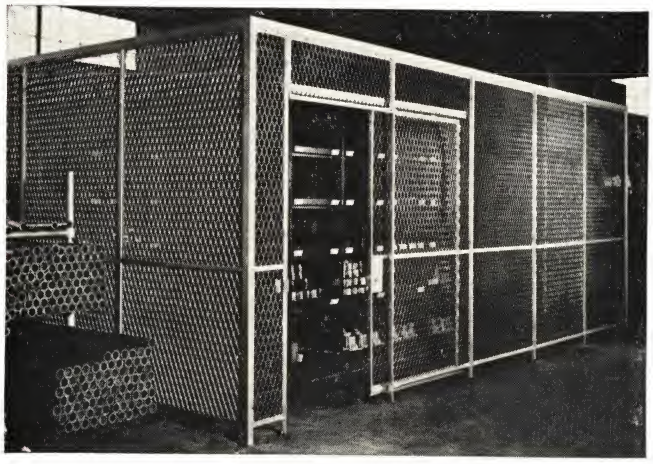
## STEELCRETE EXPANDED METAL FOR PARTITIONS, WINDOW GUARDS AND ENCLOSURES

Any open mesh problem is easily solved with Steelcrete Expanded Metal which is free from burrs and sharp edges. Diamond openings range from ½ in. wide by 1 in. high to 6 in. wide by 12 in. high in thicknesses from 18 gauge to $\frac{5}{16}$ in.

A great many articles are manufactured from flattened and regular expanded metal. These include:

| | |
|---|---|
| Baskets | Animal cages |
| Bins | Display racks |
| Filter cases | Elevator enclosures |
| Filter grids | Factory doors |
| Lockers | Machine guards |
| Partitions | Radiator enclosures |
| Shelves | Tool room enclosures |
| Trays | Window guards |

and countless other items.



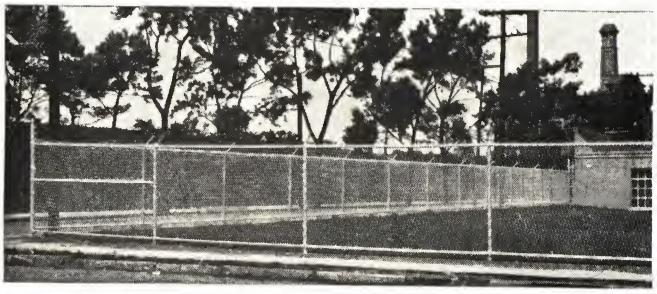
**Tool Room Enclosures**—Of 1½" No. 10 mesh framed in our special partition bar offer the maximum in appearance and security.

**Storage Vaults for Furs or Other Valuable Items**—Made from 1½" No. 9 mesh, simplify temperature control and offer no interference to fire sprinkler systems or hose play while at the same time assuring security against illegal entry.

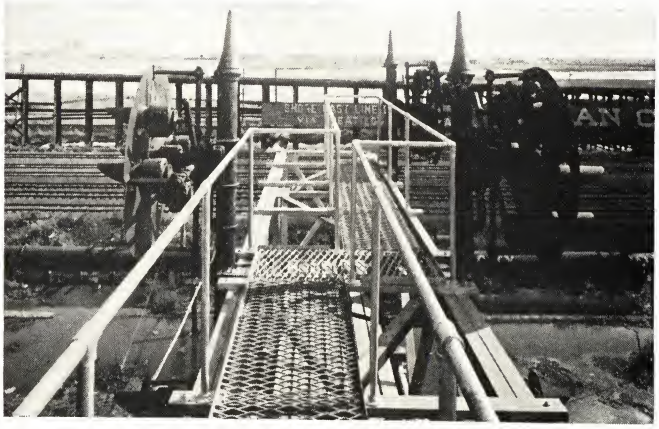
**Factory Window Guards**—¾" No. 13 mesh welded to round rod frames—either hinged, fixed or of the lift-off type—give the maximum in protection, economy and weather resistance.

**Residence Window Guards**—Of the 6 x 12-in. diameter mesh, in the heavier gauges, present a pleasing appearance and give nursery room security without the barred window effect so disastrous to any architectural treatment.

**Institutional Window Guards**—Of mesh having 3x8-in. diamonds, with porch guards of the same material, offer greater security and at the same time avoid the depressing effect of bars which are usually associated with prison cells.



**Expanded Metal Fence**—Retains all the advantages of this sheet material. It is heavily galvanized by the hand dip process, easy to erect on any grade condition, beautiful in appearance and durable.



**Catwalks and Platforms of Skywalk Mesh**—Safe, light, and offer thorough-vision for reading gauges from below and present little obstruction to the passage of light. They are, therefore, very well adapted for use as window cleaning runways and in boiler rooms.

*Submit your problems to us for a recommendation. Of course no obligation will be incurred*

# KENTUCKY METAL PRODUCTS CO.

INCORPORATED

## Woven Wire Partitions, Cages, Bank and Office Grilles, Wire Window Guards, Screen Door Grilles, Folding Gates

LOUISVILLE, KY.

REPRESENTATIVES IN PRINCIPAL CITIES

### Products

KENTUCKY WIRE PARTITION and ENCLOSURES for industrial stockrooms, toolrooms, machine-shops, shop divisions, etc.; CAGES for banks and offices; BANK GRILLES; BULLET-PROOF WIRE WORK; WIRE PANELS and DOORS; WINDOW GUARDS; RADIATOR GUARDS; SKYLIGHT GUARDS; SCREEN DOOR GRILLES; FOLDING GATES; and other open Mesh Work.

### Kentucky Wire Products

Kentucky Products are designed to meet the demands of the most artistic office or bank as well as the rough shop or factory, and are constructed to meet the approval of the leading architects of today. Wire work is very artistic as well as practical. Executives and architects are appreciating its value as an aid to increased efficiency as it makes interiors visible at all times. Open mesh partitions are a great aid to ventilation and heating.

**Any Metal**—Kentucky Wire Products can be made in steel, copper, brass, bronze, aluminum, stainless steel, etc.

**Any Finish**—Can be furnished in painted, enameled, lacquered, galvanized, or electro-plated.

**Any Mesh**—Square, diamond, rectangular or hexagonal.

### Kentucky Sectional Wire Mesh Partitions

**Wire and Mesh**—1½-in. diamond mesh, No. 10 (⅛-in.) wire of best open hearth steel. Web of each panel in one piece with double channel stiffening bar at center.

**Frame**—1 x ½-in. standard channel.

**Top Reinforcing Bar**—1½ x ½-in. channel.

**Floor Sockets**—Cast iron, made to give adjustment for uneven floors.

**Locks**—Yale, Corbin, Sargent, etc.

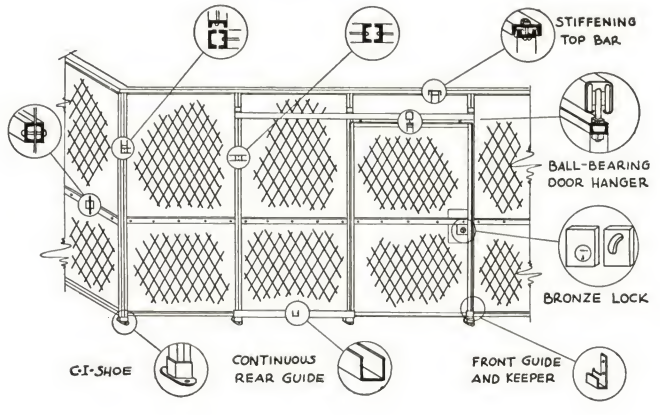
**Windows**—Sliding or hinged as required.

**Hinged Doors**—Size as required.

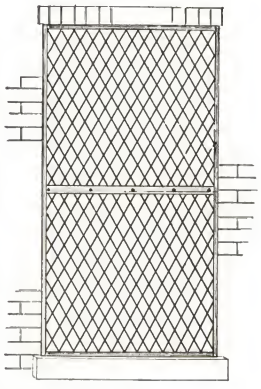
**Sliding Doors**—Made of 2 ft. 6 in., 3 ft., 3 ft. 6 in., and 4 ft. wide. Ball bearing hangers.

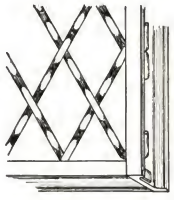
**Heights**—7, 8, 9 and 10 ft., or as required.

**Width**—Of standard panels, 5 ft.




### Kentucky Wire Guards





Kentucky Wire Guards are constructed for use over any type of windows, glass openings of doors, skylights, etc. Also as safety guards for dangerous machinery.

1¼-in. diamond mesh, No. 12 wire.
1½-in. diamond mesh, No. 10 wire.
2-in. diamond mesh, No. 8 wire.

Made with either round or channel frames. Sizes as specified with or without locks.

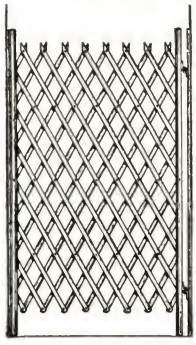
### Sectional Wire Mesh Folding Gates and Partitions

Strong in construction—economical in price. Used for closing corridors or entrances to buildings, etc. May be folded against walls or into wall pockets. Gates completely out of way during business hours. Designed especially for large installations.

Fully illustrated in catalogue.

### Standard Steel Folding Gates

(Other illustrations shown in catalogue.)



No. 174

Manufactured from high grade materials, steel, bronze or aluminum and finished to specification.

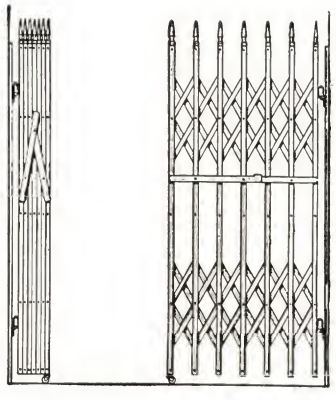
**No. 174 Folding Gate**—Lazy tong type of gate—arranged to fold back when in folded position.

This gate may also be used as window guard.

**No. 175-A Folding Gate**—Made either single or double. Ornamental picket tops. Jackknife bar brace near center. Swings back when in folded position.

*No. 175* without pickets.

Estimates glady furnished.



No. 175-A

### Write for

Blue Book of Kentucky Open Mesh Products.

Typical layouts and applications fully described and illustrated.

# WESTERN WIRE & IRON WORKS, INC.

TELEPHONE
Canal 6442

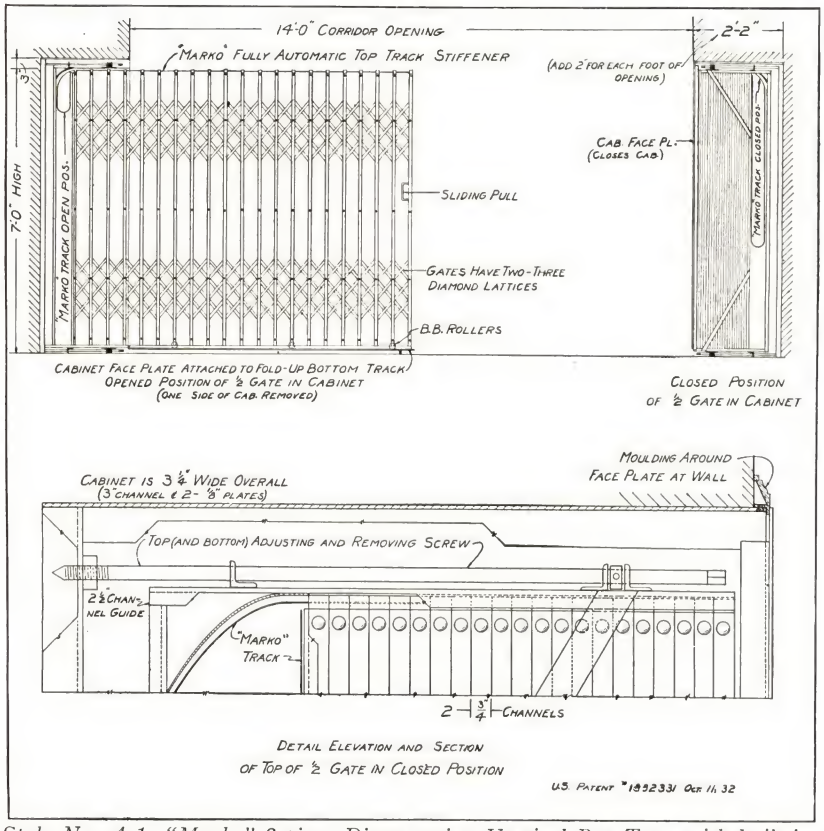
1820-1830 South Sangamon Street, CHICAGO, ILL.

## Products

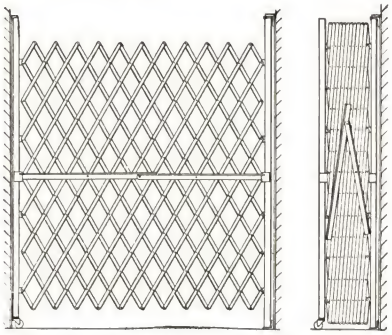
Manufacturers of "Improved" Folding Gates, "Industro" Woven Wire Partitions, Woven Wire Window Guards, "Ornamenta" Woven Wire Grilles, Hangers and Locks for Wire Doors—Bank and Office Cages, Screens, Grilles.

**Other Products**—Wire Skylight Guards, Machinery and Radiator Guards, Area and Walkway Gratings, Wire Signs, Wire Cloth, Ornamental Iron Railings, Fences and Window Guards.

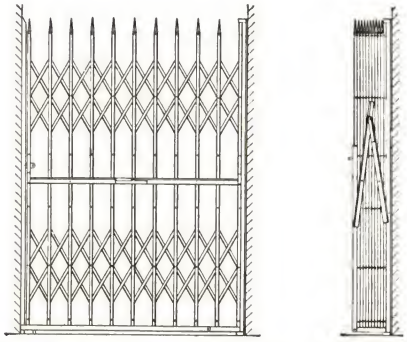
## IMPROVED FOLDING GATES—FERROUS OR NON-FERROUS METAL



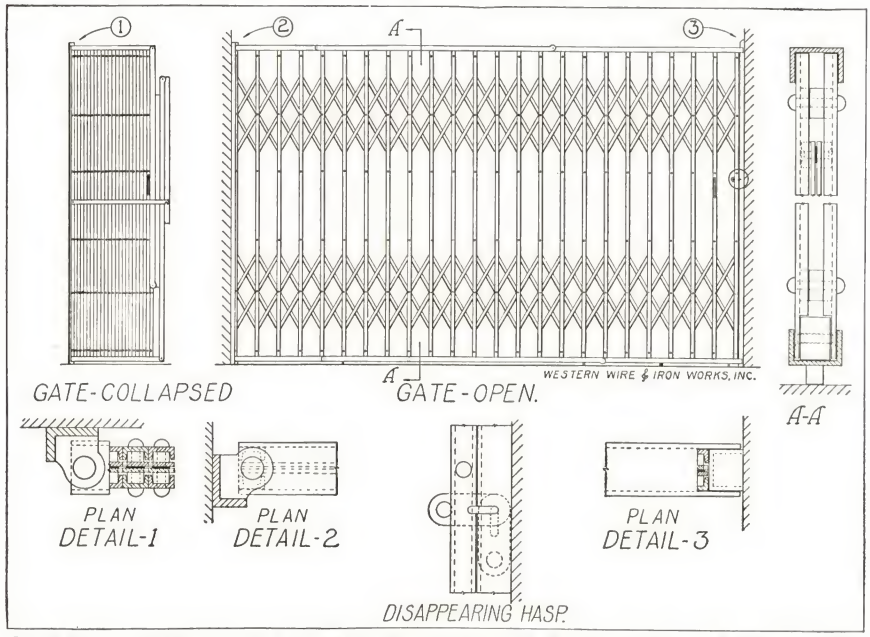

*Style No. A-1—"Marko" 2-piece Disappearing Vertical Bar Type with built-in steel cabinets, fully automatic top track and fold-up bottom track*



*Style No. 3—Diamond Lattice Type. For factories, trucks, show windows, service and shipping openings*



*Style No. 2—Vertical Bar Type. For lobbies, front entrances, banks, elevators, etc.*




*Style No. 1—Single section Vertical Bar Type with fold-up top and bottom tracks. Openings up to 10 ft. Use double section for larger openings*

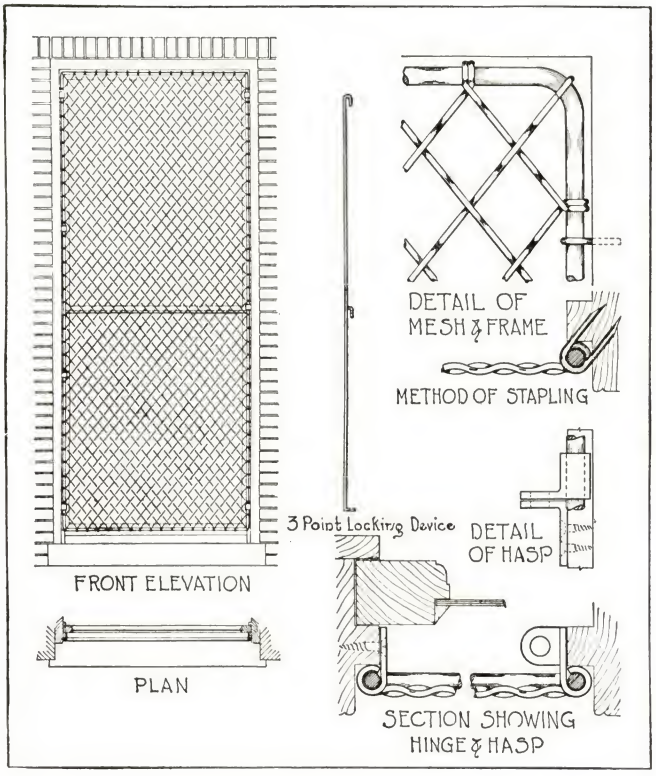
## Specifications

**Style No. A-1**—Furnish and install in corridors as shown on plans, "Marko" 2-piece disappearing vertical bar type folding gates Style A-1 as shown, manufactured by WESTERN WIRE & IRON WORKS, INC., with fully automatic disappearing top track, built in steel cabinets and fold-up bottom tracks with cabinet face plates attached. Gates to be made of ¾-in. channels spaced 5 in. o.c. with ⅛x⅝-in. lattice bars riveted between channels. Gates to be 7 ft. high. Paint prime coat gray.

**Style No. 1**—Furnish and install improved vertical bar type folding gates with fold-up top and bottom tracks, as manufactured by WESTERN WIRE & IRON WORKS, INC. Gates to be not over 7 ft. high, made of double ¾-in. channels spaced 5 in. o.c. with ⅛x⅝-in. lattices top and bottom riveted between channels. Gates to be arranged with pivots fastened to 1½-in. angles at wall to allow same to swing flat against wall (or into recessed wall pockets). Arrange for padlock. Paint prime coat gray.

***Note:** In specifying, state whether gates are to be made of steel, aluminum, stainless steel or bronze.*

## WOVEN WIRE WINDOW GUARDS



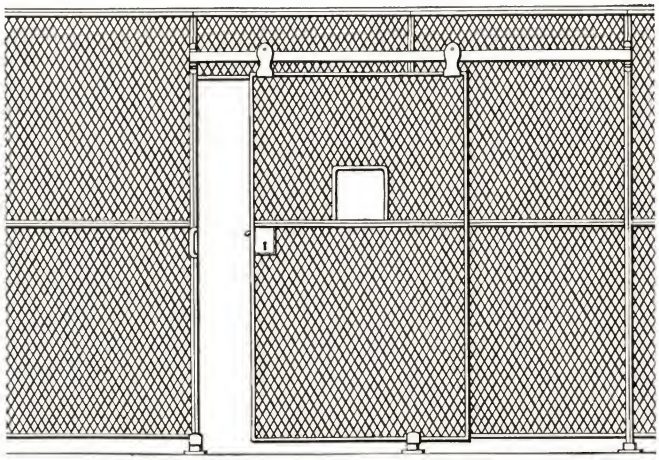

### Specifications

Furnish and install over exterior of all windows as called for on drawings. Hinged woven wire window guards made of No. 10 (.135) W&M gauge wire, woven and clinched onto ⅜-in. round rod frames, with intermediate horizontal stiffeners of same material welded in, and equipped with 3-point locking device arranged for padlock, all as manufactured by Western Wire & Iron Works, Inc. Paint all work shop coat red lead and oil.

Also furnish and install same type guards over interior windows, doors, transoms and borrowed lights in gymnasium. Where guards go over steel sash windows, make proper allowance for ventilators to swing.

***Note to architect:*** *Upon request we will submit sketches and recommendations of any special conditions for woven wire window guard applications.*

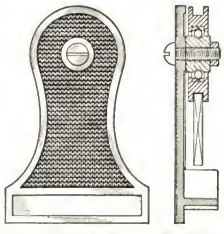
## "INDUSTRO" WOVEN WIRE PARTITIONS



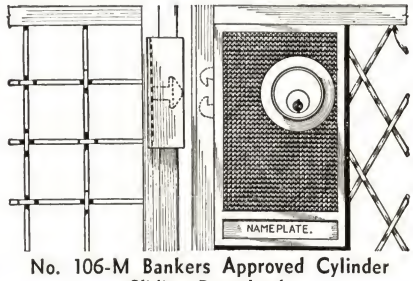
### Specifications for "Industro" Partitions

Furnish and install woven wire mesh partitions extending from floor to ceiling, standard construction, made of No. 10 (.135) W&M gauge wire woven into 1½-in. diamond mesh with 1x½x⅛-in. channel iron frames, in sections 5 ft. wide with intermediate vertical flat bar stiffeners of proper stiffness, between panels, spaced not more than 15 ft. apart and securely anchored to floors and ceilings. Partitions to have two 1-in. horizontal channel stiffeners at 3 ft. 6 in. from floor, mortised and tenoned into vertical channels as an integral part of each section. At 8 ft. from floor and each 5 ft. thereafter place horizontal intermediate flat bar stiffeners same size as verticals. As shown on plan, place 4-ft. gravity sliding doors equipped with malleable iron Bankers Approved sliding door cylinder locks and Spee-d ball-bearing hangers, as manufactured by Western Wire & Iron Works, Inc., Chicago, Ill. Paint all work shop coat black enamel paint. Leave all partitions and doors in first class working order.

***Note:*** *For heavy duty partitions specify No. 8 (.162) W&M gauge wire, 1¼-in. diamond mesh with 1¼ x ½ x ⅛-in. channel iron frames and extra heavy stiffeners.*



**No. 110-M Spee-D Ball-Bearing Hanger**
Uses ¼ x 2-in. flat track

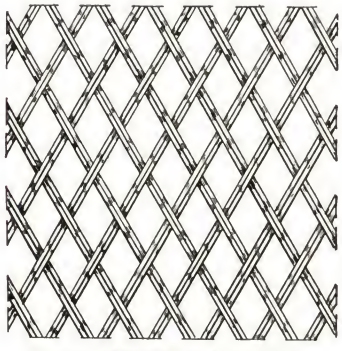



**No. 106-M Bankers Approved Cylinder Sliding Door Lock**
U. S. patent No. 1,667,600 April 24, 1928

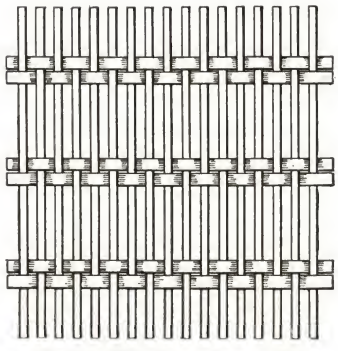
## "ORNAMENTA" WOVEN WIRE GRILLES

*For radiator recesses—bookcases—windows—ventilators.*

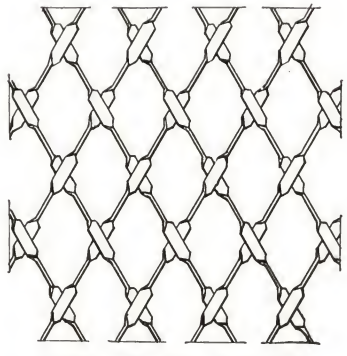
A 1000 and 3 designs. To suit any architectural style—in any available ferrous on non-ferrous metal—angle, flat bar or channel frames. Original designs on request.



**Design "BB" Open Area 80%**
2 1/16-in. round wires, diagonal mesh, ⅝-in. o.c.



**Design "FF" Open Area 50%**
⅛-in. round wire vertical. ½ in. o.c. 2 3/16 x 1/16 r.e. flat wire horizontal 1½-in. o.c.



**Design "D" Open Area 55%**
3/16 x 1/16 r.e. flat wire. Quarter twist—diagonal mesh ⅞-in. o.c.

# WILLIAM R. PITT COMPOSITE IRON WORKS

TELEPHONE
CHickering 4-6560

548 West 27th Street
NEW YORK, N. Y.

## Products

Manufacturers of "PITT-BOSTWICK" and "PITT" LAZY TONG FOLDING GATES and GUARDS for every purpose.

## Where Used

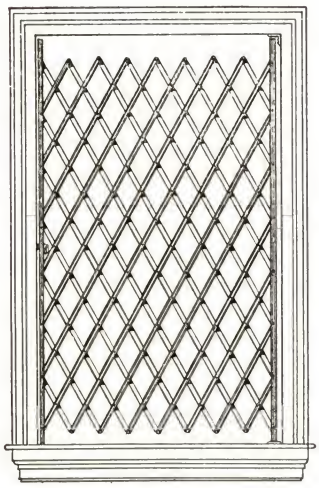
These folding gates are designed for use in banks, churches and theatres; school corridors, entrances and stairs; private residences and apartments; elevator cabs, steamships, trucks and delivery cars.

## Quality of Work

Every Pitt product is of the highest grade workmanship and material. They are strong, durable and operate easily. Folding gates and guards are a specialty. This company is the original manufacturer of the "Bostwick" gate and the originator of most of the standard folding gates. By training, experience and facilities we are prepared to meet the demands of architects, builders and the iron trade.

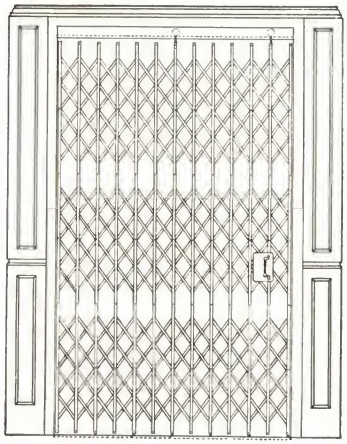
## Folding Gate Estimates

State purpose for which gate is intended. Send plans and specifications, or sketch, showing width and height, and where gate is to set.

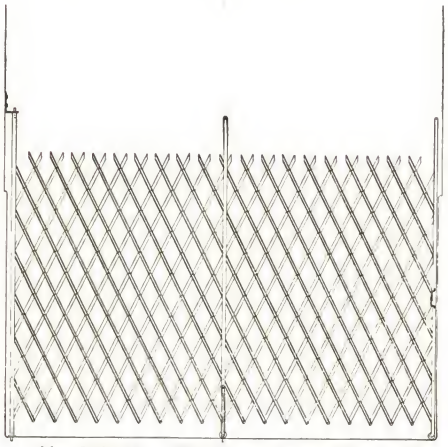




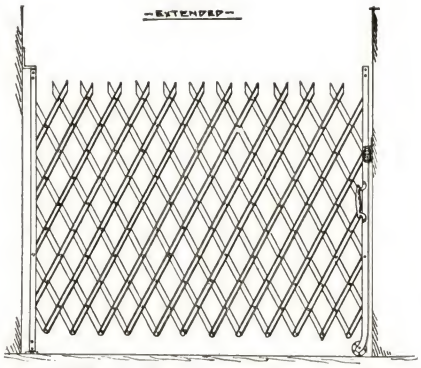
No. 1316. "Pitt" Lazy Tong Guard for Windows
No tracks



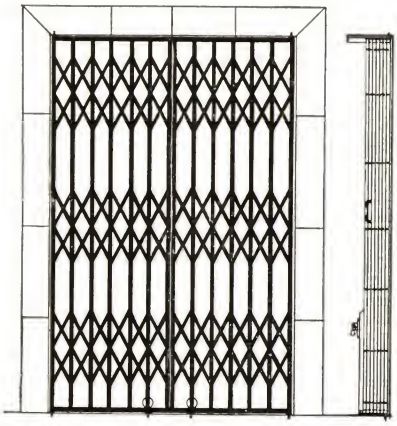
No. 1282. "Pitt-Bostwick" Elevator Gate with Tubular Top Track



No. 1303-D. "Pitt" Lazy Tong Gate with Pointed Tops
Also made with rounded tops

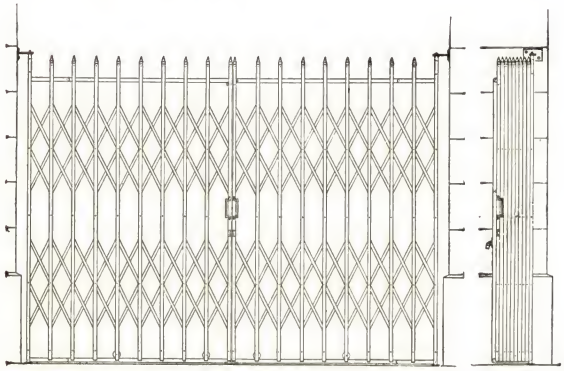



No. 1303-A. "Pitt" Lazy Tong Gate with Pointed Tops
Also made with rounded tops

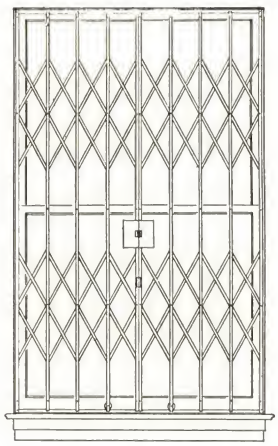




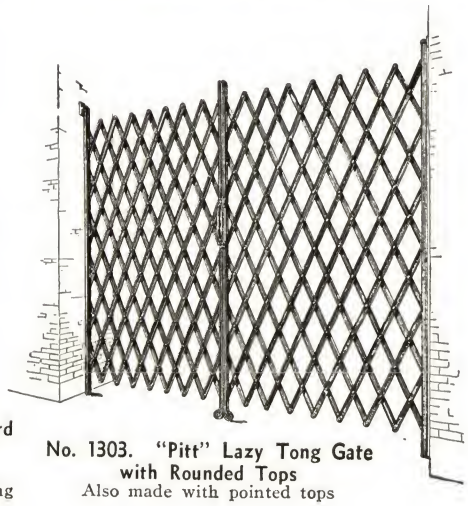
No. 1284. "Pitt-Bostwick" Vestibule or Window Gate with Stationary Top and Hinged Lifting Bottom Tracks



No. 1262. "Pitt-Bostwick" Gate with Cast Pickets, Hinged Stiffening Bars and Hinged Lifting Bottom Tracks



No. 1267. "Pitt-Bostwick" Guard for Window, with Stationary Top and Bottom Tracks
Can be arranged to fold and swing



No. 1303. "Pitt" Lazy Tong Gate with Rounded Tops
Also made with pointed tops

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Section Number 1 / Catalog Number 5

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# ART METAL CONSTRUCTION COMPANY

Steel and Bronze Interior Equipment

GENERAL OFFICES AND FACTORIES

JAMESTOWN, N. Y.

BRANCH OFFICES

BALTIMORE, MD., 201 Union Trust Building
BOSTON, MASS., 12 High Street
CHICAGO, ILL., 208 W. Adams Street
CINCINNATI, OHIO, 1107 Union Central Building
CLEVELAND, OHIO, 220 Hanna Building
DETROIT, MICH., 333 State Street
HARTFORD, CONN., 75 Pearl Street
NEW YORK, N. Y., 369 Broadway
PHILADELPHIA, PA., 1107 Architect's Building
PITTSBURGH, PA., 1215 Plaza Building
WASHINGTON, D. C., 301 Southern Building
LONDON, ENGLAND, 199-203 Buckingham Palace Road

For Metal Doors and Trim, Kitchen Cabinets, Steel Partitions, Bank, Library and Hospital Equipment, Museum Cases, see File Index

## ART METAL EQUIPMENT FOR BANKS AND PUBLIC BUILDINGS

ART METAL CONSTRUCTION COMPANY builds steel equipment which includes every item used in bank, office or public building, from desk tray and waste basket to officers' desks and fire-resisting record safes. In filing devices, all forms and sizes to take every standard size record in use are manufactured.

Art Metal
Jamestown, New York
U.S.A.
TRADE-MARK

Requirements in desks, vault trucks, steel safes and filing devices which cannot be filled from stock can be met in our facilities for built-to-order work.

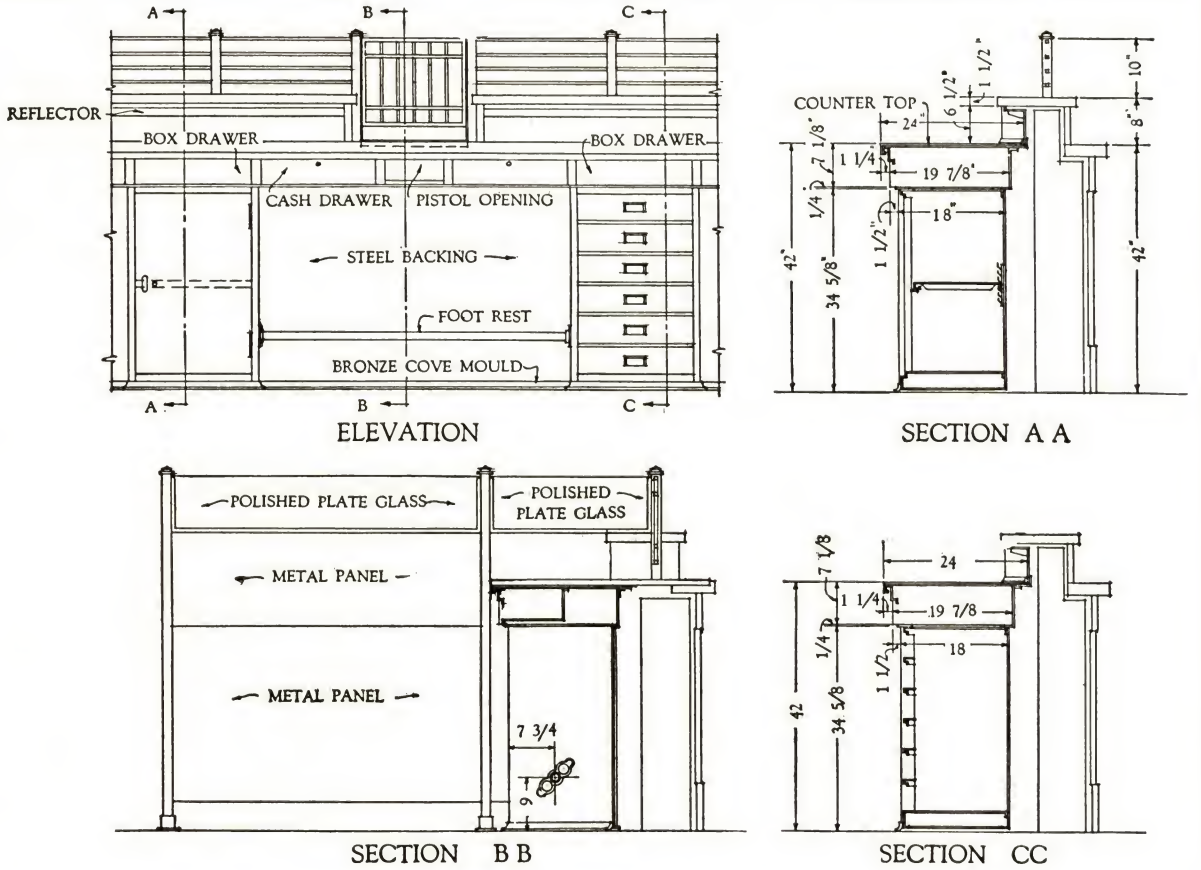
Art Metal equipment for banks and public buildings includes: BRONZE ENTRANCE and VESTIBULE DOORS; ELEVATOR ENCLOSURES; CHECK DESKS, COUNTER SCREENS; WICKET and VAULT GRILLES; CAGE PARTITIONS; BANK COUNTERS, FILING EQUIPMENT; BOOKKEEPING DESKS; SAVINGS LEDGER DESKS; DESKS for OFFICER'S USE; COUPON BOOTHS, Etc.

### Co-operation with Architects Insures Individuality

Working from blue prints of the floor plans, Art Metal Engineers will submit modern layouts of counter equipment and cages for the most efficient conduct of work of the bank. This is done after consultation with architect and banking officials and a determination of the particular requirements.

Architectural individuality is obtained by Art Metal Designers working with the architect and carefully modeling the details from his designs. All work is individually prepared and carefully executed for each contract.

Competent sales engineers are maintained at the Home Office and at all Branch Offices. Their services are offered to architects, contractors and builders without obligation.




DETAILS OF TYPICAL COUNTER AND CAGE PARTITION

# ART METAL EQUIPMENT FOR LIBRARIES

Art Metal Steel Library Equipment is used in a large proportion of the modern libraries in this country as well as many foreign countries.

Every state in the country, as well as practically every important city, has many Art Metal installations.

The production of a complete line of modern fire-resisting steel equipment for libraries and museums of various kinds is a specialty of this company. The line of products is complete for the equipment of small private or town libraries to the great city libraries, such as the Free Library of Philadelphia in which over 2,783,000 lb. of Art Metal steel library equipment was used.

Complete engineering service, including load computations, column and floor calculations, construction problems and designing of special equipment will gladly be furnished to architects and builders without obligation.

### Art Metal Equipment for Libraries Includes

Standard Type Book Stacks for Stack Rooms.
Standard Type Book Stacks for Reading Rooms.
Standard Type Book Stacks with glass or mesh doors.
Bracket Type Book Stacks for Stack Rooms, built integral with the building.
Bracket Type Book Stacks built independent of building.
Bracket Type Rolling Book Stack.
Newspaper Stacks and Racks for Newspapers.
Carrel Partitions and Reading Desks.
Charging Desks.
Card Catalog Files.
Reading Tables.
Magazine Racks.
Book Trucks.
Sliding Reference Shelves.
Portable Reference Shelves.
Roller Shelves, Book Supports.
Vertical Files.
Display Cases.
Stairs and Railings.
Booklifts.

All materials used in stack construction are the best and most suitable for this type of work.

The designs are most attractive and construction is based on the most scientific principles.

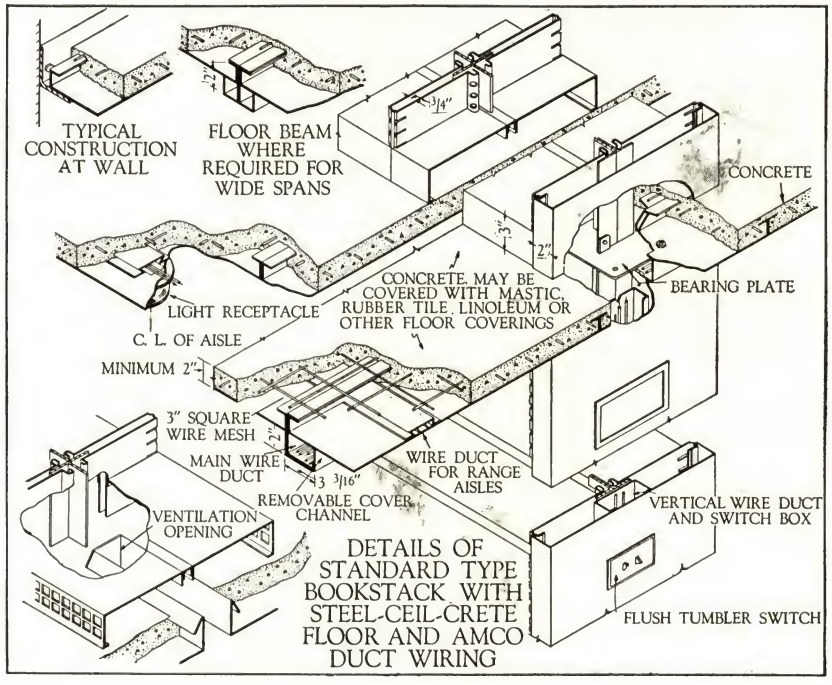
Workmanship the best that skilled mechanics of long experience can produce.

Finish of book stacks is baked-on enamel, covering all parts of the product and giving the greatest protection and wear resistance.

## ART METAL STANDARD TYPE BOOK STACK



**Philadelphia Free Library**
Main book stack




Art Metal Standard Type Book Stack with full depth hollow metal partitions or shelf supports fills the demand for the finest book stacks that may be desired either for stack room or reading room.

May be furnished with glass or mesh doors for protection of rare and valuable books.

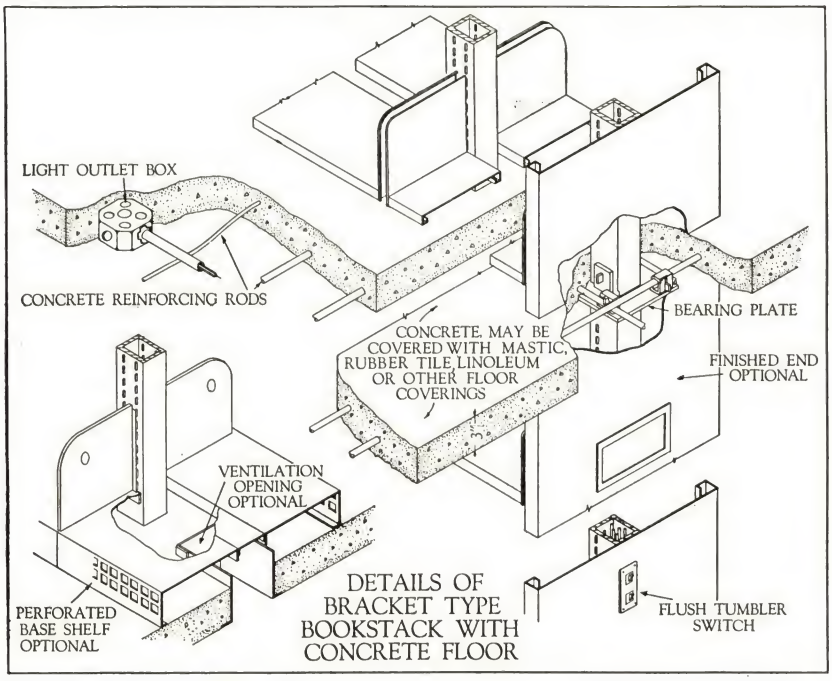
ART METAL CONSTRUCTION COMPANY

# ART METAL EQUIPMENT FOR LIBRARIES (Continued)

## BRACKET TYPE BOOK STACK



**Winchester, Mass., Public Library**
ROBERT COIT AND KILHAM, HOPKINS AND GREELEY, Architects
An aisle between two Art Metal bracket type book stacks, showing the finished steel ceiling which carries all wiring raceways, eliminating conduit, and forming foundation for concrete floor above




Art Metal Bracket Type Stack with rectangular tubing columns having ¼ in. thick walls complies with all building codes. Neat appearance, without projecting flanges, and welded construction throughout are outstanding features.

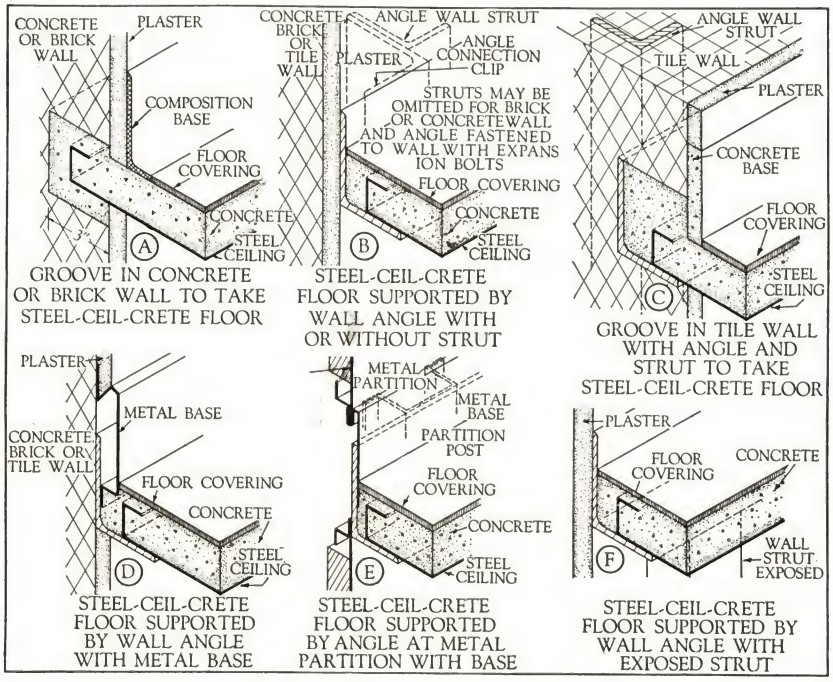
Wiring is concealed in stack columns and deck floor.

For one-tier stacks and where only a few tiers are considered, the stack columns may be formed up of sheet steel and welded into a modified tubing.

## "STEEL-CEIL-CRETE" CONCRETE DECK FLOORS



**Yale Divinity School, New Haven, Conn.**
Stack room columns in place




Art Metal "Steel-Ceil-Crete" Concrete Deck Floors for library stack rooms consist of permanent steel forms, factory finished, forming the ceiling of the deck floor in which the concrete is poured. The "Amco-duct" wire raceway system, bearing Underwriters' label, with all raceways, outlets, and switch boxes for stack room wiring is an integral part of the deck floor.

Designed to give the maximum strength with the lightest weight of floor construction.

Deck floors may also be concrete with exposed concrete ceiling where appearance is not a major consideration and where low cost is the most important factor.




# A BROCHURE

## ON PLANNING AND EQUIPPING THE MODERN LIBRARY FOR SCHOOL OR COMMUNITY

by Gaylord

# Gaylord Library Notes

PRESENTING INFORMATION OF INTEREST TO THE ARCHITECT, SCHOOL BOARD AND LIBRARIAN ON PLANNING A SCHOOL OR COMMUNITY LIBRARY

## THE IMPORTANCE OF A LIBRARY IN COMMUNITY LIFE

While libraries are more or less taken for granted in the large cities and towns, the number of people in the United States not served by libraries is appalling. The Community Library, the County Library, the Regional Library of various types and extensions from large libraries are all trying to alleviate this condition. The School Library in the smaller communities is also taking an increasingly important place in the community life.

The community which lacks a library or is without access to one is handicapped, not only in educating its adults in general recreational reading but also in the pursuit of special cultural interests. The library acts not only as a place to store books but through modern library practice the information in the books is classified and indexed so that it is readily accessible to the reader. A trained librarian is as necessary as the books, and should be responsible for the proper administration of the library system.

## THE LIBRARY IN THE SCHOOL

In late years the school library has assumed a very important position in modern school practice. With the trend to centralization of rural school districts, affording the erection of central schools, it has been possible to provide and properly equip the necessary library in such schools. This would have been prohibitive in cost under the old decentralized plan. Boards of Education now take an active interest and are able to secure the necessary funds to properly equip the central school library. As the school is the heart of the community, so the library is the heart of the school. It is the depository of facts for all courses, the pivot from which cultural activities of the school radiate.

In some towns where there is no public library, the school library is open two or three nights a week for the public. This gives the taxpayers an opportunity to use the building and see how their money has been spent. Those who have no children are benefited and their interest in the school increased.

## MODERN TRENDS IN ARCHITECTURAL PLANNING

The architectural trend in modern school design has been to make the school library the focal point for school study. This applies to the elementary as well as the higher grade schools. With the expanding of the functions of the school library in teaching methods, the library has been made more important in the plans.

The architect has seized upon the library as the one room beside the auditorium where an interesting architectural treatment can be added with slight expense. The trend is to make the library more attractive and homelike and to eliminate the severe atmosphere of the classroom with its laboratory appearance. This has had a considerable influence on the attitude of the children from an educational as well as disciplinary standpoint. School boards, superintendents and librarians should plan the equipment of the library with the architect so that the furniture may tie in with his design.

Library specialists know what furniture is needed and what technical equipment should be installed according to the size of the library and the number of pupils in the school. Gaylord Bros. manufactures furniture for library use only and maintains a staff of library experts who are glad to cooperate with the architect and the superintendent on the necessary fittings and their design.

## LIBRARY STUDY HALL AND SUPERVISORY CONTROL

Many school libraries are now showing the transition from the old-time study hall to the modern high school library of today. Where there is an adequate, properly planned library there should be no need whatever for a large study hall. Only small study halls or home rooms are required. In order to carry out the "Unit Method" of teaching, it is necessary for the student to do his studying where he has access to many books. Then, too, a student can think more clearly surrounded by books in a library atmosphere than he can at a cramped desk in the old-time study hall. The library should be a room so attractive and full of interest to him that he will be drawn to it, rather than a place which he shuns, or to which he goes under compulsion.

GAYLORD BROS., INC.
STOCKTON, CALIFORNIA . . . SYRACUSE, N. Y.

# SCHOOL LIBRARY RECOMMENDATIONS OF THE A. L. A.

By permission of the American Library Association the following recommendations are quoted from its publication, "Planning the School Library":

*"The Reading Room.* This should be sufficiently large to accommodate for any full period 10 to 25 per cent of the school's enrollment, the large percentage being applicable to the school of 500 or under. In the very small school (100 or less) the minimum capacity should be equal to that of the average classroom. A convenient estimate for the floor space needed is 25 square feet per reader.

*"Conference, Class and Lecture Rooms.* In any but the very smallest library, at least one conference room should be provided. Larger libraries will provide from one to six extra rooms, depending on the size of the school and its methods of work.

*"Librarian's Workroom.* No matter how small the library, this should be provided. It may vary in size from a small alcove to a commodious workshop, but it should never be left out.

*"Open Wall Shelving.* Not over 7 feet high in the senior high school and 5 feet in the elementary school. Every available foot of wall space should be shelved with radiators placed under windows to save space. All shelving should be adjustable, using metal screw pins for wooden shelves. The regulation size for shelves is 3 feet by 8 inches, but there may be a limited number of sections with shelves 3 feet by 10 or 12 inches to accommodate large reference books or magazines. In computing shelf capacity, 8 volumes per linear foot is a safe estimate.

*"Furniture.* The junior or senior high school will provide reading tables (size 3 x 5 feet, some 28 and some 30 inches high)—variety may be obtained by occasionally substituting round tables for rectangular ones, or adding reading benches or settees—suitable chairs, librarian's desk or desks with drawers for vertical filing, card catalog and shelf list cases, pamphlet cases, legal size vertical files, magazine rack, newspaper rack, display bookcase, book truck, and at least one bulletin board.

"The school librarian should be your best adviser. Employ a well-trained one before you start building. Put her in touch with your architect and let them work together. Consult also with the supervisor of libraries in your state department of education, the librarian of your state, county or city library, or with the American Library Association, 520 N. Michigan Avenue, Chicago, Illinois."

# WOOD, IDEAL FOR LIBRARY EQUIPMENT

Most librarians prefer that their library equipment should be made of wood. It gives the effect of warmth, restfulness and stability; of homelike rather than institutional surroundings.

Wood will take any finish the architect desires, to match the trim of the room, or to give a pleasing contrast between the furniture and the woodwork. Wood also offers a wider range for special ideas or for individual requirements than most other materials of reasonable cost.

Book shelving made of wood is easily adjustable—a most important requirement and an advantage appreciated by every librarian.

# OAK, MAPLE AND VARIETY OF FINISHES

Oak, in either light or dark shades, has been used for many years and still is used for replacements.

The present general trend for the newer libraries is toward maple and we find the change is welcomed and appreciated. The color and smooth, hard surface of maple lends a charm of mellowness to library furniture, even when the equipment is newly installed. It makes the library look entirely different from a study hall or class room.

It may be finished in the natural maple in several different shades to harmonize with knotty pine trim, also in a walnut, mahogany or "School Brown," a finish that blends well with finishes of the woodwork used in many schools.

# WHEN THE LIBRARY SHOULD BE PLANNED

The proper time for making a complete layout of the library and its equipment is before the general floor plans have been finally decided. An expert in library equipment can be of real service at that time and often can make considerable savings in future costs if consulted early enough. Very often, the suggestion of changing the position of a door or a partition, by as little as two feet, has been the means of adding two additional tables seating twelve more students, an important consideration. Making use of shelving, for enclosing book or conference rooms, has often saved the cost of a permanent plastered partition and made the library more flexible.

If an outline plan of the proposed library is submitted to us, we will, without charge or obligation, make a layout showing the proper equipment for the special requirements of that library.

Many architects and librarians have availed themselves of this service and have later expressed their appreciation of it.

The former, as well as the present Director of School Buildings and Grounds Division of the State Education Department of New York have expressed their appreciation of our cooperation in this type of consulting work.



*COVER DESIGN*

*Library of the*
*Central School, Cincinnatus, New York*
*Robert Graham, Architect*

---

*AT RIGHT*

*Entrance Hall of the New York Society Library, New York City, where an atmosphere of spacious dignity is preserved with Gaylord furnishings.*





*Leavenworth Central School Library, Wolcott, New York—Gordon & Kaelber, Architects*

# TWO TYPICAL ARRANGEMENTS . .

Note the Homelike Character

**Seating Capacity — 82**
**Book Capacity — 4,000**

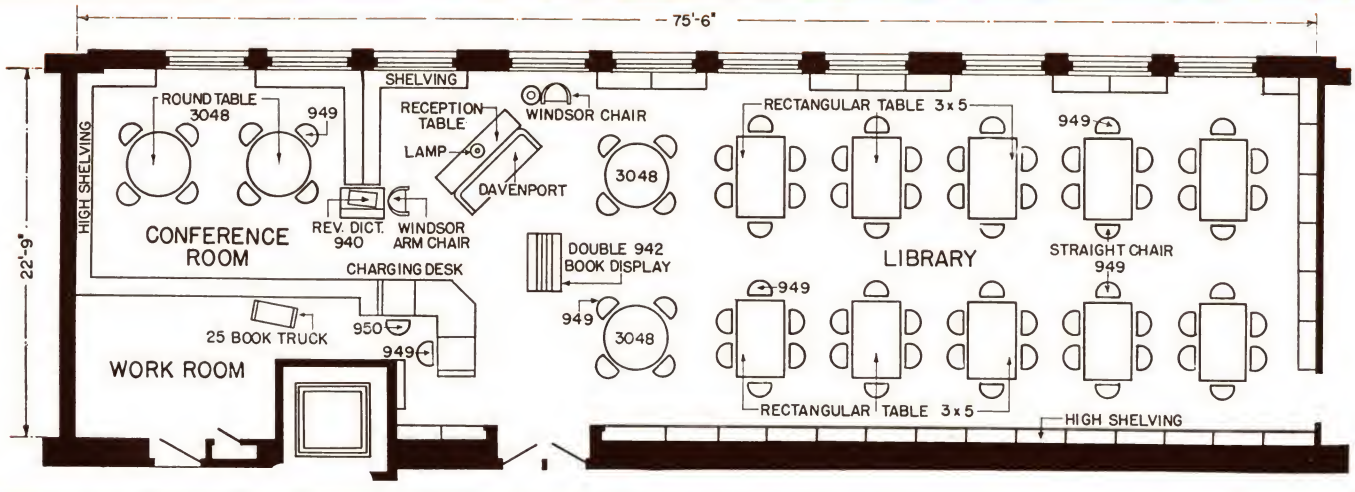
This library is very well planned and appointed from an architectural and utilitarian standpoint. There is only one entrance door to the library; this gives the librarian complete control of books and traffic. One entrance is more desirable than having doors in both ends of the room. The Charging Desk placed near the door is also accessible to the work room and conference room.

It has been the policy of Gaylord Bros. to make the library as homelike and attractive as possible and to give warmth and atmosphere to the room. Note the davenport, table, easy chairs, table lamp and window draperies. Opposite the door is a double book display where new and special groups of books are exhibited.

The counter height shelving forms a partition for the conference room. This shelving is also used under windows, thus making a shelf for flowers, plants and book displays.

The maple furniture blends nicely with the panelling of the room. This library shows the results of manufacturing the furniture in accordance with the architect's design for the room and following out his ideas.







*Chancellor Livingston High School, Hudson, New York—Tooker & Marsh, Architects*

# . . . OF THE MODERN SCHOOL LIBRARY

An Attractive School Library in Maple

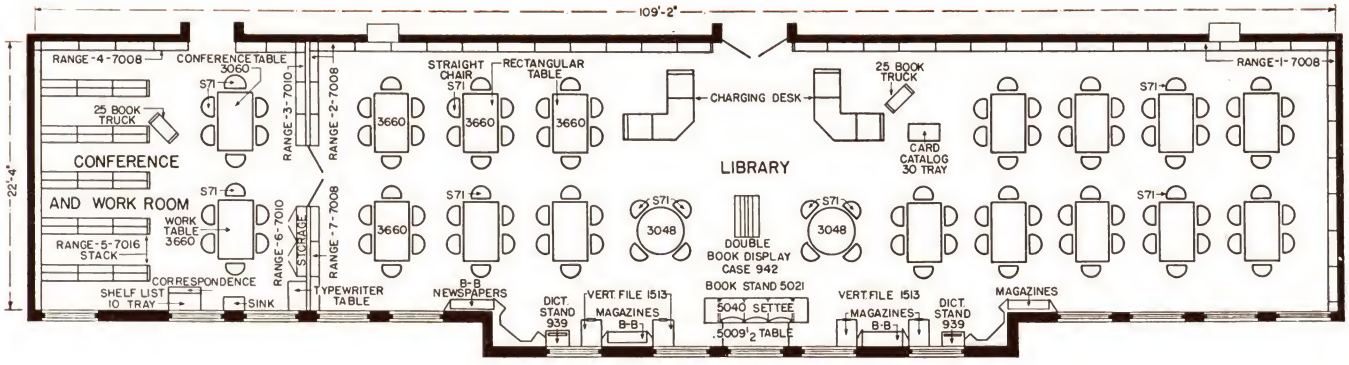
**Seating Capacity — 115**
**Book Capacity — 14,700**

A distinguishing feature of this library is the use of two desks. One of these is used for charging and the other for discharging books. They are located by the door so that a control may be kept on traffic and a close check on books. These desks are manned by trained students. This plan leaves the librarian free to teach the students how to use the catalog, locate books on the shelves and find information; in short, to act in an advisory capacity. This solves the discipline problem as the students are all so interested they forget mischief.

The conference room is used by students working on debates, plays or projects where such work is to be done in groups.

Any possibility of an institutional atmosphere is avoided by the use of home-like furnishings such as the davenport, console table, book stands, window drapes, etc., in addition to the restfulness provided by the maple finish on all furniture and woodwork. This library is new, but it is planned to paint murals over the shelves; canvas for these is already in place. It has been proven that such surroundings are reflected in the attitude of pupils working in the library.






SPECIALISTS IN LIBRARY EQUIPMENT



*East High School Library, Aurora, Illinois—R. C. Llewellyn, Architect*

# AN ADEQUATELY EQUIPPED LIBRARY

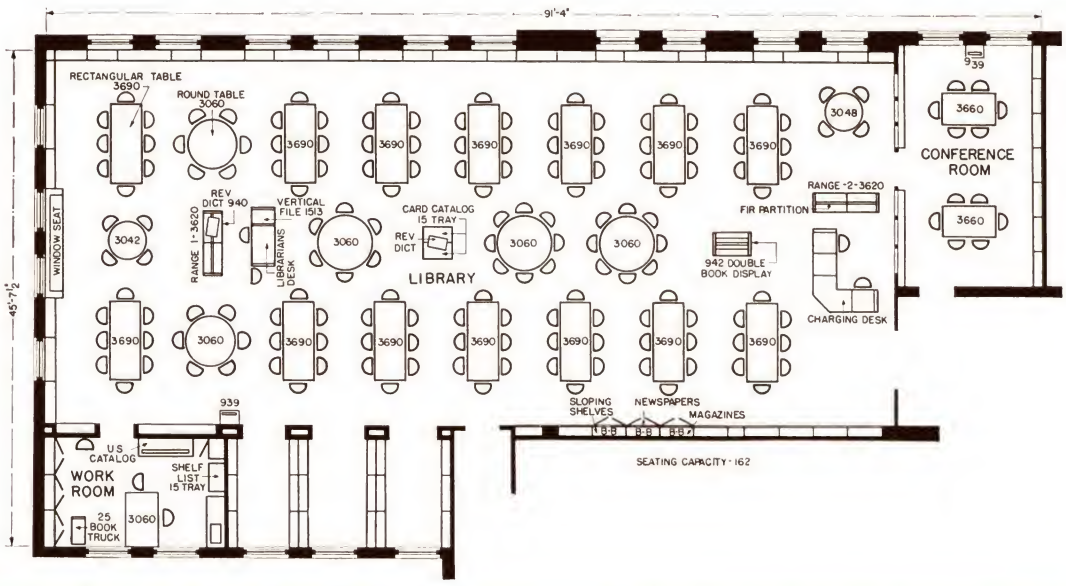
## Seating Capacity — 162
## Book Capacity — 13,500

In this room the architect did several things of interest which show a spirit of co-operation with library specialists. The stacks are as near the center of the room as possible. The conference room has a separate entrance. The remainder of the ten-foot wing is used for a much-needed work room.

When it is necessary to plan on seating to room capacity, rectangular tables must be used; yet the use of some round tables relieve an over-angular appearance of the room, as shown in the illustration.

The arrangement of library furniture in this room is also interesting. The catalog case is divided into two parts in order to expedite its use; A to M on one side and N to Z on the other. The usual charging desk is near the door to control the charging of books. The attendants at this desk are students selected from a library club, two being on duty each period.

The librarian has a desk at the rear of the room where she is free from book charging and thus is able to devote more time to the individual student. There is a range of counter height shelving directly behind her desk; here she has within reach lists, guides and reference material to help the students who consult her.






GAYLORD BROS., SYRACUSE, NEW YORK



*Children's Room, McKinley Branch Public Library, Sacramento, California—H. J. Divine, Architect*

# EQUIPMENT OF A PUBLIC LIBRARY BRANCH

## Seating Capacity—84

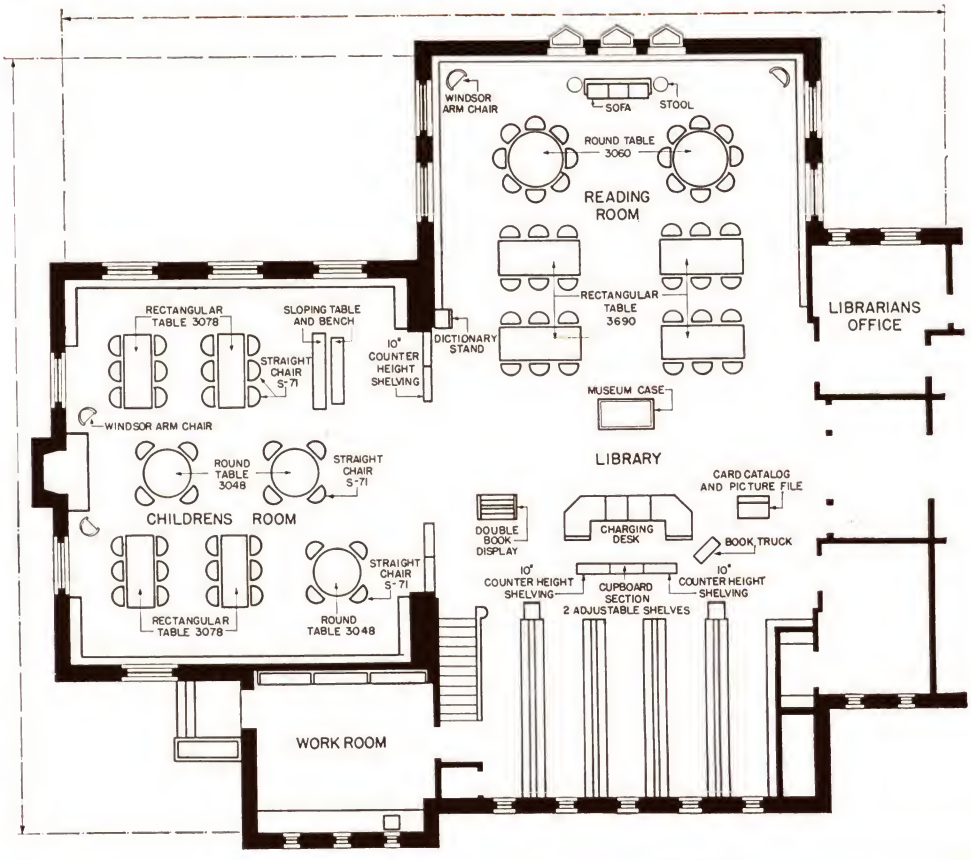
## Book Capacity—14,500

This is an outstanding example of a perfectly equipped public library branch, which is a vital part of a Community House with all the cultural and recreational facilities of the most modern type.

The plan shows the general layout of the library wing; the illustration above pictures the Children's Room. This room is separated from the main library by counter height shelving so that the children's department may be served and supervised from the general charging desk.

The room contains tables and chairs of suitable sizes, a sloping top table and bench which is most popular for picture books, and a fireplace around which the children gather for story telling.

The dark maple of the furniture contrasts pleasingly with the light walls and the Venetian blinds at the windows.





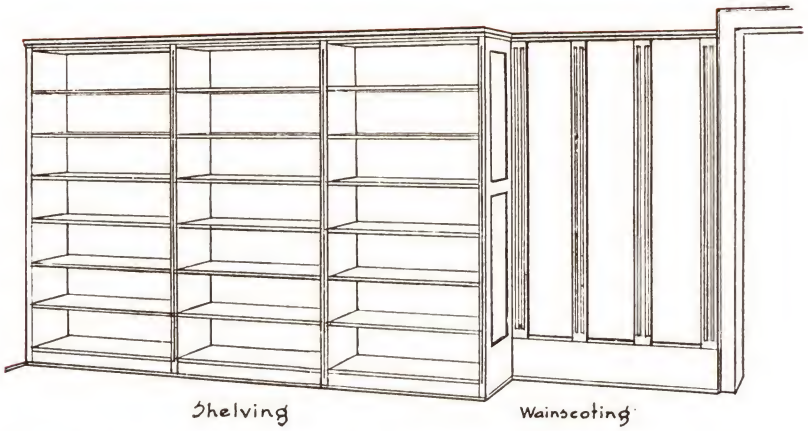

SPECIALISTS IN LIBRARY EQUIPMENT

# "GAYLORD MAPLE" SHELVING, CHARGING DESKS . . .

In selecting furniture for a library three major factors should be kept in mind—simplicity, durability and beauty. Standard equipment, which will conform with the necessary technical library procedure, should be used; however, a wide variation in design, wood and finish may be obtained with no sacrifice of the working efficiency of the library as a whole. It should be kept in mind also that changes or new features may be desired later, and that room for expansion in desks, shelving and seating capacity should be considered.

Maple, with its variety of finishes and special designs for the exterior of the various items of furniture, solves the problem of those who want "something different" in a library and makes possible a room that is informal and attractive.

Most of the specially designed furniture on pages 8 and 9 has been planned around the No. 971 chair, (shown on page 9). These pieces are made of maple and carry the same fluting design as that used on the chair.

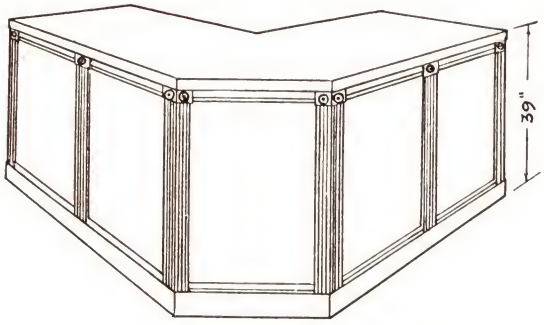



This shelving and wainscoting tie in together. Gaylord Bros. makes the shelving and cooperates with the architect so that the general contractor may carry out the same design on the wainscoting and trim of the room.



*No. 936-M*

The Magazine Rack with its six compartments will hold about fifty-two periodicals of various sizes. It is made of maple and also designed to match the No. 971 chair (opposite page).




A Charging Desk of maple with a special design made according to the architect's specifications to match the trim of the room in which it is to be used. The inner fittings of the desk are standard parts and are selected according to the individual requirements of the librarian.



*No. 937-M*

A Book Display Case with its two sloping shelves for special book displays and a Bulletin Board above them is both useful and attractive. This case is also designed to match the No. 971 chair, as shown by the shape of the top and the fluting on all edges.

Gaylord Maple
LIBRARY FURNITURE
*Manufactured by*
GAYLORD BROS., Inc.
STOCKTON, CALIF. SYRACUSE, N. Y.

The above is a facsimilie of the label which Gaylord places on every piece of "Gaylord Maple" furniture. In addition to this, the words "Gaylord Maple" are stamped on the wood.



*No. 521-M*

A maple Book Table in a colonial design will just fit into some special place and makes a pleasing note in furniture grouping.



*No. 540-M*

Maple Davenports in various colonial designs with upholstery to harmonize with the color scheme of the room form the nucleus for attractive corners in many libraries. A long table with lamps and books may be placed behind the davenport, or a book table (illustrated at left), floor lamp and one or two arm chairs may be grouped around the davenport.

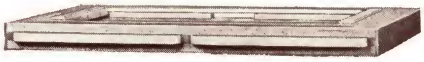
# . . . CATALOG CABINETS, TABLES, CHAIRS, ETC.



*No. 3500*



*No. 3505*



*No. 3501*



*No. 3510*

*Horizontal Units for Card Catalog Cabinet*

A cabinet made of these horizontal units lends itself most effectively to the demands of simplicity, economy and flexibility in a library. The cabinet may be built up with a leg base, a five, ten or fifteen card tray section and a top; this makes a free standing piece of library furniture. Five, ten or fifteen tray units may be added as there is need for more card catalog drawers. The units of catalog trays make possible the expansion of the catalog case to any desired size.



*No. 3500-M*
*No. 3510-M*
*No. 3502-M*
*No. 3524-M*

*Catalog and Picture Combination Vertical File Unit*

For a small catalog the trays in units of five, ten or fifteen trays may be combined with a two-drawer vertical file unit (with top and leg base). The large drawers may be had in correspondence or legal size; in them are housed the picture, clipping or information file or they may be used for correspondence. This combination is made of maple with fluting on the top and legs; it may be obtained in any desired finish and trim.



*No. 3660-M*
*Rectangular Table*

These tables are made in various sizes. The standard sizes are 36 by 60 or 90 inches, 25, 28 or 30 inches high.

Built up, five-ply top, 1½ inches thick, with heavy edge band ⅜ of an inch thick, tongued and glued to core and mitered at four corners. Tenoned aprons enter in grooves provided in the legs. The legs are built up and faced with heavy veneer to show graining on all sides. Heavy steel hanger and bushings are used to connect legs to top and aprons.



*No. 3048-M*
*Round Table*

Round tables have a top diameter of 42, 48 or 60 inches and are 25, 28 or 30 inches high.

Built up legs with quarter sawed oak on four sides are connected to top and apron by steel hangers and held in place with large machine screws; these enter into steel bushings anchored within the leg construction.

Apron is built up from seven-ply to form curve of correct radius. Top is built up five-ply banded with ⅛ inch banding to the edge.

All tables are shipped knocked down for safe transportation.

The tables illustrated above are made of maple with fluting on legs to correspond with the "Gaylord Maple" furniture shown. A variety of finish and design is also obtainable for these tables.



*No. 971*
*"Gaylord Maple" Chair*



*No. 952*
*Windsor Chair*



*No. 960*
*Straight Chair*



*No. 949*
*Straight Chair*

These illustrations show some of the most popular chairs. Various other types are also available.

# GAYLORD STANDARD SHELVING, FILING . . .

The Gaylord Wood Book Shelving made in the "unit" style meets library requirements completely and satisfactorily.

It is equally suitable for new libraries and for rearrangement of established libraries.

*Flexibility*—This shelving can be fitted easily into almost any available space, whatever its size and shape, either against a wall or entirely detached. It may be readily adjusted to changes and to requirements for more book space. Attractiveness, strength and rigidity are combined in its design.

The standard shelving unit is 3 feet wide, constructed to that one unit with two paneled ends makes a complete case; or several units may be joined with partitions between them and only one pair of paneled ends, providing for a range of any desired length.

*Knock-Down Construction*—This makes the assembly and installation of Gaylord Shelving a simple matter and changes are made easily. The different heights and depths available offer a complete variety for any shelving need, yet the standardization of dimensions makes it possible to add to sections or ranges at any time.



*No. 5212-M*
*5 Foot 2 Inch Shelving*



*No. 3612*
*Counter Height*
*Shelving—with Modifications*

Threaded nuts and bolts are used for intermembering one section with another, and the paneled ends are equipped with steel bushings, into which steel bolts engage. A screw-driver is the only tool necessary when assembling or dismantling this shelving.



*Rear View*



*With Book Trough Top*

*Standard Shelving*—This is furnished in heights of 3 feet 6 inches, 5 feet 2 inches and 7 feet. Shelves are made in the following depths: 8, 10, 12, 16, 20 and 24 inches ¾ inch thick. Shelving is made with and without back as desired.

The shelves are made of narrow pieces of white wood glued together and edged with the same wood that is used for the framework. This construction prevents warping. Shelf pin holes are accurately spaced, and threaded steel shelf pins are used to support the shelves.

All shelving is carried in stock in oak and maple, matching standard finishes in library furniture. It is also made to order in any special finish or design to correspond with other equipment.

*Counter Height Shelving*—This may be single or double faced and may be used as a substitute for partitions, setting off browsing nooks, conference or work rooms or an entrance. Thus this shelving gives a double utility as it adds to the available book space as well as forming a partition.

One or more of these sections may be equipped with regular book shelves, magazine shelves, storage cupboards or with combinations of these. The top of a section may be flat, sloping or in the shape of a trough for book display, thus adaptable to a wide variety of uses.




*No. 7012-M*
*Range of 7 Foot Shelving*
*with Newspaper Rack, etc.*

*At the Left*: Special Arrangements in Standard Wall Shelving.

1—Locked Compartment—A section with glass doors that may be locked is sometimes desirable for valuable books.
2—Magazine Section—Current issues of magazines lie flat on the sloping shelves, with immediate past issues on the straight shelves below. Older magazines are housed on shelves back of bulletin boards, conserving space.
3—Rack for Newspapers—This arrangement provides for newspapers and a bulletin board with shelf space behind it.
4—Section with straight shelves close together may be used for magazines when there are too many for display; as in a university or technical library.
5—Section with regular book shelf arrangement.

# . . . SECTIONAL CHARGING DESKS

The Sectional Charging Desk with the linoleum top, originated by Gaylord Bros. is one of its best items of service to the library field. This unit type of desk may be adapted to libraries of any size. It has all the advantages of the unit type of construction so well known in catalog cabinets and vertical files.

A charging desk may be started with one or two sections and then additional sections may be added later for expansion as needed.*

The flexibility of the sections from one position to another, and the detachable ends make a rearrangement or change of location possible without any replacement.

Another advantage of this desk is the interchangeability of the drawers, shelves, cupboards, well sections, etc. These may be arranged or changed at any time to meet the individual requirements of any library.

In short, the possibilities in combinations of sections and interior equipment are almost unlimited.

Oak and maple are used for this desk; the finish, the trim, and the panel detail may be made to conform with any special design or to match other library furniture. Bases may be recessed on inside to allow toe space: outside equipped with marbelized rubber base to prevent marring if desired.

A few desks showing possible combinations of sections are shown on this page.

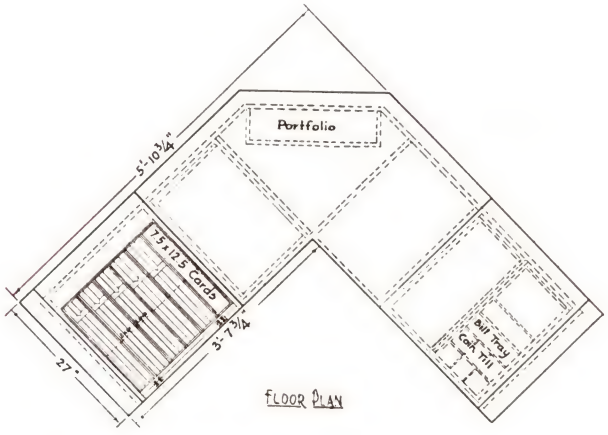
**All Charging Desks are made in either sitting height (32½ in.) or standing height (39 in.)*



*Sectional Charging Desk—Four Units with Ends*
*Sitting Height—32½ inches*



*Sectional Charging Desk—Three Units with Ends*
*Standing Height—39 inches*





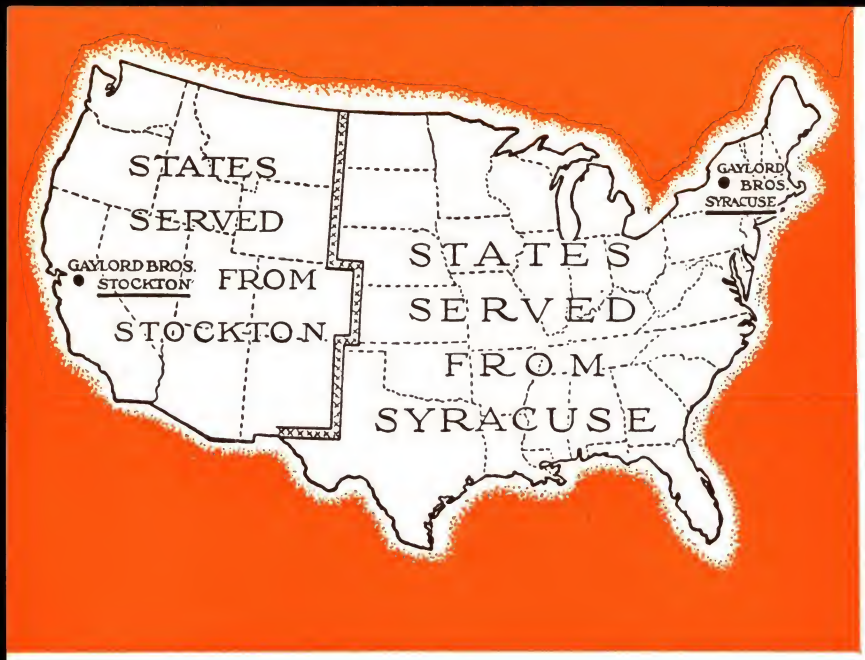

*Rear View of Sectional Charging Desk,*
*showing convenient arrangement of space*
*—Floor Plan at left*



*Desk with one Corner and One Center Section*
*Sitting Height—32½ inches*



*An Adequate Desk for the*
*Small Library—Sitting Height*




# OTHER PRODUCTS

For forty-one years Gaylord Bros. has been manufacturing library supplies and selling direct to libraries of all types—public, school, college, special, institutional, etc. Among these supplies are all kinds of catalog cards, book cards and pockets, printed forms, magazine and pamphlet covers, publicity supplies, book repair materials and the Electric Automatic Charging Machine, which has revolutionized book charging in libraries.

Gaylord Bros. is known throughout the library world for the high quality of its merchandise and for promptness in filling orders. The policy is, and always has been, to fill and ship orders the day they are received, with the exception of those which call for special printing or manufacture. This immediate shipment from the eastern and western plants results in prompt deliveries to all Gaylord customers.

This service is not something to brag about—it is a service to which the customer is entitled and which he receives when he buys from Gaylord Bros.

# OFFICES

The main office and factories of Gaylord Bros. are located in Syracuse, New York. In one factory are manufactured our library supplies. In another all of our library furniture, both stock and special, is made by skilled craftsmen who have had many years of experience in this specialized type of work.

The western branch office and factory, located at Stockton, California, is a great convenience to customers in the western states, Alaska, the Hawaiian Islands, the Philippines and the Far East. A complete line of supplies and much of the stock furniture are carried at the Stockton branch so that prompt service is always assured the libraries and schools located in the eleven western states, as shown on the map.

Excellent service is also given to all foreign customers as frequent shipments can be made from San Francisco and New York.

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GAYLORD BROS., INC.
STOCKTON, CALIFORNIA . . . SYRACUSE, NEW YORK

MUSEUM CASES

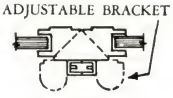
Art Metal
Jamestown, New York
U.S.A.



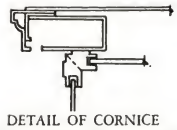
DETAIL SHOWING FACE OF FRAME AT MITERED CORNER



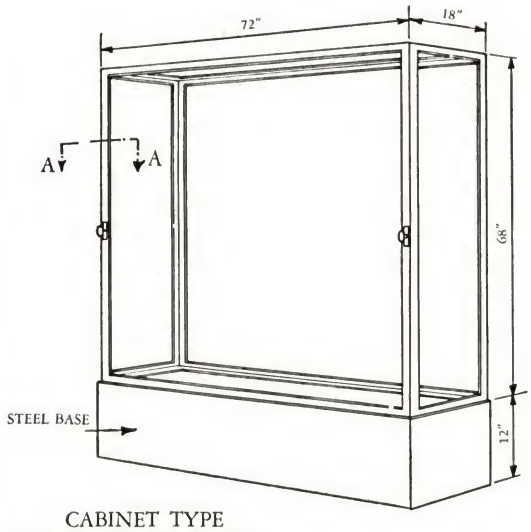
SECTION A-A



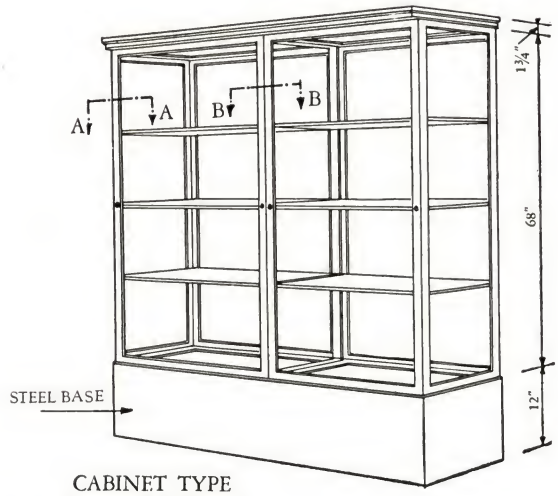

SECTION B-B



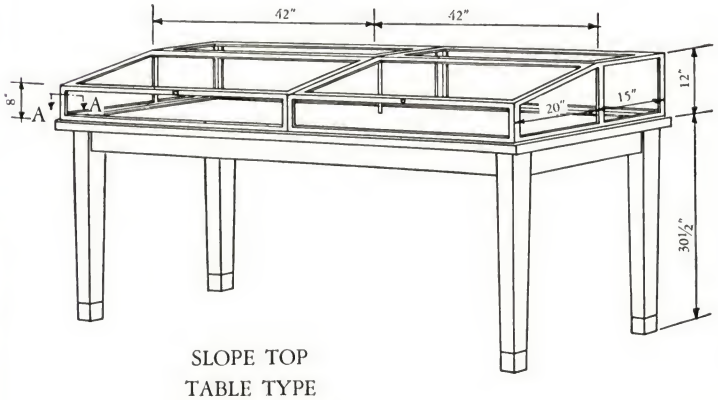
DETAIL OF CORNICE SHOWING SPACE FOR TRACK



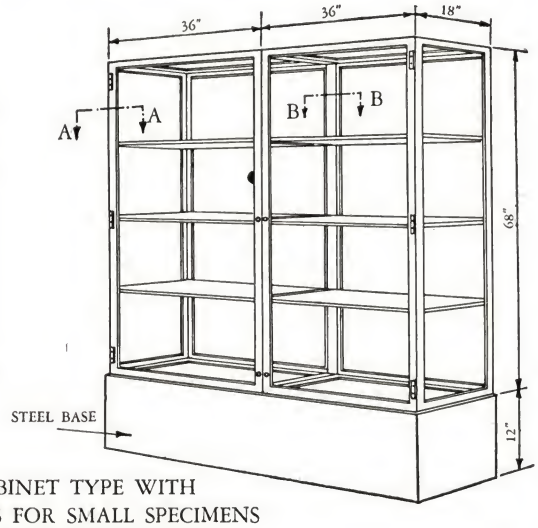

CABINET TYPE
FOR LARGE SPECIMENS
GLASS OR SOLID BACKS OPTIONAL




CABINET TYPE
SLIDING DOORS
SHELVES FOR SMALL SPECIMENS
GLASS OR SOLID BACKS OPTIONAL




SLOPE TOP
TABLE TYPE
SINGLE FACED




CABINET TYPE WITH
SHELVES FOR SMALL SPECIMENS
GLASS OR SOLID BACKS OPTIONAL

## BRONZE MUSEUM CASES

These cases are constructed of architectural extruded bronze shapes. All joints are of dustproof construction.

All corners of doors and case panels to be securely fastened together by means of concealed connection angles. All panels of case are held in position by means of concealed sliding lock bars.

Glass or Vehisote panels optional and are cemented in the bronze frames so as to make a dustproof joint and absolutely rigid construction.

Cases can be had with removable panels or hinged doors fitted with locks.

Cases are made to any specified size for mounting on tables, sanitary or closed bases.

MEMORANDA

# HAMILTON MANUFACTURING CO.

TWO RIVERS, WISCONSIN

## PRODUCTS

Manufacturers of: Wood Drawing Tables, Steel Drawing Tables, Steelwood Drawing Tables, Auto-Shift Drafting Tables, Blue Print Files, Sectional Plan Files, Steel Vertical U-Plan Files, Hamilton-Calumet Shallow Drawer Tracing Files, Engineering Desks, Shadowless Tracing Tables, Drawing Boards, Artists' Accessory Equipment, Stools, Coaster Drafting Chair.

## DRAWING TABLES

You can get a drawing table to suit any need from Hamilton. Every type from the drawing board horses, pedestal type, to the large four-post drafting tables is illustrated in the complete Hamilton Catalog of drafting room furniture.

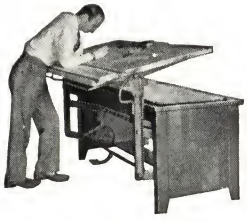


Fig. 1

### Hamilton Auto-Shift Drawing and Reference Tables (Fig. 1)

These have the new counterbalanced, "full-floating" drawing board. Top is adjustable to any desired height or slant quickly and easily—it is practically automatic. Each table has a 36x60 in. reference surface which is used by the man in front of the table.

### Hamilton Steelwood Drawing Tables (Fig. 2)

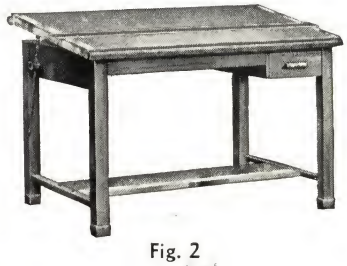


Fig. 2

They offer the first major improvement in the construction of 4-post drawing tables in many years. They combine best features of steel and wood construction. Welded steel framework insures permanent rigidity, joints that can never become loose, and freedom from annoying repairs. This guarantees many years' hard, continuous usage.

### Hamilton Wood 4-Post Drawing Tables (Fig. 3)

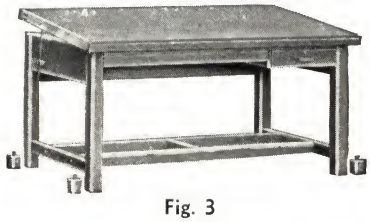


Fig. 3

They are, we believe, the standard of the world. These tables are efficient, rigid, accurate—tops are smooth and square. They are modern in appearance, with *all corners rounded.* Low in cost.

### Hamilton Ideal Drawing Tables (Fig. 4)

Low-cost pedestal drawing tables. They are sturdily built of the best seasoned wood, adjustable in height and in slant.



Fig. 4

## FILING EQUIPMENT

In Hamilton's complete line of filing equipment there is a file for every drafting room need—horizontal plan files, vertical plan files, and files for rolled tracings. There are more than ninety-six Hamilton Steel Files and Wood Files to choose from.

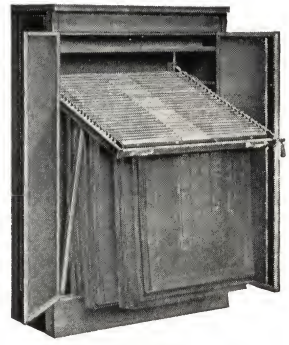


Fig. 5

### Hamilton-Calumet Vertical Plan Files (Fig. 5)

Designed for efficient filing of groups of reference plans, maps, charts, etc. This file has a place in every drafting room, because it answers the problem of filing large sheets so well. 2600 plans in a single file, easily located, removed, and replaced—a money-saver because it affords such excellent protection.

### Hamilton-Calumet Shallow Drawer Units (Fig. 6)



Fig. 6

For filing active tracings and is a radical departure from the old system. It makes filing easy because *each tracing is as accessible as the top sheet,* with the *new patented tracing lifter.* These units offer complete protection to valuable tracings, at a very low unit cost. Each shallow drawer holds 100 tracings.

### Hamilton-Calumet 5-Drawer Units (Fig. 7)



Fig. 7

Offer perfect protection to semi-active tracings. Each drawer equipped with a black coated canvas drawing protector to keep tracings free from dust and prevent curling.

### The Hamilton-Calumet System

The Hamilton-Calumet system is a complete filing method for the drafting room; it is designed in interlocking units. There are units for every need—vertical filing, horizontal filing, and roll filing.

# THE KELTNER MANUFACTURING COMPANY

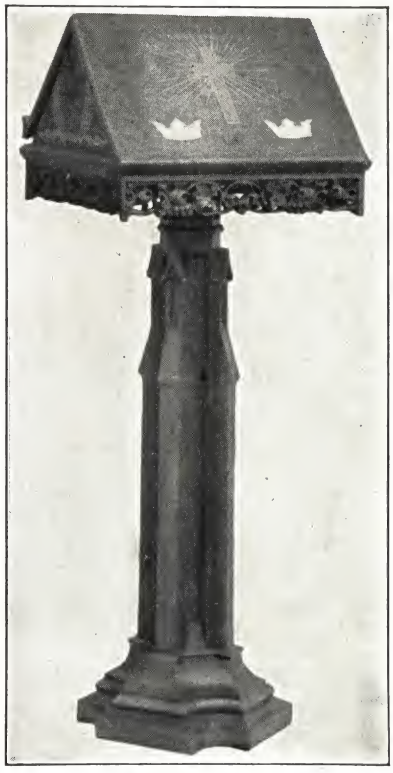
ASHLEY, OHIO

## ECCLESIASTICAL FURNISHINGS AND SUPPLIES AND LODGE FURNITURE

Established in 1869, the success of our church furniture has resulted from the satisfaction we give our customers. All furniture is made of selected, thoroughly seasoned kiln dried lumber. All carvings are done by hand and are not of composition. The finish used on our furniture is of the very highest quality, and our packing department uses every precaution to insure delivery of all furniture in excellent shape. Good workmanship and construction is in our furniture, for if this was omitted, we would not have been in business for sixty years.

We manufacture complete all items of furniture and supplies for ecclesiastical purposes, such as:

Flag Stands and Holders
Book Racks
Envelope Holders
Communion Cup Holders
Collection Plates
Altar Desks
Poor Boxes
Credence Shelves
Pulpit Lamps
Missal Stands
Alms Boxes
Hymn Boards
Triple Chairs
Communion Tables
Altar Crosses
Candlesticks
Candelabra
Prie Dieus
Pulpits
Prelates' Desks
Altars
Reredos
Vestment Cases
Confessionals
Baptismal Fonts
Bishops' Chairs
Pulpit Chairs
Lecterns
Reading Desks
Flower Stands
Pedestals
Pews
Kneelers, etc.



**A Prelate's Desk**
Indicative of our originality in design and craftmanship in execution

Our complete catalog will gladly be sent on request.

Furniture tends to create proper atmosphere, that invisible effect which is so beneficial in church work. The church that is provided with appropriate and necessary furniture, with those furnishings that make for appearance and comfort always appeals to and attracts the members.

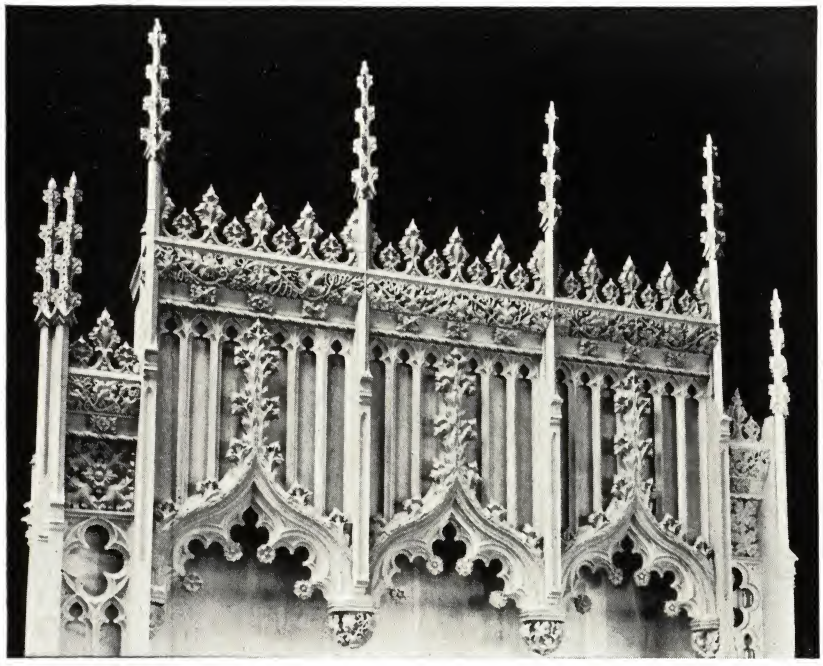
When you buy from us, you may have furniture designed and built exactly as you want it, at prices no higher than you would pay for ordinary furniture of stock design—for every piece that leaves our factory is built to order.

Our pledge is that all orders will be given prompt attention and will be filled accurately and carefully; that goods will reach the customer in perfect condition and will be satisfactory in every respect.

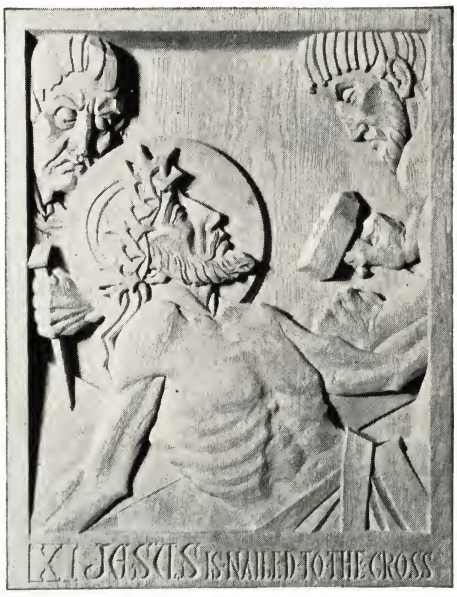


# MANITOWOC CHURCH FURNITURE CO.

Manufacturers of Church Pews, Altars, Pulpits and Carved Religious Figures
WAUKESHA, WIS.



Gothic White Oak Altar Reredos




Carved Oak Station



Wood Carved Pews

## MANITOWOC STUDIOS PROVIDE A SERVICE TO ARCHITECTS

A unique service for architects who require designs and details developed from their preliminary or impromptu sketches is offered by Manitowoc Studios.

Royal Institute and A.I.A. Architects on the staff of this organization whose particular forte and life study have been in the Liturgical Arts are at your service to solve the complex and intricate requirements of Canon law; also to observe the canons of good taste. The traditional forms, styles and ornamentations of the periods and centuries and motifs of the new and future art are submitted with meticulous regard to source material.

It is understood that all ideas emanate theoretically from the architects and that our efforts are interpretations and developments.



Leonardo DaVinci, The Last Supper Group, Carved in White Oak

MEMORANDA

# PRESSED METAL DIVISION

HERRING-HALL-MARVIN SAFE COMPANY

HAMILTON, OHIO

BRANCHES

NEW YORK, N. Y. CHICAGO, ILL. SAN FRANCISCO, CALIF. BIRMINGHAM, ALA.

REPRESENTATIVES IN ALL PRINCIPAL CITIES

For Herring-Hall-Marvin Safes, see File Index

## PRESSED METAL EQUIPMENT

For hospitals, institutions, banks, government buildings, laboratories, and schools.

Pressed Metal Equipment has proved its value for hospital, institutions, government buildings and other places where dependable performance, durability and low cost maintenance demand primary consideration.

Equipment of this type, when built to specifications by the PRESSED METAL DIVISION OF HERRING-HALL-MARVIN SAFE COMPANY, embodies the latest developments in both design and materials. Whether in the pharmacy of a hospital or in the license bureau of a county building, materials and construction are used to meet the service requirements.

In fabrication, every care is taken to assure close fitting doors and drawers, securely fastened hinges, sturdily welded joints.

Two finishes, lacquer and baked enamel are available in all colors. Both are applied by men thoroughly experienced in this work.

### H-H-M Engineers

With their years of experience in designing and planning some of the largest pressed metal equipment installations, these engineers may be used to full advantage by any architect working on a project requiring pressed metal equipment. This service is available in all steps of the work and can be used to best advantage before the room layout is completed. This service involves no obligation.

### H-H-M Architectural Guide to Metal Equipment for Hospitals and Institutions

This guide, prepared by men with years of experience in this field, shows typical details of hospital cabinet work, using modern designs, fabricated in metal—furniture steel, monel and stainless steel.

Included are specifications, plans, elevations and details on the various types of equipment used in hospitals and institutions. A copy will be sent to architects on request.

## HOLLOW METAL PRODUCTS

Doors, Door Frames.
Combination Buck Jamb and Trim.
Borrowed Light, Metal Base.
Chair Rail, Picture Moulding, etc.

With its years of experience in pressed metal work and many years of building vault doors with metal frames, the manufacture of hollow metal doors is a natural field for HERRIN-HALL-MARVIN SAFE COMPANY.

Fabrication of hollow metal work is done under the supervision of company engineers who have many years of experience in the hollow metal field.

Write for details and specifications.

## PROMINENT RECENT INSTALLATIONS

Kansas City Courthouse, Kansas City, Mo., Wight & Wight Architects.

Holy Family Hospital, Brooklyn, N. Y., Crow, Lewis & Wick, Architects.

Dry Dock Savings Bank, New York, N. Y., Cross & Cross and Louis S. Weeks, Architects.

Kings County Nurses' Home, Brooklyn, N. Y., Leroy P. Ward, Inc., Architect.

Coney Island Hospital, Brooklyn, N. Y., Landsman & Smith, Architects.

Bayside National Bank, Bayside, L. I., N. Y., Harold Carlson, Architect.

Citizens Trust Company, Jeffersonville, Ind.



**Holy Family Hospital, Brooklyn, N. Y.**
CROW, LEWIS & WICK, Architects



**Kansas City Courthouse, Kansas City, Mo.**
WIGHT & WIGHT, Architects



**Dry Dock Savings Bank, New York, N. Y.**
CROSS & CROSS and LOUIS S. WEEKS, Architects

# REMINGTON RAND INC.

LIBRARY BUREAU DIVISION

BUFFALO, N. Y.

LIBRARY SERVICE OFFICES

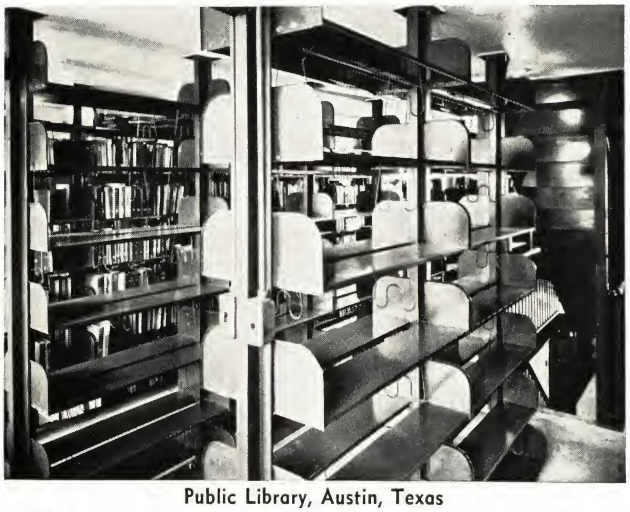
Headquarter Points for Library Service

BOSTON NEWARK NEW YORK PHILADELPHIA PITTSBURGH ST. LOUIS KANSAS CITY
SAN FRANCISCO LOS ANGELES MINNEAPOLIS ST. PAUL DETROIT CLEVELAND BUFFALO

BRANCH OFFICES IN PRINCIPAL CITIES



New U. S. Supreme Court Building, Washington, D. C.



Public Library, Austin, Texas



University of Buffalo, Buffalo, N. Y.

## STEEL BOOKSTACKS AND LIBRARY EQUIPMENT SPECIALISTS SINCE 1876

### Products and Services

| | |
|---|---|
| Steel Bookstacks | Wood Book Shelving |
| Museum Cases | Stack Equipment |
| Magazine Racks | Furniture |
| Card Catalog Cases | Administrative Systems |
| Charging Desks | Library Systems |
| Tables and Chairs | Consulting Service |

For our pages on Vaults, see File Index.

### A Complete Library Equipment and Consulting Service

The Library Bureau Division of Remington Rand offers to architects a complete, specialized service on library planning and equipment. This service, available through direct representatives with a rich background of experience, is available at headquarter points listed above. Experience has proved that the full value of such service can be realized only if it is rendered continuously from the time when projects are in the "sketch" stage through to the making of working drawings.

The whole subject, a general view of the function and operation of each type of library in all of its departments, must be had in order to properly correlate and allocate the various areas. Constant contact with library administrators in all sections of the country and a thorough study of present and possible future trends, have developed an experience which is authoritative and dependable.

The value of this service to architects through the years has left its impression on hundreds of libraries of all types, and is offered today in a professional spirit of co-operation without obligation.

### A Few Prominent Installations

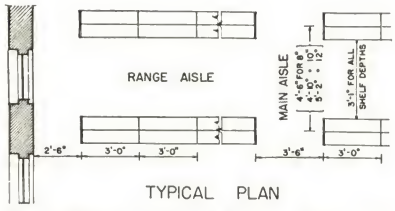
Boston Public Library
Birmingham Public Library
State Teachers' College, Morehead, Ky.
University of Chicago, Eckhart Hall
University of Louisiana, Baton Rouge, La.
University of New Mexico, Albuquerque, N. Mex.
Los Angeles County Medical Society
Public Library, Austin, Texas
Supreme Court Library, Bismarck, N. D.
University of Missouri, Columbia, Mo.
Princeton University
Rutgers University, New Brunswick, N. J.
Swarthmore College
Public Library, Rochester, Minn.
Northwestern State Teachers' College, Alva, Okla.
State Teachers College, Natchitoches, La.
San Francisco College for Women
University of Denver
Rhode Island State Library, Providence, R. I.
Carnegie Library, Atlanta, Ga.
University of Buffalo
Mellon Institute of Industrial Research, Pittsburgh, Pa.
Public Library, Lockport, N. Y.
Public Library, Wellsville, N. Y.
New U. S. Supreme Court Bldg., Washington, D. C.
St. Thomas College, St. Paul, Minn.
Rosary College, River Forest, Ill.
St. Catherine's College, St. Paul, Minn.
Indianapolis Public Library
Goodwyn Institute, Memphis, Tenn.
University of Indiana, Archives Bldg.
State Normal College, Cape Girardeau, Mo.

# STACK STANDARDS

## Stack Measurements

**Height**—Each tier 7 ft. 6 in., measuring from top of deck floor to top surface of next deck floor, usually seven shelves in height.

**Ranges**—In multiples of 3 ft. each as the shelf length. For the maximum use of space, lengths should not be less than 12 ft. or more than 30 ft. Ranges usually spaced 4 ft. 6 in. on centers.




**Plan Showing Typical Range, Main and End Aisles**

## Shelving Data

| | Vols. per ft. of shelf | Recommended depth, in. | | Vols. per ft. of shelf | Recommended depth, in. |
|---|---|---|---|---|---|
| Fiction | 9 | 8 | Reference | 7 | 10 |
| Economics | 9 | 8 | Technical | 7 | 10 |
| General Literature | 8 | 8 | Scientific | 7 | 10 |
| Law | 5 | 8 | Medical | 6½ | 10 |
| Public Documents | 6 | 8 | Bound Periodicals | 5½ | 10 |

A typical library requires shelving proportioned as follows:
85%—8 in. deep; 13%—10 in. deep; 2%—12 in. deep and deeper for flat folio housing.

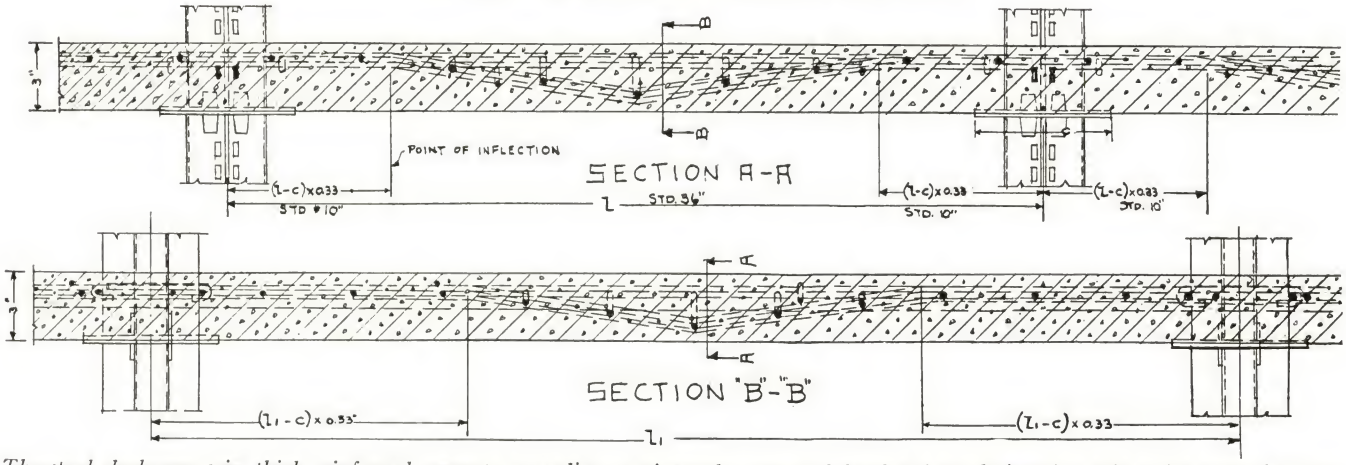
## To Estimate Approximate Book Capacity of Stack Room One Tier High
## No Allowance for Stairways or Lifts

Given the length and width of the stack room. Find the number of square feet contained therein. Multiply the square feet found by 20, which gives book capacity. *Note*: The figure 20 is based on the estimate that there are 20 books to the square foot in area.

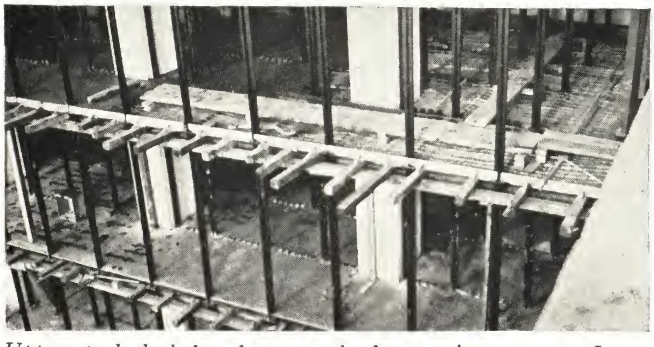
| WIDTH OF ROOM · FEET · ↓ | LENGTH OF ROOM → 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 1,000 | 2,000 | 3,000 | 4,000 | 5,000 | 6,000 | 7,000 | 8,000 | 9,000 | 10,000 | 11,000 | 12,000 |
| 15 | 1,500 | 3,000 | 4,500 | 6,000 | 7,500 | 9,000 | 10,500 | 12,000 | 13,500 | 15,000 | 16,500 | 18,000 |
| 20 | 2,000 | 4,000 | 6,000 | 8,000 | 10,000 | 12,000 | 14,000 | 16,000 | 18,000 | 20,000 | 22,000 | 24,000 |
| 25 | 2,500 | 5,000 | 7,500 | 10,000 | 12,500 | 15,000 | 17,500 | 20,000 | 22,500 | 25,000 | 27,500 | 30,000 |
| 30 | 3,000 | 6,000 | 9,000 | 12,000 | 15,000 | 18,000 | 21,000 | 24,000 | 27,000 | 30,000 | 33,000 | 36,000 |
| 35 | 3,500 | 7,000 | 10,500 | 14,000 | 17,500 | 21,000 | 24,500 | 28,000 | 31,500 | 35,000 | 38,500 | 42,000 |
| 40 | 4,000 | 8,000 | 12,000 | 16,000 | 20,000 | 24,000 | 28,000 | 32,000 | 36,000 | 40,000 | 44,000 | 48,000 |
| 45 | 4,500 | 9,000 | 13,500 | 18,000 | 22,500 | 27,000 | 31,500 | 36,000 | 40,500 | 45,000 | 49,500 | 54,000 |
| 50 | 5,000 | 10,000 | 15,000 | 20,000 | 25,000 | 30,000 | 35,000 | 40,000 | 45,000 | 50,000 | 55,000 | 60,000 |
| 55 | 5,500 | 11,000 | 16,500 | 22,000 | 27,500 | 33,000 | 38,500 | 44,000 | 49,500 | 55,000 | 61,000 | 66,000 |
| 60 | 6,000 | 12,000 | 18,000 | 24,000 | 30,000 | 36,000 | 42,000 | 48,000 | 54,000 | 60,000 | 66,000 | 72,000 |

The above table gives the approximate book capacity of a stack room one tier in height, but does not allow for stairways or lifts.

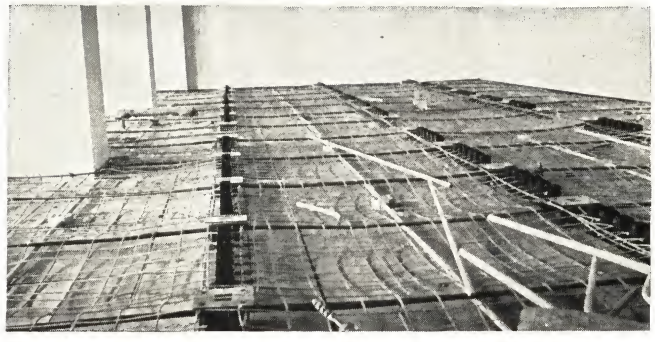
*Example:* If a room is approximately 40 ft. in length and 25 ft. wide it will hold approximately 20,000 volumes. See arrows.




*The stack decks are 3-in. thick reinforced concrete extending continuously over each level and are designed to take a live load of 50 lbs. per sq. ft. The finished floor and ceiling are smooth surfaces. All reinforcing, electric conduits, etc., are concealed within the construction.*



*Upper stack deck has forms ready for pouring concrete. Lower stack deck shows concrete deck poured and smoothed.*



*Showing wire reinforcement and electric conduits laid in concrete deck, with Stack Columns for future extension of stacks.*

REMINGTON RAND INC.

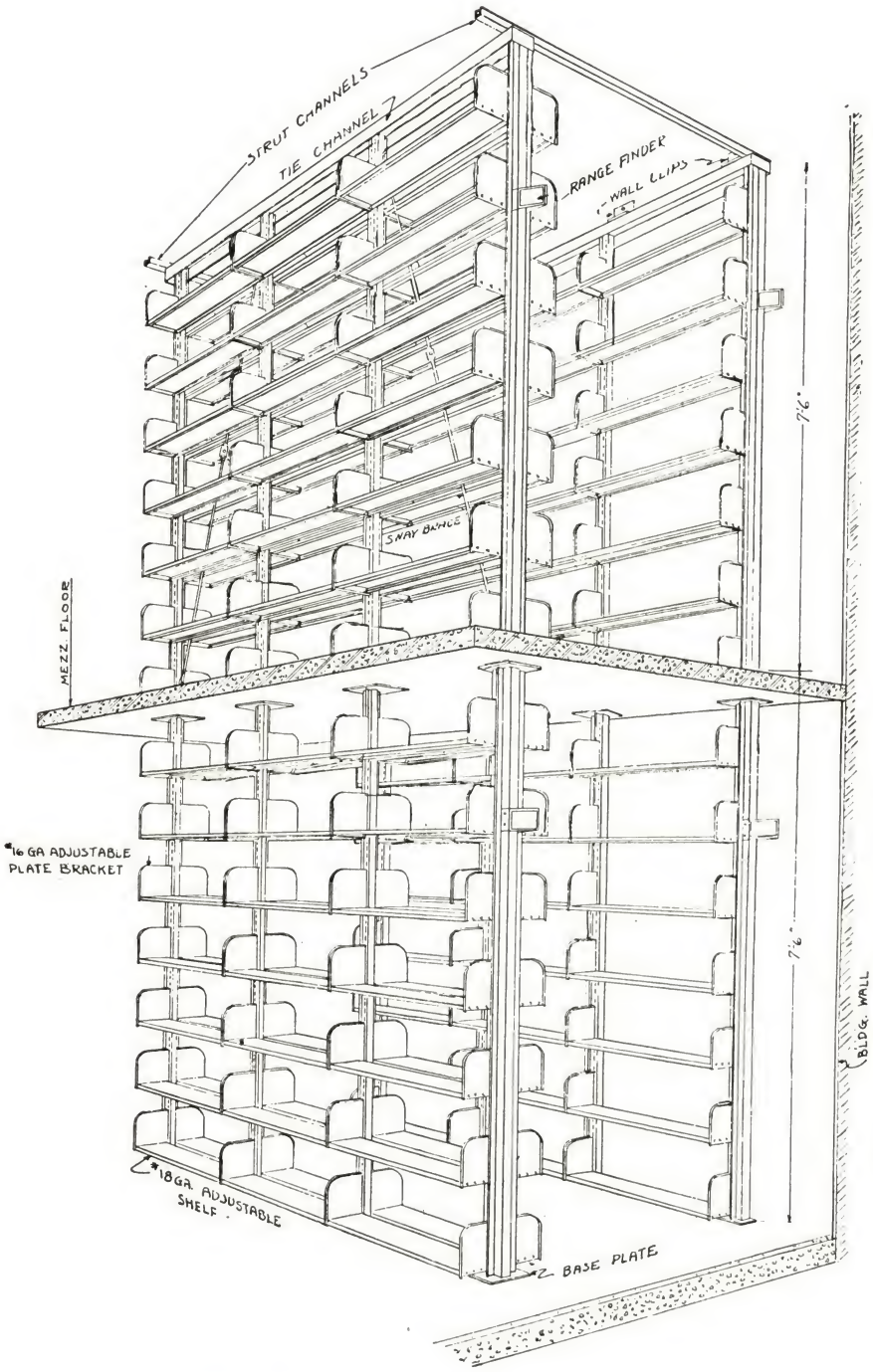
## STACK STANDARDS

### Stack Measurements

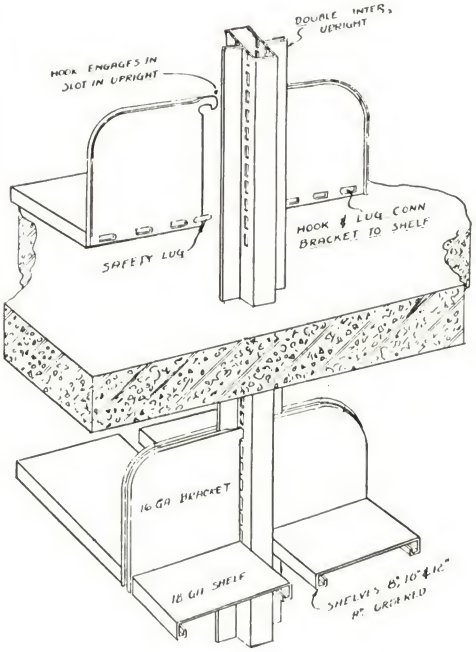
This stack is entirely self-supporting. It can be erected before or after building walls and can be entirely isolated from building walls, insofar as the transmission of vibration, strains, etc., are concerned. On the other hand, it can be tied to building walls and perform an important function of furnishing a lateral tie for additional wind bracing.

Stack uprights in general are 5 by 3⅝ in. over all and are made of formed and flat pieces of steel securely electrically spot-welded together. The unique shape of the uprights brings the fins of the columns between the brackets, thereby losing but a minimum of available book space. The distance between backs of shelves is only 1¾ in. Stack columns are designed to support as many as thirty-one tiers.

Stack columns are perforated with two rows of rectangular holes spaced 1 in. apart on centers to receive the notched lugs or hooks of shelf brackets, thereby allowing convenient adjustment of shelves without removal of books.




Type 32 Bracket Stack Multi-story with Plain Ends




**Detail of Double Intermediate Upright**
**Showing shelf and bracket connection**



University of Denver, Denver, Colo.



Bennington Library, Bennington, Vt.

## MUSEUM AND EXHIBITION CASES

Remington Rand offers a complete line of museum and exhibition cases, with frames of extruded bronze or aluminum alloy. These cases are the result of over thirty years of constant study of the problem of proper display and adequate protection for exhibit material. Case frames are kept narrow and light to produce the best architectural effect. Cases are made thoroughly dustproof by means of a process perfected after many years of research.

Bases may be of wood or metal to harmonize in design with surrounding objects or detail of the building. Close co-operation with architects on the part of our trained staff in the solution of special problems is always assured.

### Partial List of Installations

Williamsburg Restoration, Williamsburg, Va.
John Woodman Higgins Armory, Worcester, Mass.
Seattle Art Museum, Seattle, Wash.
Army Medical Museum, Washington, D. C.
Enoch Pratt Free Library, Baltimore, Md.
Avery Memorial, Wadsworth Atheneum, Hartford, Conn.
Texas Centennial, Dallas, Texas.
Brooklyn Museum, Brooklyn, N. Y.
Yale Art Museum, New Haven, Conn.
Laboratory of Anthropology, Santa Fe, N. M.
Robert Hull Fleming Museum, Burlington, Vt.
Currier Gallery of Art, Manchester, N. H.
James River Golf Club, Newport News, Va.
Franklin Institute, Philadelphia, Pa.
Fogg Art Museum, Cambridge, Mass.
National Parks Museums.
Metropolitan Life Ins. Co., Archives Room, N. Y. C.
New Jersey Historical Society, Newark, N. J.



Robert Hall Fleming Museum, University of Vermont, Burlington, Vt.



Folger Shakespeare Library, Washington, D. C.

FOUNDED 1849

# SNEAD & COMPANY

TELEPHONE
DElaware 3-3500

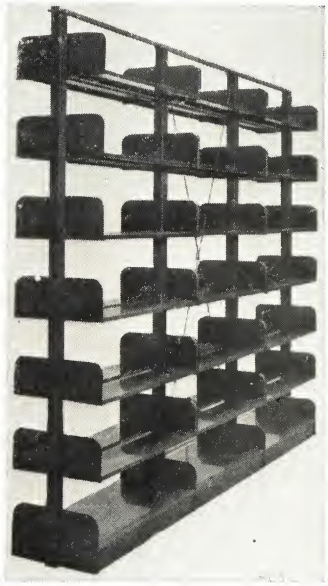
96 Pine Street
JERSEY CITY, N. J.

For Snead Floor Grids and Snead Partitions, see File Index

## SNEAD METAL LIBRARY EQUIPMENT

SNEAD & COMPANY has built stacks for many of the world's great libraries. The original Snead Bookstacks for the Library of Congress, with cast iron shelf supports, were completed forty years ago. Prior to that SNEAD & COMPANY had been manufacturing metal products for 49 years. Today, we believe, the company is the largest producer of metal stack equipment in the world.

The less costly types of Snead shelving can be purchased from stock for small libraries, law offices, business offices and book stores, in small units designed to be added to as the need arises. Much of the work, however, is highly specialized and most of the improvements in stack construction have been developed and patented by this company.



**Snead Free Standing Bracket Stack**
The simplest type

Snead Engineers developed the Snead Continuous Deck Floor Construction, the Snead Convertible Stacks and Rolling Cases, the Snead Zig-Zag Ventilating System, the Snead Book Conveyor, the Snead Hinged Bracket Shelf, the Snead Stack Carrell Units, and many accessories for the efficient library, including the Snead Aisle Light Reflector.

We will be glad to recommend the most satisfactory type of construction for the problem involved. Since we make all types of stack construction and are not partial to any one type we are in a position to offer unprejudiced advice. Our facilities are complete for taking charge, under one contract, of every item necessary to equip the stack room of the modern library. Our staff of experts is available for consultation, criticism, and the development of special designs, including catagorical estimates—all without obligation. Whether it be a single installation of wall shelving or a fifty-tier tower stack—nothing is too small or too large.

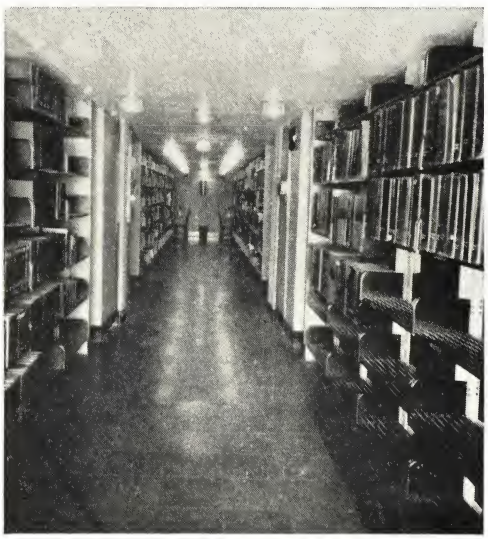
## STANDARDS AND STACK DATA

Standards and Stack Data will be furnished gladly on request. Bookstack construction cannot, from its very nature and use, be confined within strict limitations as to design and plan.

But there are certain rules to be observed, if good planning and economy in cost are to be achieved. Consultation with Snead Engineers from the stage of sketch plans through to the taking of final bids will save time and prevent confusion for the architect and the owner or the building committee.



*Left:*
**Snead Free Standing Bracket Stack with Full Width Ends**



*Right:*
**Snead Top Braced Bracket Stack with Hinged Open Bar Shelves**

# SNEAD BRACKET STACKS

Snead Bracket Stacks made of die-formed sheet steel are the least costly type. They can be of free-standing construction (as illustrated below) or top-braced. No base shelves are furnished for the latter, but all shelves are adjustable and the ranges are braced overhead by means of light cross-tie channels usually anchored to adjacent building construction. Full width ends and top cover plates may be added to either type to secure a more finished appearance and better protection from dust. Shelves may be either of solid plate or of the special Snead Open Bar hinged construction, as illustrated. Bracket stacks are generally chosen where economy is a prime consideration. However, they have also been used in some of the largest installations ever built.

## SNEAD STANDARD CAST IRON STACKS

Snead Standard Cast Iron Stacks have shelf supports that measure the full width of the adjustable shelves and support the latter at the four corners.

Type "A" differs from Type "B" in detail but the two types are alike in principle. Shelves may be either solid plate or the Snead Open Bar. Type "B" ends may be supplied of a special, individual design finished to harmonize with any decorative scheme. In the Type "A" stack the stack's supporting columns are made of structural steel shapes and the other shelf supports of cast iron. Provision may be made for adjusting the width of Type "A" shelf supports to suit for a rearrangement of book classifications. With Types "A" and "B", all of the fixed parts of the construction are finished after installation with air-drying enamel in any desired color. Movable parts, such as adjustable shelves, are factory-finished in baked black japan.



**Snead Standard Cast Iron Stack, Type "B"—N. Y. Chapter, American Institute of Banking**

Type "B" is suitable for either single or multi-tier installations. Type "A" has been especially designed for the stack of many tiers where difficult structural conditions often create problems that must be met.

## SNEAD STANDARD STEEL STACKS

Snead Standard Steel Stacks are similar to the standard Type "B", except that the uprights are made of cold rolled sheet steel instead of cast iron.

Type "SS" standard stacks are noteworthy for their utter simplicity and smooth, clean-cut appearance. See illustration at left and below. The shelf supports, which are hollow in form, enclose the stack's structural columns used in multi-tier installations.

Either solid plate or Snead Open Bar Shelves may be used, adjustable vertically on 5/8-in. centers. All parts of the stack, except the structural members used in multi-tier work, are finished at the factory in baked enamel.

Standard type steel stacks are often preferred for open reading rooms, seminar rooms and offices.

## SNEAD CONTINUOUS DECK FLOORS

Snead Continuous Deck Floors, illustrated at left, are made of reinforced, flat slab concrete. They practically eliminate horizontal steel deck framing, give greater headroom in the tier below, are strong, sanitary, attractive in appearance and usually cheaper than the old forms of construction. They are specially constructed to have smooth, level top and bottom surfaces. The underside is generally painted a light color to reflect light rays. The upper surface is either covered with resilient tile or given a hardened treatment and painted.

Since the introduction of Snead Continuous Deck Floors in the Engineering Society's Library in New York City, other forms of construction have practically passed out of use, as the new type is much more attractive, adaptable, rigid and fire-safe.

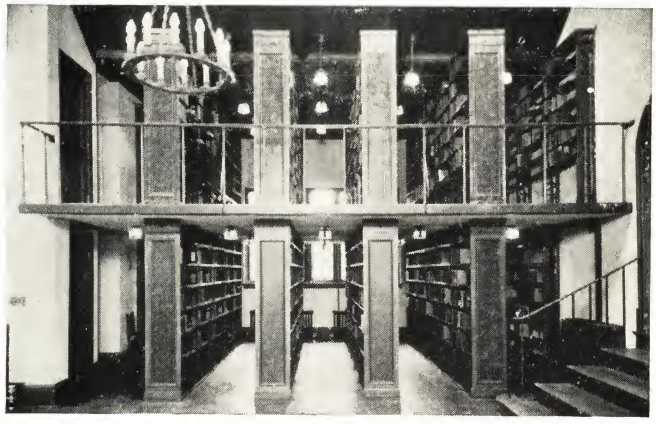


*Left:*

**Snead Standard Steel Stack, Type "S.S."—Doheny Memorial Library, University of Southern California**

*Right:*

**Paneled End Type "B" Stack Public Library, Great Neck, N. Y.**



## SNEAD ROLLING CASES AND CONVERTIBLE STACKS



Snead Rolling Cases—Toronto Public Reference Library

Designed for use where compactness of storage is an immediate or future essential.

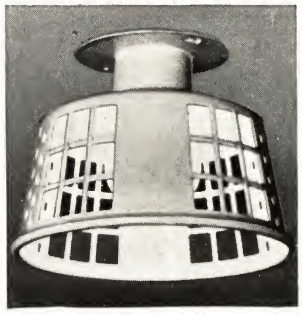
Snead Rolling Cases are simply stack units mounted on wide fiber rollers. They afford from 50% to 100% more storage capacity in a given area than is feasible with ordinary fixed shelving.

If compact storage is not immediately required, but may be desirable in the future, Snead Convertible Stacks are recommended. They consist of unit cases so designed that they may be easily converted into rolling cases at small cost.

To obtain satisfactory results the stack area should be carefully planned in advance by Snead Engineers, as was done in the case of the new Department of Agriculture Library in Washington, D. C., where the Snead Convertible Stack System has been installed.

## STACK LIGHTING

The Snead Stack Aisle Light Reflector has demonstrated its efficiency in light distribution and control in the many libraries. Its superiority has been repeatedly proved where exacting competitive tests have been made with all kinds of stack lighting units. It is low in first cost, unbreakable, simple to install, requires practically no maintenance and permits the ready replacement of burned-out bulbs.



Stack Aisle Light Reflector

With the Snead Continuous Deck Floors it is possible to completely conceal the lighting conduits. This results in a clean, simple effect, as only the light outlets in the stack ceilings are seen. The vertical conduits carrying the wires from the ceiling to the controlling switches are usually placed in or behind the end shelf supports. Switches may be either the ordinary snap type or the time limit type.

The lighting of a stack room is such an integral part of the bookstack installation that it is often advisable to include it in the bookstack contract.

## SNEAD STUDY CARRELS AND STUDY UNITS

Snead Accessories for the efficient library include standard Study Carrells, with individual desks and book shelves for private work or study; and special Snead study unit which provides desk, book shelves and folio volume storage all in one; and sliding reference shelves that fit into the shelf compartments and may be pulled out at will for quick reference to books.

Other accessories are book supports of various styles, shelf label holders, card frames and range indicators for stack ends.

Further data on any of these items will be furnished on request.

## SNEAD BOOK CONVEYOR

Designed to take books speedily and quietly from any stack level to the delivery desk for automatic discharge. It may be arranged to return books from the delivery desk to the stack levels, if desired.

The conveyor operates either horizontally or vertically, preferably in one plane. It is simple to operate and absolutely safe even in inexperienced hands. It travels quietly and smoothly, and requires no care except occasional lubrication.

The book carriers, attached to an endless chain, are largely made of polished aluminum to prevent any harm to the books whether carried loose or in containers.

The keynote of the whole Snead Conveyor design is simplicity and a minimum of maintenance attention. Up to the time the first Snead Book Conveyor was installed in the new library for the University of North Carolina in 1929, the problem had never been successfully solved. Since then Snead Conveyors have become standard equipment in more than a score of important libraries.



Snead Standard Stack, Type "S.S."—Public Library, Plainville, Conn.

## SNEAD ZIG-ZAG VENTILATING SYSTEM

Developed by Snead Engineers and installed in Myron Taylor Hall at Cornell, Maryland Hall of Records and various other modern libraries. The Snead Zig-Zag system offers unusual economy and efficiency in ventilation.

Details of construction will be furnished on request.

## STACK DATA

### Standard Dimensions for Multi-tier Installations

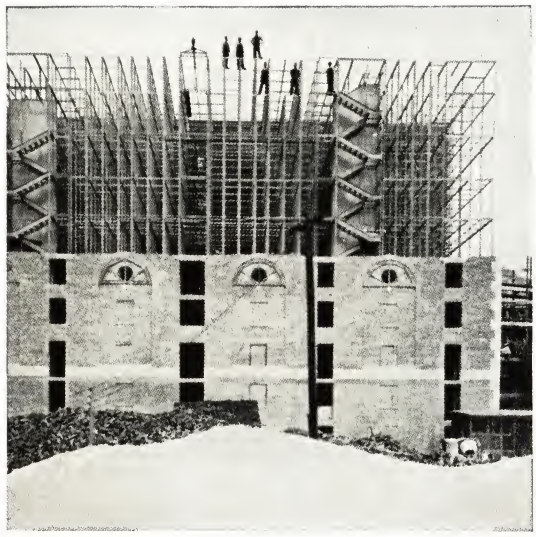
**Height**—7 ft. 6 in., measuring from top surface of deck floor to top surface of next deck floor.

**Aisles**—*Main:* 3 ft. to 5 ft. *Range:* 2 ft. 6 in. to 3 ft.

**Ranges** — *Lengths:* as required, preferably not over 30 ft., in even multiples of shelf length. *Depths:* single-faced —8¼ to 12½ in. for books, 18⅞ and 22¾ in. for newspapers; double-faced—16½ to 24¼ in. for books, 37 and 44¾ in. for newspapers.

**Shelves**—*Lengths:* as required, generally 3 ft., not to exceed 3 ft. 6 in. *Depths:* 8, 10 and 12 in. for books, 18 and 22 in. for newspapers.

**Stairs**—*Straight runs:* well length, 8 to 9 ft., 12 to 13 risers; width, 2 ft. 6 in. or more. *Return runs:* well length, 6 ft. 8 in., 12 risers; width, 5 ft. or more.



**Snead Standard Stack, Type "A," Addition No. 2, University of Illinois, Urbana, Ill.**

**Deck Floor**—Marble, fine sand rubbed on all exposed surfaces, 1¼ in. thick. Stone substitutes are generally 1¼ in. thick. Reinforced concrete slabs, 3½ in. thick without floor covering. *Floor covering:* asphaltum tile, rubber tile, cork, linoleum, etc. *Total thickness of deck floor,* for ordinary span, from top of slabs to bottom of supporting steel framing: 1¼ in. marble, slate or stone, 4⅝ in.; concrete, 3½ in. With typical concrete deck floor construction no steel framing projecting below deck ceiling is required.

### Depth and Capacity of Shelves

No definite rules can be laid down regarding the depth of shelves required, as much depends on the method of classification, space available and use to which the library is put. For great economy and compactness of storage, 8-in. deep shelving is recommended in general. Most books are 6 in. or less in width, and it is well to bear in mind that waste space behind books collects dirt, while the space gained, added to the width of the aisles becomes valuable.

### Unit Stack Weights

**Books**—25 lbs. per cu. ft. of ranges.

**Stack Construction**—8 lbs. per cu. ft. of ranges.

**Steel Flooring Framing**—4 lbs. per sq. ft. of gross deck area.

**Deck Flooring**—3½ in. reinforced concrete slab, 40 lbs. per sq. ft. gross area. 1¼ in. marble or stone, 18 lbs. per sq. ft. aisle area.

**Live Loads**—100 lbs. per sq. ft. of aisle area to avoid vibration. For column loads, assume 40 lbs. per sq. ft. of aisle area for live load and reduce the figure 5% for each deck below the top deck.

### Data Required for Preliminary Drawings and Quotations

1. Name and address of Library.
2. Reply to the attention of.
3. Kind of books to be housed.
4. Number of volumes (a) Present number. (b) Future maximum.
5. Dimensions of stack room (a) Length. (b) Width. (c) Height.
6. Type of stack preferred
   (a) Bracket type: 1. Free Standing. 2. Top braced.
   (b) Standard types: 1. Type "A." 2. Type "B." 3. Sheet Steel Standard (Type "S.S.").
7. Do you want a booklift?
8. Send architect's plans or a pencil sketch showing floor and wall construction and any interference due to radiators, pipes, wall cabinets, etc.

# ALL-STEEL-EQUIP CO., INC.

GENERAL OFFICES AND FACTORY
170 Griffith Avenue, AURORA, ILL.

CHICAGO, ILL., All-Steel-Equip Co., 326 So. Jefferson Street
NEW YORK, N. Y., All-Steel-Equip Co., 56 W. 22nd Street
DETROIT, MICH., All-Steel-Equip Co., 2761 Grand River Avenue
PHILADELPHIA, PA., All-Steel-Equip Co., Cunard Bldg., 220 So. 16th Street
WASHINGTON, D. C., All-Steel-Equip Co., 1254 24th St., N. W.
BIRMINGHAM, ALA., Alex Patterson, Chamber of Commerce Building
BRANCH AND SALES OFFICES IN ALL PRINCIPAL CITIES

## Engineering Service

Our experienced engineers offer A-S-E customers a complete layout service.

## Acceptance

*Representative Locker Users:* John Pershing High School, Detroit, Mich.; School of Engineering, Princeton University, Princeton, N. J.; Central High School, Philadelphia, Pa.; University of Chicago, Chicago, Ill.; State Capitol, Bismarck, N. D.; Sea Horse Yacht Club, Rye, N. Y.




## PRODUCTS

ASE

STEEL LOCKERS (all types), STEEL STORAGE, WARDROBE, COMBINATION CABINETS (57 models), STEEL FILING CABINETS (all grades). STEEL BOOK SHELVING. STEEL EQUIPMENT for public and commercial buildings.

## SPECIFICATIONS

**General**—A-S-E Lockers are made from hot-rolled annealed, stretcher-leveled steel, free from buckle or scale. They are built on the unit principle, with all parts interchangeable.

**Frame**—⅞ x ⅞ x ⅛ in. hard steel angle uprights; cross members 16-gauge (.0625 in.) cold rolled steel channel, inset at ends to be flush with face of angle uprights. Each corner riveted with two countersunk (flush) rivets, then ground and polished smooth on face of frames. *No notches cut in angles for hinges.*

**Doors**—One-piece 16-gauge (.0625 in.) hot rolled annealed steel, with 1-in. flange on all edges, and with additional ⅜-in. return flange (channel formation) on hinge side. Additional ¾ and ⅜-in. return flanges (box formation) on latch side. Latch bar partially enclosed within box formation. Doors 18 in. or more in width reinforced by steel panels between sets of louvers.

**Hinges**—Flush hinges, completely concealed pin type, embossed in metal of door, making the door an integral part of the hinge. Hinge pin is held by a full looped hinge leaf of 16-gauge steel, riveted to frame by two countersunk (flush) rivets, ground and polished smooth on face of frame. Pin is held in the emboss in door by a heavy embossed hinge clip. Non-sagging and tamperproof. Two hinges on all sizes up to 42 in. high. Three hinges on 60 in. high, and 4 hinges on all lockers 72 in. in height.

**Latch (Standard—Not Pre-locking)**—Automatic lift type, of channel formation, one piece moving vertically, partially concealed within flange of door. Remains in raised position when door is open, and latches automatically as it is closed. Engages into 13-gauge (.0938 in.) steel jambs, serving both as door-strikes and latch-keepers, at three points on single tier and two points on double tier lockers

**Latch (Pre-locking)**—Furnished when specified.

**Rubber Silencers**—Live rubber silencing equipment furnished on all single and double tier lockers, at points of contact on top and bottom of latch bar and on door jambs. Rubber bumpers are replaceable.

**Handle**—White brass, die-cast, in distinctive design, shaped for easiest natural grip and greatest safety. Chromium plated in high-lighted satin finish, or nickel-plated, Butler finish. Padlock attachment and padlock guard (to prevent padlock from striking against door and marring finish) are integral parts of handle. Padlock eye completely enclosed within handle. Handle is attached to latch bar with two special slotless head machine screws and lock washers.

**Ventilation**—Standard ventilation feature consists of louver perforations of harmonious modern design. Single tier lockers have sets of eight louvers at top and at bottom of door. Double tier type have sets of four at top and bottom. Louver perforations full height of door, or ½ in. round hole perforations on 1½-in. centers, on order.

**Number Plate**—Brass, chromium plated and highly polished, with large black filled numbers, attached with two solid rivets. Numbering as specified.

**Backs**—24-gauge (.025 in.) hot rolled annealed steel. Flanged on upright edges to fit around sides of lockers. Bolted to sides on 12 in. centers.

**Sides**—24-gauge (.025 in.) hot rolled annealed steel. Offset at front and back to fit inside of frame angle and back flange. Top edges flanged to fit over edges of locker top. Assembled to back and locker frame with bolts on 12 in. centers.

**Tops**—24-gauge (.025 in.) hot rolled annealed steel. Flanged on all four sides, and attached with bolts to sides and back of locker. Front of top formed to fit inside of and rest on top cross channel of frame. Top flush with top of frame.

**Bottoms**—24-gauge (.025 in.) hot rolled annealed steel. Flanged on all four sides. Attached with bolts to locker sides and backs. Fronts formed to fit inside of and rest on bottom frame member. Bottom flush with frame.

**Shelves**—24-gauge (.025 in.) hot rolled annealed steel. Flanged on sides and back, with rolled edge at front for greater strength and smoothness. Attached with bolts in each side, at a point approximately 9 in. from top in single tier lockers. Not furnished in double tier unless specially ordered.

**Bolts**—All bolts used in A-S-E Lockers are 8/32 slotless binding head machine screws, black Parkerized. Nuts used are square, also black Parkerized.

**Hooks**—Ball-point, cadmium plated against rusting. Single prong side hooks and double prong ceiling hook in single tier lockers, and in other styles on special order. All hooks attached with two bolts.

**Standard Equipment**—Number plate, padlock attachment, three coat hooks (more in larger sizes), hat shelf, and double prong ceiling hook in single tier locker. Double tier lockers have same equipment, but no hat shelf or ceiling hook unless specially ordered. All lockers 18 in. or more in depth have coat hanger rod instead of ceiling hook. 6 in. legs are standard equipment and adjustable feet are furnished when requested, without extra charge. No-leg lockers (for recessed or concrete base installation) furnished at same prices as standard lockers. Closed base, sloping top, and other special features supplied at nominal extra cost.

**Finishing Trim**—For recessed installations. 20-gauge (.0375 in.) cold rolled steel. 3 in. standard width. Built to length of locker rows and height of lockers, with neat overlapping slip joint for adjustment to length. No bolt or rivet heads showing.

**Locks**—Any desired type of locker lock or padlock can be furnished on order.

**Finish**—A-S-E olive green or school furniture brown, standard colors. French gray and other colors on order. All parts thoroughly cleaned, then enameled and baked at high temperature. All locker fronts further finished in hand sprayed lacquer. Highest quality enamels and lacquers used.

**Shipment**—Shipped completely assembled or knocked down

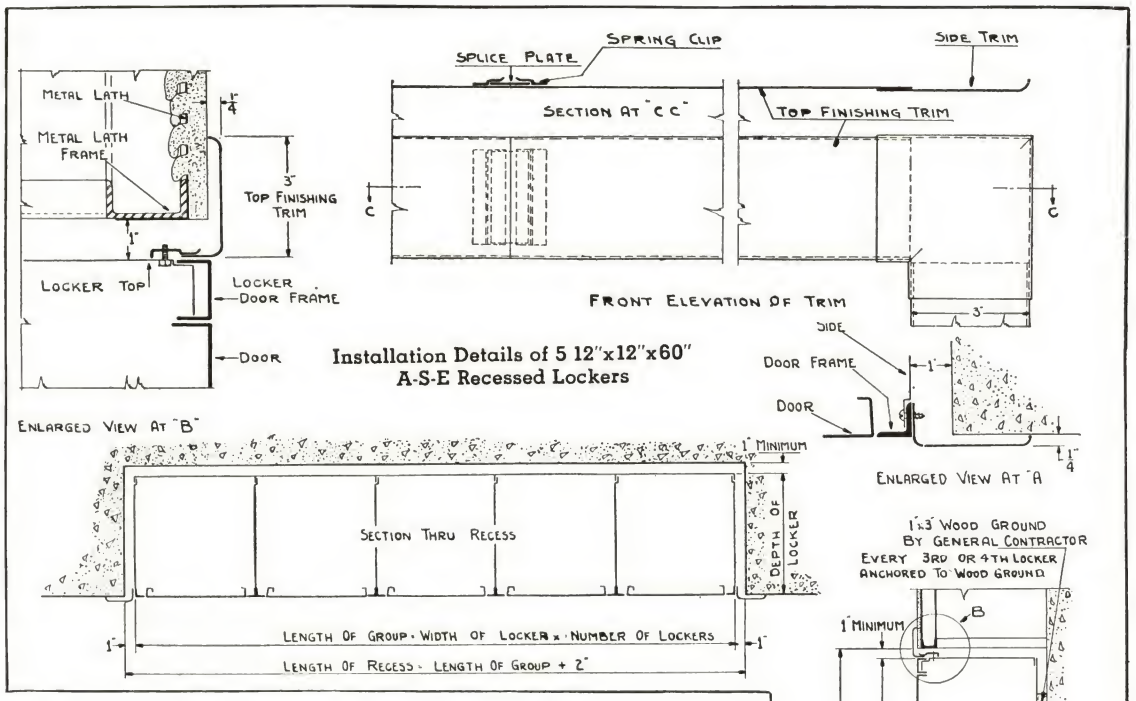
# INSTALLATION DETAILS—RECESSED LOCKERS



**A Finger Operates the New A-S-E Streamlined Handle**



**Outside of Hinge**
Showing how door emboss covers and conceals hinge pins




**Installation Details of 5 12"x12"x60" A-S-E Recessed Lockers**



**Type 9006 Two-person Locker**
Each occupant has one small and one coat compartment



**Group Lockers**
One point locking and unlocking but individual door operation

## NO. 9000 SINGLE TIER LOCKERS

| Width, in. | Depth, in. | *Height, in. | Width, in. | Depth, in. | *Height, in. | Width, in. | Depth, in. | *Height, in. |
|---|---|---|---|---|---|---|---|---|
| 12 | 12 | 60 | 18 | 18 | 60 | 15 | 15 | 72 |
| 12 | 15 | 60 | 18 | 21 | 60 | 15 | 18 | 72 |
| 12 | 18 | 60 | 12 | 12 | 72 | 18 | 18 | 72 |
| 15 | 15 | 60 | 12 | 15 | 72 | 18 | 21 | 72 |
| 15 | 18 | 60 | 12 | 18 | 72 | | | |

*Heights given do not include 6-in. legs, use of which is optional. Double row lockers not made for depth greater than 18 in. Also built in other acceptable widths and depths in multiples of 3 in.

## NO. 9001 DOUBLE TIER LOCKERS

| Wide, in. | Deep, in. | High, in. |
|---|---|---|
| 12 | 12 | 30 |
| 12 | 12 | 36 |
| 12 | 15 | 36 |
| 15 | 15 | 36 |
| 12 | 12 | 42 |
| 12 | 15 | 42 |

## NO. 9002 MULTIPLE TIER LOCKERS

| Wide, in. | Deep, in. | High, in. | Tiers |
|---|---|---|---|
| 12 | 12 | 12 | 5 or 6 |
| 12 | 15 | 12 | 5 or 6 |
| 15 | 15 | 15 | 4 |

## NO. 9006 TWO-PERSON LOCKERS

| Compartments | Wide, in. | Deep, in. | *High, in. |
|---|---|---|---|
| 2 large..... | 7½ | 15 | 53 |
| 2 small..... | 15 | 15 | 9 |
| Over-all..... | 15 | 15 | 72 |
| 2 large..... | 7½ | 18 | 53 |
| 2 small..... | 15 | 18 | 9 |
| Over-all..... | 15 | 18 | 72 |
| 2 large..... | 7½ | 21 | 53 |
| 2 small..... | 15 | 21 | 9 |
| Over-all..... | 15 | 21 | 72 |

*Heights shown do not include 6-in. legs, use of which is optional.

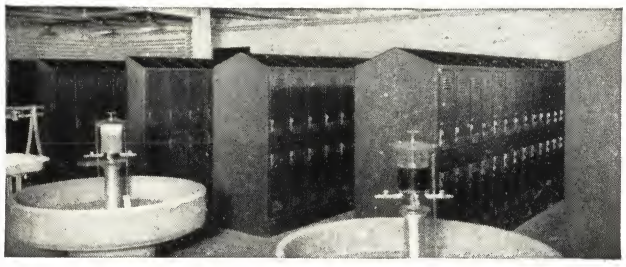
## TYPE NO. 9003 COMPARTMENT LOCKERS

| Compartments | Wide, in. | Deep, in. | High, in. |
|---|---|---|---|
| **Seven-Person** | | | |
| 1 large..... | 18 | 21 | 60 |
| 1 small..... | 18 | 21 | 12 |
| 6 small..... | 18 | 21 | 12 |
| Over-all..... | 36 | 21 | 78 |
| **Eight-Person** | | | |
| 2 large..... | 18 | 21 | 60 |
| 8 small..... | 18 | 21 | 12 |
| Over-all..... | 54 | 21 | 78 |

*Ask for A-S-E Catalog C-31*



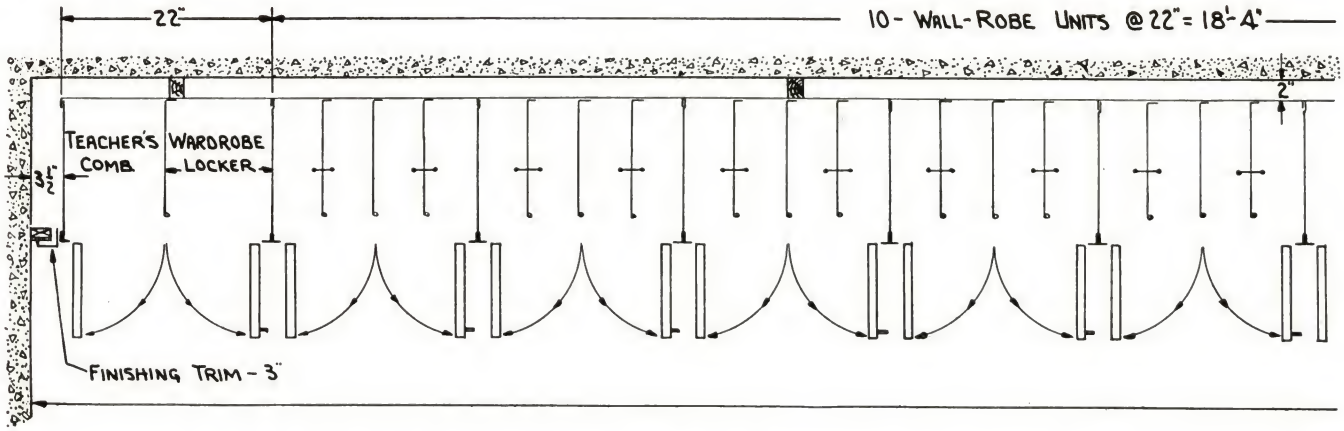
**Type 9003 Seven-person Locker**
Seven small compartments, one large one



**Type 9001 Double Tier Lockers with Sloping Top**



**Type 9002 Box Lockers**
Storage space for small articles




# A-S-E STEEL WALL-ROBES FOR ELEMENTARY SCHOOLS

Incorporating latest design features, ALL-STEEL-EQUIP CO., INC. now offers a steel wardrobe system for elementary schools.

The A-S-E Wall-Robe is based on the principle of one-point group control with individual operation of doors. When the teacher's unit is unlocked, the doors may be opened or closed at will; when the teacher's unit is locked, the doors may be closed at any time, locking automatically. The A-S-E Wall-Robe, requiring a minimum recess depth, offers savings in space and building cost.

A-S-E Wall-Robes are available in groups up to 10 units consisting of one teacher's unit and the balance student units in any of the arrangements shown on the following page. Shelves, partitions, stationary and sliding hooks are varied as to arrangement in pupils' units to meet differing needs.

For teacher's use there are lockers and bookcases and combinations of clothing and book compartments in several widths.

*On this and the following page is shown a typical layout diagram of a section of ten A-S-E steel Wall-Robes, storage locker, and teachers' lockers. Recess and trim details are shown in the side elevation on page 4. These details are for standard 22x15x66-in. units.*

## SPECIFICATIONS

**General**—Made from stretcher-leveled steel, free from buckle or scale. Built on the unit principle, with all parts interchangeable.

**Frame**—⅞ x ⅞ x ⅛ in. hard steel angle uprights; cross members 16-gauge (.0625 in.) cold rolled steel channel, inset at end to be flush with face of angle uprights. Each corner riveted with two countersunk (flush) rivets, then ground and polished smooth on face of frame. No notches cut in angles for hinges.

**Doors, Double**—One-piece 16-gauge (.0625 in.) stretcher-leveled steel, with 1 in. flange on all edges and with additional ⅜ in. return flange, channel formation on left-hand door and on the hinge side of right-hand door. Additional ¾ and ⅜ in. return flanges (box formation) on latch side of right-hand door, with the latch bar partially enclosed within box formation. Specially designed stop prevents doors opening greater than 90 degrees, preventing damaging contact between doors.

**Hinges**—Flush hinge, completely concealed pin type, embossed in metal of door, making the hinge an integral part of door. Hinge pin held by a full-looped hinge leaf of 16-gauge steel, riveted to frame by two countersunk (flush) rivets, ground and polished smooth on face of frame. Pin held in the emboss in the door by a heavy embossed hinge clip, non-sagging and tamperproof. Three hinges on each door.



**Latch (Pre-locking)**—Lift type, of channel formation, one piece moving vertically. Partially concealed within flange of door, latch bar is raised to permit opening the locker, and immediately drops to locked position. Opening the right-hand door automatically unlatches the left-hand door which can then be opened. With the left-hand door in closed position, closing the right-hand door automatically latches both the right and left-hand doors.

**Group Control**—Group control is designed to control the locking of an entire row of units (up to and including 10 units wide). When the key is turned, the lock is forced out by spring action, immediately unlocking all doors. To lock the entire group, all that is necessary is to press in the lock cylinder. The group control device can easily be disengaged, and individual locks or padlocks can be installed on any or all Wall-Robes, at any later time, as doors are punched for standard locks, equipped with padlock attachment.

**Rubber Silencers**—Live-rubber silencing equipment furnished at points of contact on top and bottom of latch bar and on door jambs. Rubber bumpers are replaceable.

**Handle**—White brass, die-cast in distinctive design, shaped for easiest natural grip and greatest safety. Chromium plated in highlighted satin finish or nickel plated Butler finish. Padlock attachment and padlock guard are integral parts of handle. Padlock eye completely enclosed. Handle is attached to latch bar with two special slotless-head machine screws and lock washers.

**Ventilation**—When Wall-Robes are used with a ventilating system, eight louver perforations are placed at the bottom of each door, round hole perforations are also placed at the top of the back, and removable square grilled base plate is supplied. When Wall-Robes are used without ventilating system, eight louver perforations are placed at the top and bottom of each door, no perforations in back or base plate.

**Number Plate**—Brass, chromium plated and highly polished, with large black-filled numbers. Numbering as specified.

**Backs**—24-gauge (.025 in.) steel. Offset at sides to fit around sides of Wall-Robes. Bolted to sides on 12 in. centers.

**Sides**—24-gauge (.025 in.) steel. Offset at front and back to fit inside of frame angle and back flange. Top edges flanged to fit over edges of Wall-Robe top. Assembled to back and frame with bolts.

**Tops**—24-gauge (.025 in.) steel. Flanged on all four sides, and attached with bolts to sides and back. Front of top formed to fit inside of and rest on top cross channel of frame. Top flush with top of frame.

**Bottoms**—20-gauge (.0375 in.) steel. Flanged on all four sides. Attached with bolts to sides and backs. Fronts formed to fit over and rest on bottom frame member.

**Shelves**—20-gauge (.0375 in.) steel. Flanged on sides and back with front edge formed for greater strength and smoothness. Reinforced by steel panels when vertical partitions are not used. Attached with bolt to each side.

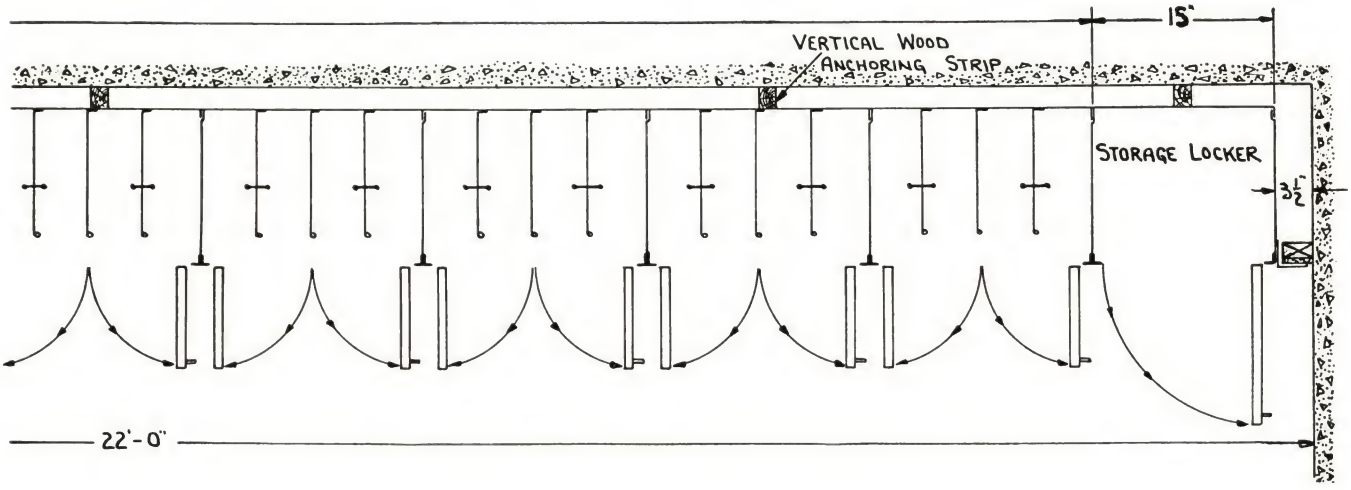
**Bolts**—All bolts used in A-S-E Wall-Robes are 8/32 slotless binding head machine screws, black Parkerized. Nuts used are square, also black Parkerized.

**Hooks**—Ball-point, cadmium-plated against rusting. All hooks attached with two bolts.

**Finishing Trim**—For recessed installations, cold rolled steel trim of 2 in. standard width, built to length of rows and height of Wall-Robes, with neatest overlapping slip joint for adjustment to length. No bolt or rivet heads showing.

**Lock**—Grooved key, pin-tumbler lock with spring bolt, chromium plated.

**Finish**—A-S-E Olive Green or School Furniture Brown, standard colors. French Gray and other colors on order. All parts thoroughly cleaned, then enameled and baked at high temperature. All Wall-Robe fronts further finished in hand sprayed lacquer. Highest quality enamels and lacquers used.






No. 9112—22 in. wide; 12 or 15 in. deep; 66 in. high, including 6-in. legs or closed base. Accommodates four pupils. Four 11x7-in. compartments at top, two large coat compartments at bottom.



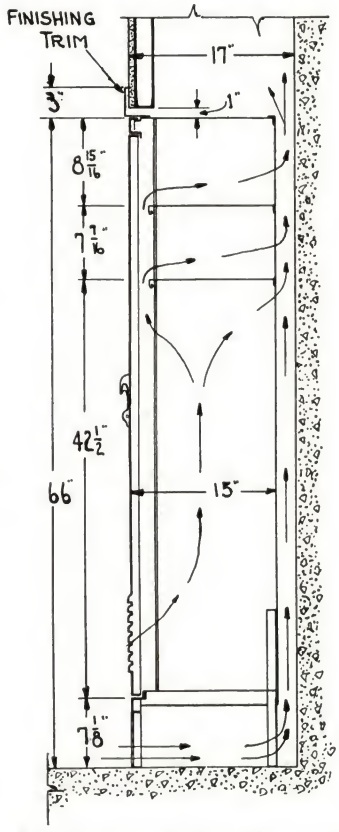
No. 9113—22 in. wide; 12 or 15 in. deep; 66 in. high, including 6-in. legs or closed base. Accommodates four pupils. Four 11x7-in. compartments at top, one large coat compartment at bottom.



No. 9211—22 in. wide; 12 or 15 in. deep; 66 in. high, including 6-in. legs or closed base. Accommodates two to six pupils. Two 22x7-in. compartments at top, one large coat compartment below. Five or more sliding hooks.



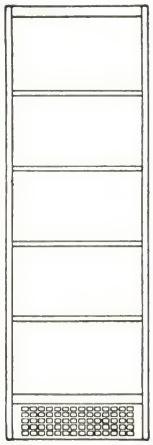
No. 9111—22 in. wide, 12 or 15 in. deep, 66 in. high, including 6-in. legs or closed base. Each unit accommodates four pupils. Four 11x7-in. compartments at top, four coat compartments at bottom.



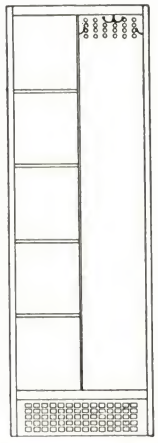

Side Elevation of Typical Recessed A-S-E Wall-Robe



No. 9312—Plain wardrobe for teacher's use. 9, 12, 15 or 18 in. wide; 12 or 15 in. deep; 66 in. high, including 6-in. legs or closed base. Single door and individual lock.



No. 9313—Bookcase with four adjustable shelves. 9, 12, 15 or 18 in. wide; 12 or 15 in. deep; 66 in. high, including 6-in. legs or closed base. Single door, individual lock.



No. 9311—Combination wardrobe and bookcase. Four adjustable shelves. 22 in. wide; 12 or 15 in. deep; 66 in. high, including 6-in. legs or closed base. Double doors, individual lock.



*Left:*

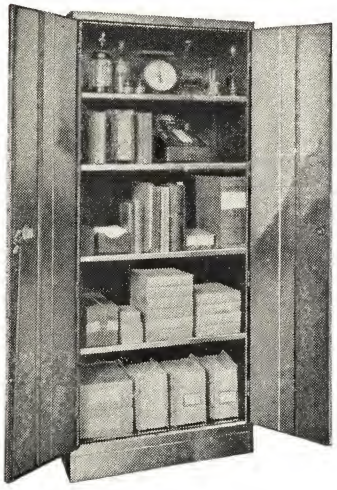
No. 9212—22 in. wide, 12 or 15 in. deep, 66 in. high, including closed base or 6-in. legs. Accommodates five or more pupils. Two 22x7-in. compartments at top, one large coat compartment at bottom.

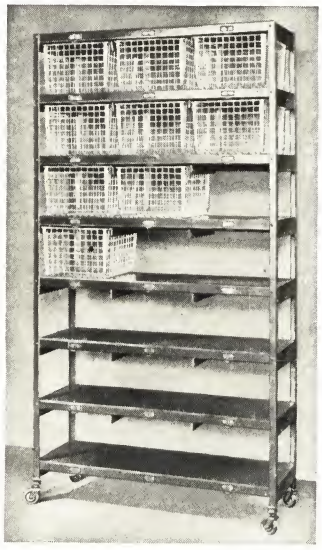
ALL-STEEL-EQUIP CO., INC.

# STEEL EQUIPMENT FOR PUBLIC AND COMMERCIAL BUILDINGS

## Steel Storage, Wardrobe and Combination Cabinets

Two lines, "Master" and "Popular". Both made of heavy steel throughout with all members strengthened by flanging or embossing. Both have adjustable shelves. Olive Green baked enamel, standard finish on both lines with Mahogany, Walnut, White or French Gray finishes furnished on specification.





**"MASTER" LINE SIZES AND MODELS**

| | Width, in. | Depth, in. | Height, in. |
|---|---|---|---|
| *No. 3687 storage cabinet | 36 | 18 | 78 |
| *No. 3689 wardrobe cabinet | 36 | 18 | 78 |
| *No. 3688 combination cabinet | 36 | 18 | 78 |
| *No. 4287 storage cabinet | 42 | 18 | 78 |
| No. 2887 storage cabinet | 18 | 18 | 78 |
| No. 2889 wardrobe cabinet | 18 | 18 | 78 |
| No. 1804 desk high cabinet | 18 | 20 | 30 |
| *No. 3684 counter high cabinet | 36 | 18 | 42 |

*Furnished in 24-in. depth also.

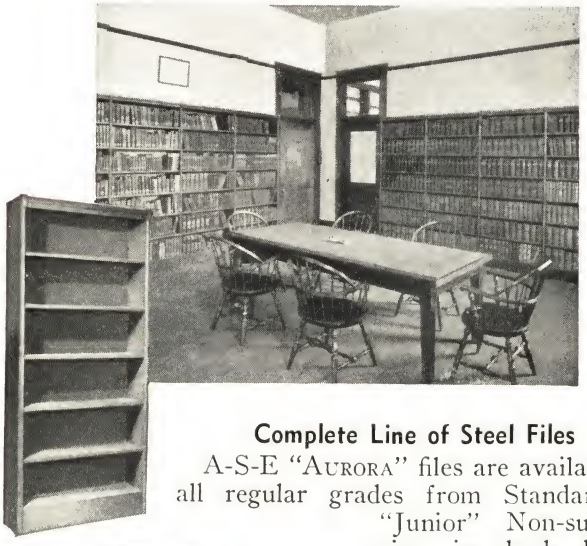
**"POPULAR" LINE SIZES AND MODELS**

| | Width, in. | Depth, in. | Height, in. |
|---|---|---|---|
| *No. 3487 storage cabinet | 36 | 18 | 78 |
| No. 3456 storage cabinet | 36 | 18 | 66 |
| *No. 3485 combination cabinet | 36 | 18 | 78 |
| *No. 3489 wardrobe cabinet | 36 | 18 | 78 |
| No. 2486 storage cabinet | 24 | 18 | 66 |
| No. 2456 storage cabinet | 24 | 15 | 66 |
| No. 1886 storage cabinet | 18 | 18 | 66 |

*Furnished in 24-in. depth also.

## "Patrician" Steel Shelving

The beauty of wood with the strength and durability of steel. Shelving may be installed free standing or recessed. Built in five or six-shelf sections 36 in. wide; 10 or 15 in. deep; 78, 84 or 90 in. high; and in back-to-back style. Shelves are adjustable on 1-in. centers. Same finishes as cabinets.



## Gym Baskets and Racks

Complete ventilation in clothing storage for gym or swimming pool. Baskets are 9x13x8 or 12x13x8 in.



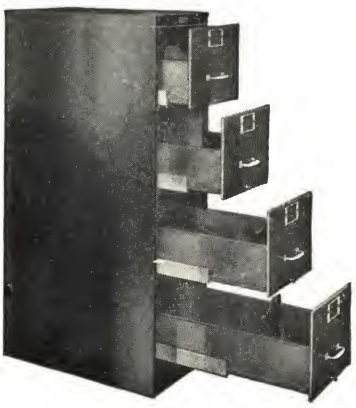
**A FEW POPULAR BASKET RACKS**
(Many other sizes and arrangements)

| Number and size, in. | Width, in. | Depth, in. | Height, in. |
|---|---|---|---|
| 30 baskets (5 wide x 6 high) | 48 13/16 | 13 1/2 | 64 7/8 |
| 35 baskets (5 wide x 7 high) | 48 13/16 | 13 1/2 | 74 7/16 |
| 40 baskets (5 wide x 8 high) | 48 13/16 | 13 1/2 | 84 |
| 36 baskets (6 wide x 6 high) | 58 3/16 | 13 1/2 | 64 7/8 |
| 42 baskets (6 wide x 7 high) | 58 3/16 | 13 1/2 | 74 7/16 |
| 48 baskets (6 wide x 8 high) | 58 3/16 | 13 1/2 | 84 |

Table covers baskets 9x13x8 in. Over-all heights include 5-in. legs on racks.

## Complete Line of Steel Files

A-S-E "Aurora" files are available in all regular grades from Standard to "Junior" Non-suspension, in check, letter, legal, ledger and jumbo widths; in all drawer combinations. Standard finish is olive green baked-on enamel. Standard grained wood finishes also furnished upon specification. File shown is No. 7401 four-drawer letter Utility grade file. Ask for Catalog No. FE-3 for complete list of files and prices.



## Steel Typewriter Stands

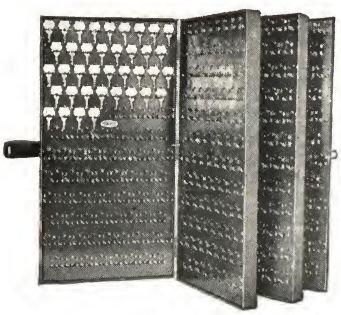
Equipped with stationery drawer. Olive green or grained wood finishes.

**No. 300**—24 in. wide, 16 in. deep, 26¼ in. high.
**No. 400**—32 in. wide, 18 in. deep, 26¼ in. high.



## Steel Key Cabinet

Opens like a book. May be locked shut. One to six leaves with 102 to 612 hooks, each accommodating 1 to 4 keys.



*Ask for A-S-E Catalogs*

# SECTION 21

CONTINUED ⟶

# BERGER MANUFACTURING DIVISION

OF REPUBLIC STEEL CORPORATION

## Lockers, Shelving, Storage Cabinets and Steel Office Furniture

CANTON, OHIO

BRANCHES

BOSTON, MASS. BUFFALO, N. Y. CHICAGO, ILL. CLEVELAND, OHIO DETROIT, MICH. KANSAS CITY, MO. LOS ANGELES, CAL. MINNEAPOLIS, MINN. NEW YORK, N. Y. PHILADELPHIA, PA. PITTSBURGH, PA. SAN FRANCISCO, CAL. ST. LOUIS, MO.

For Metal Lath and Building Products, see File Index

## BERLOY STEEL LOCKERS FOR EVERY REQUIREMENT

More than 50 years of experience in the fabricating of steel are embodied in the construction of Berloy Steel Lockers. Several types and sizes meet any locker need that may arise. As the different types are made to unit dimensions they may be combined in the same installation.

Berloy Steel Lockers may be installed on legs, as in the illustrations shown on the next page, or the legs may be omitted and the lockers installed on a concrete base or recessed in the walls.

### Advisory Service

There are many things to be considered in the selection of locker equipment that will be the most efficient for your particular needs. Amount of space to be allotted to lockers must be taken into consideration, together with number of people to be accommodated and amount of clothing to be placed in the lockers.

Berger Engineers will welcome an opportunity to co-operate with you in planning the most convenient and economical locker arrangement to meet any service requirement.

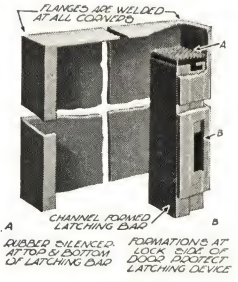
## DETAILS OF CONSTRUCTION—BERLOY LOCKERS

### Material

The material used for the doors and door frames is pickled, cold rolled and patent leveled steel. The balance of the parts are made of mild annealed, cold rolled, patent leveled steel. This material is all made in our own mills from ore to finished sheet and given special processes to insure perfectly level sheets with smooth surfaces.

### Unit Principle of Construction

The unit principle of construction followed throughout gives great flexibility of arrangement. As many or as few lockers as desired may be built into any group and rearrangement of any equipment is quickly and easily accomplished. All parts are punched and formed over standard dies which make all corresponding parts uniform and interchangeable.



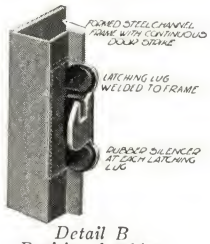

*Detail A*
*16 Ga. door and 18 Ga. latching bar*

### Doors

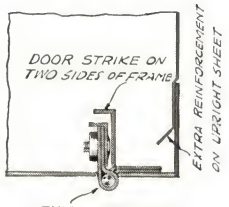
Doors are made of 16-gauge steel (.0625 in. thick) with two right angle formations at lock side of door and two at hinged side. The channel-shaped locking bar completely encloses the locking mechanism. The door has the ability to realign itself after being subjected to severe strain.

### Pre-locking Device

This is a unique feature of Berloy Locker construction. Sturdy steel locking fingers are located at each latching point on the bar and operate independently of the bar. Thus, the latching bar drops into a locked position immediately after the door is opened and handle released, but the independent locking fingers permit the door to be closed without raising the bar.




*Detail B*
*Positive latching device*




*Detail C*
*Section of locker showing attachment of hinge*

### Full Loop Hinge

This sturdy hinge is 2 in. wide with five loops and tight pin. It is securely welded to door frame and bolted to door. Single-tier lockers have three hinges and double-tier lockers two hingers per door. Note strength and construction of this full loop type hinge.

### Body of Locker

The body of the locker consisting of upright sheets, back, tops, bottoms and shelves is made of 24-gauge steel. Upright sheets are flanged on both sides, making them very rigid. Tops and bottoms are flanged on all four sides. The hat shelf has a beaded front. Backs are flanged on two sides.

### Locks

A wide variety of locks to meet any requirement will be furnished as standard.

### Finish

The standard finish is the best quality olive green or school furniture brown enamel baked on at proper temperature to insure durability. Special colors can be supplied at a small increase in cost.

### Equipment

All single-tier lockers are equipped with hat shelf, three single-prong wall hooks and one double-prong ceiling hook and number plates. Double-tier lockers have three single-prong wall hooks and one double-prong ceiling hook and number plates. (No shelves.)

### Ventilation

In all types of Berloy Lockers, hooded slots or louvers are embossed in the field of the doors.

### Sloping Tops

Lockers can be furnished with sloping tops if desired at a slight advance in price.

### Erection

Lockers are usually shipped knocked-down.

## DIMENSIONS OF STANDARD BERLOY STEEL LOCKERS

| Locker No. | Width, in. | Depth, in. | Height, in. | | Locker No. | Width, in. | Depth, in. | Height, in. | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Locker | Over all | | | | Locker | Over all |
| **Single Tier Lockers, Types S.S. and F.S.** | | | | | | | | | |
| 126 | 9 | 12 | 60 | †61 | 156 | 9 | 12 | 72 | †73 |
| 136 | 9 | 15 | 60 | †61 | 166 | 9 | 15 | 72 | †73 |
| 146 | 9 | 18 | 60 | †61 | 176 | 9 | 18 | 72 | †73 |
| 226 | *12 | 12 | 60 | †61 | 227 | *12 | 12 | 72 | †73 |
| 256 | *12 | 15 | 60 | †61 | 257 | *12 | 15 | 72 | †73 |
| 286 | *12 | 18 | 60 | †61 | 287 | *12 | 18 | 72 | †73 |
| 556 | *15 | 15 | 60 | †61 | 557 | *15 | 15 | 72 | †73 |
| 586 | *15 | 18 | 60 | †61 | 587 | *15 | 18 | 72 | †73 |
| 815 | 18 | 18 | 60 | †61 | 887 | *18 | 18 | 72 | †73 |
| 816 | *18 | 21 | 60 | †61 | 847 | *18 | 21 | 72 | †73 |
| | | | | | 857 | 18 | 24 | 72 | †73 |
| **Double Tier Lockers, Types S.D. and F.D.** | | | | | | | | | |
| 113 | 9 | 12 | 30 | 61 | 117 | 9 | 15 | 36 | 73 |
| 213 | *12 | 12 | 30 | 61 | 253 | *12 | 15 | 36 | 73 |
| 115 | 9 | 12 | 36 | 73 | 553 | *15 | 15 | 36 | 73 |
| 223 | *12 | 12 | 36 | 73 | 254 | *12 | 15 | 42 | 85 |
| | | | | | 554 | *15 | 15 | 42 | 85 |

| Locker No. | Compartment dimensions, in. | | | Height over all, in.† | Number of compartments high |
|---|---|---|---|---|---|
| | Width | Depth | Height | | |
| **Box Lockers, Type S** | | | | | |
| 222 | 12 | 12 | 12 | 73 | 6 |
| 252 | 12 | 15 | 12 | 73 | 6 |
| 221 | 12 | 12 | 12 | 61 | 5 |
| 251 | 12 | 15 | 12 | 61 | 5 |
| 555 | 12 | 15 | 14 2/5 | 73 | 5 |
| 551 | 12 | 15 | 15 | 61 | 4 |
| 521 | 12 | 21 | 14 2/5 | 73 | 5 |

*Recommended as standard by Department of Commerce.
†Without legs.

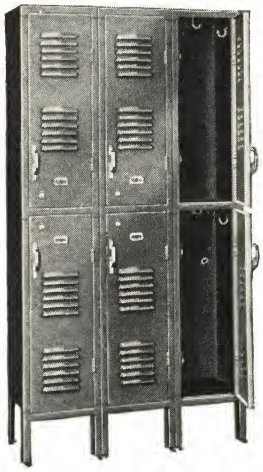
**Combination Locker Type G**—Made in two sizes: 5 or 6 small compartments 15 in. wide, 21 in. deep and 15 in. high; one small compartment 18 or 21 in. wide, 21 in. deep and 15 in. high; one large compartment 18 or 21 in. wide, 21 in. deep, 58 or 61 in. high. Over all without legs 33 or 36x21x73 in.

### Type S. S.—Single-Tier



The single-tier standard louver is the most popular general purpose locker. There is ample height for hanging street clothes without wrinkling and a roomy hat shelf

### Type S. D.—Double-Tier



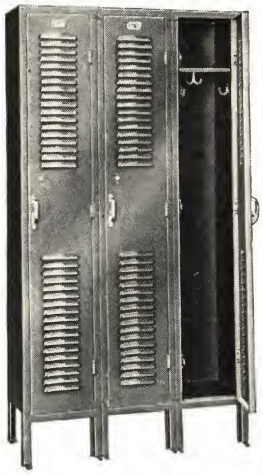
A double-tier standard louver locker which is very desirable where a large number of people must be accommodated in a limited space

### Golf Locker—Single Door



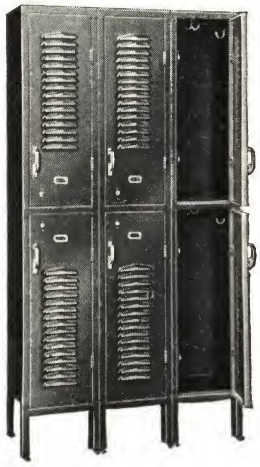
A roomy locker which provides the facilities required by golf clubs. Full louvered doors afford ample ventilation. Are giving entire satisfaction in many of the country's leading clubs

### Type F. S.—Full Louver—Single-Tier



Similar to the Type S. S. but with full louvered door. Recommended where an extra amount of ventilation is required

### Type F. D.—Full Louver—Double Door



Similar to the Type S. D. but with full louvered doors. Widely used wherever the ventilating properties of the full louvered doors are desirable to promote sanitation

### Golf Locker—Double Door



A spacious locker especially constructed to provide room for long coats, sweaters, etc., in addition to golf bags. Inner compartment with a lock for valuables and shelves for shoes, etc. Furnished 24 in. wide by 18 or 21 in. deep by 60 and 72 in. high

### Type G—Combination



For use where individual full length lockers require too much floor space. Six or seven small compartments furnish individual lockers for hats and personal belongings while the large compartment has a rod for hanging coats of the users of the small compartments

### Type S—Compartment



Used wherever it is desirable to provide storage facilities for personal belongings other than overcoats

### Two-Person Locker



Provides private compartments for two people in the floor area of one large single tier locker. Has interlocking device by which hat compartment doors are controlled by the large doors. Three sizes: 15 in. wide, 72 in. high, 15, 18 or 21 in. deep

## LOCKERS RECESSED IN CORRIDOR WALLS

In many new school buildings, locker equipment is being placed in the walls of corridors of the school building, recessed so that only the faces of the lockers are visible.

These details are given to show the size opening required for the recessing of locker equipment.

The height of the opening for recessed lockers should be at least 1 in. greater than the over-all height of the locker without legs.

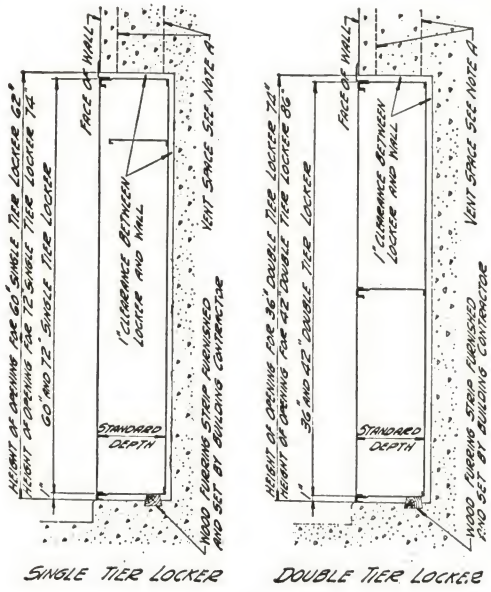
See page 1 for total height of lockers.

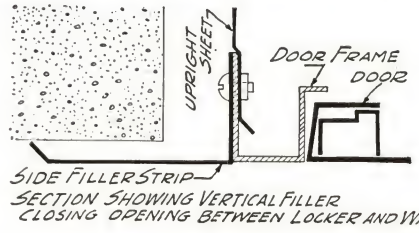
Depth of recess to be 1 in. greater than depth of locker. Width of recesses should be 2 in. greater than the over-all width of the total number of lockers in the group. Example, five lockers 12 in. wide, 12 in. deep by 60 in. high without legs, recessed in one group, the opening should be 5 ft. 2 in. wide, 13 in. deep, 62 in. high.

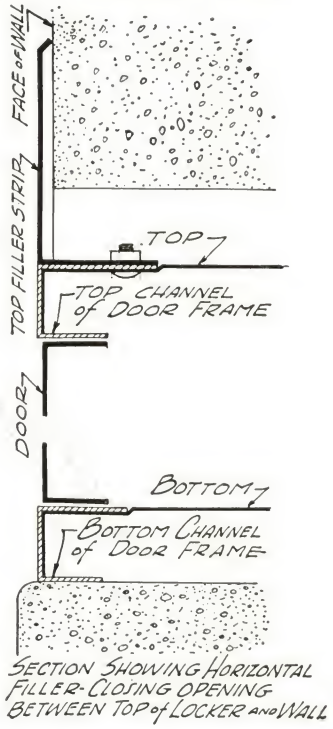
Lockers cannot be set in recesses in groups of more than 15 lockers wide. If space requires more lockers they should be assembled in two or more groups and bolted together after placing in recess.

### Details for Recessed Lockers

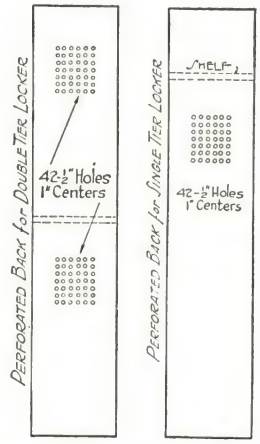
*Lockers Recessed in Corridor Walls*




*Note:* Diagrams above and at left show top and side sections of lockers recessed in walls, including steel recessing strips.




Standard group perforation furnished in back, top, bottom or shelf when specified. Consists of 42 holes ½-in. diameter on 1-in. centers giving a clear perforated area of 8⅔ sq. in. Same number of holes regardless of size of locker.



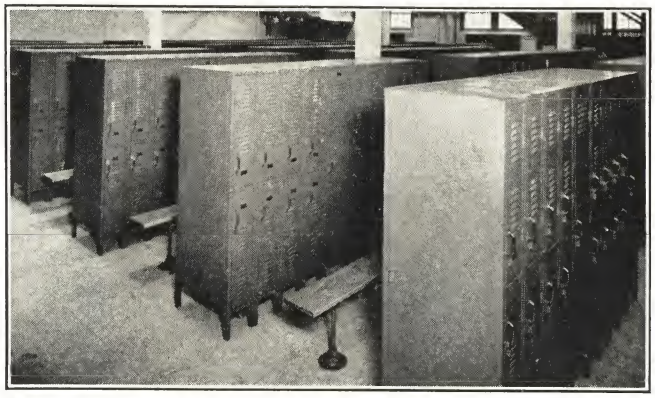
TOP-BOTTOM or SHELF PERFORATION

## TYPICAL INSTALLATIONS OF BERLOY STEEL LOCKERS



**Berloy Steel Lockers Recessed in One of the Corridors of the Pierre S. DuPont High School, Wilmington, Del.**

E. WILLIAM MARTIN, Architect
KARNO-SMITH COMPANY, Trenton, N. J., Contractor



**A Locker Room in the Technical High School, Springfield, Mass., Equipped with Berloy Gymnasium Lockers**

E. C. & G. C. GARDNER and FRANK W. S. KING, Architects
City of Springfield, Mass., owner

## GENERAL SPECIFICATIONS FOR STEEL LOCKERS

**Material**—Doors and door frames shall be made of pickled cold rolled and roller leveled sheet steel. Other parts shall be made from a good grade mild annealed cold rolled and roller leveled steel. All steel to be free from buckle, scale and other imperfections and capable of taking a high grade enamel finish.

**Doors**—Shall be of 16-gauge steel (.0625 in. thick), adequately flanged. Formations shall consist of two right angles at lock side of door; two right angles at hinge side and one right angle formation at top and bottom. All flanges shall be welded together at corners.

**Door Frames**—Shall be not less than 16-gauge steel capable of taking same high grade finish as balance of locker. All parts to be of channel formation securely welded together. Sides of frames shall form a continuous door strike.

**Locking Device**—Shall be a positive automatic type locking device of the pre-locking type whereby locker may be locked while door is open, then closed without unlocking and without damaging locking mechanism. Rubber silencers shall be provided at each latching lug and at top and bottom of latching bar. Latching bar shall be of channel formation and tamper-proof. Handle shall be of the straight lift type enameled or plated and designed to provide a strike for padlock. Handles shall have padlock attachment so that handle or latching device cannot be operated when padlock is affixed (unless hereinafter specified locks are not included in these specifications). There shall be three locking points on single-tier lockers and two locking points on double-tier lockers.

**Locks**—All lockers shall be furnished with built-in master keyed flat key (grooved key or combination locks may be specified if desired) locks of standard manufacture with two keys for each lock. (Padlocks, either of flat key or combination type may be specified.)

**Hinges**—Shall be at least 2 in. wide of the five-loop, tight pin style, to be securely welded to frame and bolted to door with two bolts to each hinge. Locker doors 42 in. high and less shall have two hinges. Doors over 42 in. high shall have three hinges.

**Body**—Body of locker shall be of 24-gauge steel with necessary formation to make rigid locker and to insure tight joints between bolts.

**Finish**—All steel parts shall be thoroughly cleaned and finished with a heavy coat of neutral green enamel (school furniture brown enamel may be specified). Enamel shall be baked on at 250 degrees. Where bolt heads are visible on outside of locker, they shall be finished to match balance of locker. Bolts and nuts to be rustproofed before finishing.

**Number Plates**—Each locker shall have a polished aluminum number plate with black background and etched aluminum numerals not less than ½ in. high. Plates to be attached with split rivets.

**Equipment**—Single-tier lockers shall have one hat shelf, with beaded front approximately 9 in. below top of locker; double-tier lockers no hat shelf. All lockers shall have one double-prong ceiling hook and at least one single-prong wall hook on each side and back. All hooks shall have ball points and be cadmium plated. All hooks shall be attached with two bolts.

**Ventilation**—Door shall have standard louver perforations, not less than six louvers near top and bottom of both single-tier and double-tier lockers.

### For Lockers Recessed in Walls

**Metal Top and End Strips**—Lockers are to be placed in recesses provided for them and the locker contractor is to furnish steel recessing strips 3 in. wide to cover them and the locker contractor is to furnish steel recessing strips 3 in. wide to cover the gap at the ends and across the top of each locker section. Recessing strips to be not less than 18-gauge finished to match lockers and preferably with joint clips where top strips or top and end strips join together.

## BERLOY STORAGE CABINETS, RACKS AND SHELVING

### Berloy Storage Cabinets—Series 8100

Furnished with four adjustable shelves for storage or with one shelf and coat rod for a wardrobe, or in combination with a vertical division in the center with wardrobe space on one side and shelf space for storage on the other.



Storage Cabinet



Combination Storage Cabinets

Made in two depths, 18 and 25¼ in. both 36 in. wide and 78 in. high. Also made in single door type 19½ in. wide, 18 in. deep and 78 in. high for storage or wardrobe.

### Berloy Basket Racks and Wire Baskets

For gymnasium use in schools, Y. M. C. A.'s, clubs, etc., the Berloy Basket System provides a convenient and economical method of storing gym clothing.

A small basket just large enough for gym suit and shoes is provided each individual. A large locker is used for street clothing only when the user is in the gymnasium.

The racks are made of 14-gauge angle uprights, 18-gauge shelves, 20-gauge angle dividers (between baskets) and 14-gauge cross braces. Backs of shelves are formed to provide a stop for baskets. Padlock loops and number plates are included. Racks are usually 8 openings high and 4, 5 or 6 openings wide. Spaces are for baskets 9 in. wide, 13 in. deep, 8 in. high; or 12 in. wide, 13 in. deep, 8 in. high.



Berloy Basket Trucks are made of two standard sections of basket racks bolted back to back and equipped with casters to expedite handling of wire baskets.

Standard baskets to fit Berloy Racks are made of 16-gauge wire 1-in. diamond mesh with reinforcing rod around top and bottom. Baskets are provided with number plates and padlock loops. Furnished in two sizes: 9x13x8 in. and 12x13x8 in.

### Berloy Book Shelf Units

This open book shelf unit will accommodate a greater number of books for the amount of space occupied, costs less and is more convenient.

The Berloy Book Shelf Unit is similar in appearance and construction to the standard library stack and can be used advantageously in law offices, schools, libraries, universities—wherever books are kept.

Each unit is provided with six No. 5224 shelves—adjustable on 1 in. centers. Shelves are fitted into the slotted uprights, and easily rearranged—simply slide into the slotted uprights. Shelves are designed to prevent accidental removal. There is nothing to obstruct the removal of end books.



No 5222 Book Shelf Unit

Shelf units are shipped set up—with or without finished end panels. Only one pair of end panels is required for the exposed ends of each assembly of units. Units can be equipped with any number of No. 5224 shelves.

**Dimensions**—Over all, 36 in. wide, 84 in. high, 9¼ in. deep. Each end panel adds ⅛ in. to over-all width. Clear book shelf space, 34 in wide, 9 in. deep.

**Standard Finishes**—Olive green, also can be furnished in gray or brown.

# DURABILT STEEL LOCKER CO.

502 Arnold Avenue, AURORA, ILL.
SALES OFFICES IN ALL PRINCIPAL CITIES

**Products**

STEEL LOCKERS for all purposes.
STEEL STORAGE and WARDROBE CABINETS.
STEEL GYMNASIUM RACKS and TRUCKS.
TABLE TENNIS TABLES and Equipment.

## There Is a Durabilt Locker to Meet Every Requirement



**High School**
Single tier lockers recessed in corridor walls



**Country Club**
Single tier lockers set on cement bases, double row (back to back)



**Factory**
Single tier lockers, free standing, double row (back to back)



**Office**
Single tier lockers, free standing, set against wall

**For Schools and Gymnasiums**—For clothing storage, the Durabilt Lockers best suited to schools and gymnasiums are the specially equipped full length or Single Tier lockers either recessed in the walls, on concrete bases, or free standing on legs. Where Single Tier lockers are not desired, we recommend the use of Double Tier Lockers. Multiple Tier Lockers, or "Box" Lockers are ideally adapted to storage of gym suits, books, sewing materials, etc. Combinations of any of these types are, of course, available. Durabilt Basket Racks and Trucks for gymnasiums, pools, etc., furnish well ventilated and secure storage facilities.

**For Clubs, Lodges, Hotels, etc.**—As in the case of schools, the specially fitted or equipped interiors of full length or Single Tier Lockers either recessed in the walls, mounted on concrete bases, or free standing on legs, are best suited to clubs, lodges, hotels, etc. Double Tier and Multiple Tier Box Lockers are also widely used in these instances.

**For Factories, Plants, Mills, etc.**—For industrial establishments having large numbers of employees and where floor space is limited, there is available, in place of the full length lockers, a combination of (Box) Lockers and Single Tier Lockers, commonly known as Compartment Lockers. The Multiple Tier Box Lockers are especially useful in storing small tools, aprons, shoes, gloves and such work-day articles.

**For Offices, Stores, Banks, etc.**—For the employees of such commercial establishments, the adaptation of Durabilt Steel Lockers is, of course, dependent upon the number of employees, floor space, interior decoration, etc. Any of the above mentioned lockers either singly or in the innumerable combinations possible, are certain to meet ordinary or special requirements.

## Standard Locker Specifications

**Doors**—Cold rolled, stretcher levelled 16-gauge special enameling steel with square tubular reinforcement housing the latching device, with a channel formation at the vertical edge on the hinge side, and with a flange on top and bottom. This is semi-flexible construction.

**Frames**—Uprights, 1x1x⅛ in., smooth, hard steel angles; cross members, 1½x¾ in. 14-gauge formed steel channels, joined by two $\frac{3}{16}$-in. countersunk rivets at each corner.

**Body**—The remaining parts of locker are made of 24-gauge steel.

**Lock Fingers**—Extra heavy, reinforced fingers made to engage directly with door and so designed that door in closed position is always locked. Fingers, pick and tamper proof, and to release only by operating unlocking device. Three fingers riveted on single tier and two on double tier lockers. All fingers have rubber bumpers for silent operation.

**Unlocking Device with Pre-locking Features**—Lockers equipped with unlocking device so that doors in closed position are always locked unless manually unlocked. This device so constructed that raising of handle silently disengages lock fingers allowing locker door to open. Designed to operate with all standard locks, to permit pre-locking, and to prevent accidental locking of door in open position.

**Handle**—Stamped steel (not cast) straight lift handle with curled grip providing ample space for comfortable hand-hold and attached directly to unlocking bar. Cadmium finish (chromium optional).

**Padlocking Attachment**—This attachment complete with rubber silencers furnished on standard single and double tier lockers at no extra cost.

**Locks**—Masterkeyed locks with two keys each. Combination locks or padlocks can be furnished when specified.



**Single Tier Lockers**

**Hinges**—Full-looped, 5-knuckle "strap" hinge with concealed hinge pin.

**Legs**—Front legs integral with frame. Adjustable feet furnished. Rear legs also adjustable.

**Tops**—All lockers have flat tops unless sloping tops are specified.

**Ventilation**—Louvre perforations of modernistic design in doors, "safety type" 4½ in. wide, $\frac{3}{16}$ in. deep.

**Equipment**—Single tier, one hat shelf 9 in. from top; double tier, no shelf, 12-in. wide lockers, one double prong ceiling and three single prong side hooks. Lockers more than 12 in. wide, one double prong ceiling and four single prong side hooks. All hooks arranged for attaching with two bolts. Coat rod furnished in all lockers 18 in. and deeper when specified.

Coat rods, mirrors, comb trays, towel rods, umbrella racks, drip pans, golf ball trays, golf bag chains, drawers and other special equipment to order.

**Finish**—Standard No. 350 Dark Green Baked Enamel and No. 466 Brown Baked Enamel. Other colors at reasonable extra cost. Coat hooks, bolts and nuts, Cadmium or Parkerized finish. All outside bolt heads are slotless type.

**Number Plates**—Modernistic design, solid brass, Butler nickel finish, $\frac{7}{16}$-in. black filled numerals.

**Sizes**—Widths: 9, 12, 15, 18 and 24 in.; depths: 12, 15, 18, 21 and 24 in.; heights: 60 and 72 in. single tier; 30, 36 and 42 in. double tier.



**Multiple Tier (Box) Lockers**

## Multiple Tier (Box) Lockers

Multiple Tier (Box) Lockers conform in general with specifications of standard lockers with following exceptions:

**Doors**—Flanged on all edges.

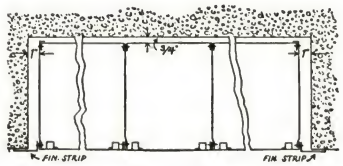
**Frames**—Same as standard lockers with 20 gauge intermediate channel cross members between door openings.

**Combination Handle and Padlock Attachment**—All Multiple Tier (Box) Lockers are furnished with neatly formed stamped steel (not cast) straight-pull curl handle combined with padlock attachment. When doors are closed, spring clips keep them shut.

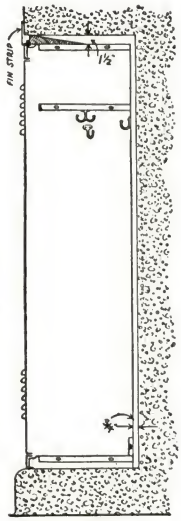
**Equipment**—No hooks or shelves.

**Sizes**—Widths: 9, 12, 15 and 18 in.; depths: 12, 15, 18, 21, and 24 in.; heights: 12, 15, 18, 20, 21, and 24 in. Usually furnished in tiers four to six high. Also combinations of Lockers and Multiple Tier (Box) Lockers in all sizes.

## Recessed with Top and End Finishing Strips




**Floor Plan**




**End View**

Recessed type lockers are made without legs. When building recesses, the width should be 2 in. greater than total nominal width of lockers. Depth of recess should be at least ¾ in. greater than depth of lockers. Height should be approximately 1½ in. greater than height of lockers.

When lockers are recessed, it is necessary to close up the top and ends of recesses where the lockers fit in. For this purpose we furnish steel finishing strips enameled in the same color as the lockers.

Concealed joint clips are used to engage top and end strips or adjoining top strips. This eliminates unsightly screw heads on exterior surface. When joint clips are engaged, there is a spring contact holding the finishing strips in alignment with a smooth, flush butt joint, making a finishing strip free from exposed screw heads.

# W. L. EVANS CO.

Main, South and Mill Streets
WASHINGTON, IND.

## EVANS VANISHING DOOR WARDROBES

*EVANS VANISHING DOOR is Patented in United States, Canada, and Foreign Countries*

### Adaptability and Advantages

Evans Vanishing Door Wardrobes are designed for use in Schools, Hotels, Hospitals, Offices, Apartments, and Homes and offer the following advantages:

(1) Saving of space, as the doors in opening swing back into the wardrobe entirely out of the way.

(2) Ease of operation, as doors swing as easily as on common butt hinges.

(3) Quietness, with no tracks or guides to rattle and squeak.

(4) Low cost, due to the simplicity of the operating hardware.

(5) Ease of installing, due to the accuracy in cutting the wardrobe parts and the simplicity of the hardware.

(6) Perfection of ventilation, both of the wardrobes and as a medium for ventilating the rooms in which they are installed.

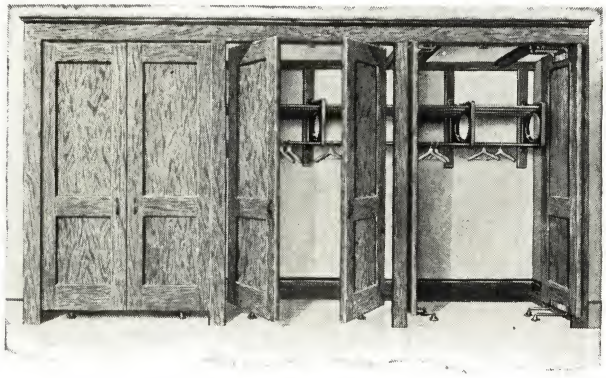
### Ventilation

Ventilation is ordinarily provided by setting the doors up off the floor so that the air from the room (the used air always settles to the floor) is drawn into the wardrobes under the doors, passes upward through the wardrobes (drying wet or damp clothing that may be in the wardrobes) and through the wire mesh ceiling into the space above the wardrobes which is connected to the vent stacks. If the ceiling is plastered, small vents may be provided instead of a wire mesh ceiling over the entire top, or, if desired, openings may be made at the ends or backs of the wardrobes with connections to the vent stacks.

*Trade Mark*
"VANISHING DOOR"
*Reg. U. S. A. and Canada*

### Simplicity

Simplicity was the predominant idea in designing the hinges, hence a hinge consisting of double pivoted arms, with no tracks, guides, rollers, or other intricate mechanism that might cause the doors to stick or bind, or to require repairs or adjustments from time to time. There is no adjustment provided for the hinges, as once they are properly installed (which is easily accomplished) there is no way for them to get out of adjustment. Each door is opened independently of the others and with such quietness and ease that simultaneous operation of all doors from a master door, through the use of complicated rods and levers, is unnecessary.



Wardrobe Style "X"

**STANDARD WARDROBES**

| STYLE OF WARDROBES with doors (and ends, backs and partitions when used) made PANELED | | FLUSH | | Ends and backs | Partitions | Ceiling | Mullions |
|---|---|---|---|---|---|---|---|
| 4′-0″ units | 5′-0″ units | 4′-0″ units | 5′-0″ units | | | | |
| I | I-5 | C | C-5 | Wood | Wood | Wire mesh | Yes |
| X | X-5 | P | P-5 | Plaster | None | Plaster | Yes |
| A | A-5 | B | B-5 | Plaster | None | Plaster | No |

Units can be made up separately or any number of units (including 2 ft. 0 in. and 2 ft. 6 in. single-door units, as well as the 4 ft. 0 in. and 5 ft. 0 in. double-door units) can be arranged together in a single wardrobe.

Standard height of door opening is 6 ft. 0 in. and minimum depth with garment hanger interior is 2 ft. 0 in. Either "Floor" type or "Jamb" type hinges can be used on any of the wardrobes.

Interior of "racks and garment hangers" or "shelves and hooks" can be furnished at the same price, and a solid metal top in place of a wire mesh can be furnished at no extra cost.

A five-shelf bookcase can be furnished for either double or single-door units in place of pupils' interior at no extra charge.

Continuous blackboards can be furnished for wardrobes without mullions and individual blackboards on all other wardrobes.

Umbrella Racks and Overshoe Receptacles are extras.

Standard wardrobes are made to set in a recess flush with the wall; however, exposed ends and tops can be furnished for any of the wardrobes, as an extra, so they can be set against the wall if desired.

While we prefer furnishing the wardrobes complete, we will furnish the doors with hinges only, or the hinges only, if desired.

### Specifications

All wardrobes shown or indicated on the plans shall be the Evans Vanishing Door Wardrobes as made in the white knock-down by W. L. EVANS Co., Washington, Indiana, to be installed in the white and finished by the contractor. Wardrobes shall be as follows:

Style.....made to set {*in a recess flush with the wall* / *against the wall with an exposed top*}

in.....lengths, of.....
*(length of wardrobes)* *(kind of wood)*

with {*panel* / *flush*} doors, {*wood* / *plaster*} ends and backs, {*plaster* / *wire mesh*} ceiling, {*with* / *without*} partitions, using {*Floor* / *Jamb*} type hinges, with interior arrangement of {*racks and garment hangers* / *shelves and coat hooks*} and {*with* / *without*} mullions between the pairs of doors.

### Recess Dimensions

The recess length, from finished plaster to finished plaster, should be the total length of the units plus 1 in.; that is, 10 ft. 1 in., 12 ft. 1 in., 16 ft. 1 in., etc. The standard depth (which may be varied), is 2 ft. 2 in. from finished plaster to finished plaster, and the height is 6 ft. 4¼ in. from the floor to the finished plaster (or rough opening, if wire mesh or metal top is used) above.

*Note: For continuous-door wardrobes, without mullions, the recess length is the total length of the units with nothing added.*

### Catalog

All wardrobes are described, with illustrations and details, in our catalog which will be sent promptly on request.

# THE J. G. WILSON CORPORATION

**ESTABLISHED 1876**

GENERAL OFFICES
1841 Broadway
NEW YORK, N. Y.

FACTORY
P. O. Box 599
NORFOLK, VA.

CABLE: "WILCORP, NEW YORK"
OFFICES IN ALL PRINCIPAL CITIES

For Overhead Type and Rolling Doors, Partitions and Venetian Blinds, see File Index

## WARDROBES—ROLLING FRONT TYPE

Wilson Wardrobes, which have been an important feature of school equipment for many years, are recognized as standard by many architects, and are in use in hundreds of schools.

They may be placed in the classrooms or corridors, eliminating cloakrooms, thus reducing the size and cost of the buildings without loss of seating capacity.

TRADE-MARK

A 12-foot wardrobe of 3 standard 4-foot sections, has accommodations for 50 pupils. The fronts operate easily, are out of the way, opened or closed, and may be provided with blackboard surface where necessary.

The entire Wilson Wardrobe and its equipment are made at our own plant and backed by our own guarantee.

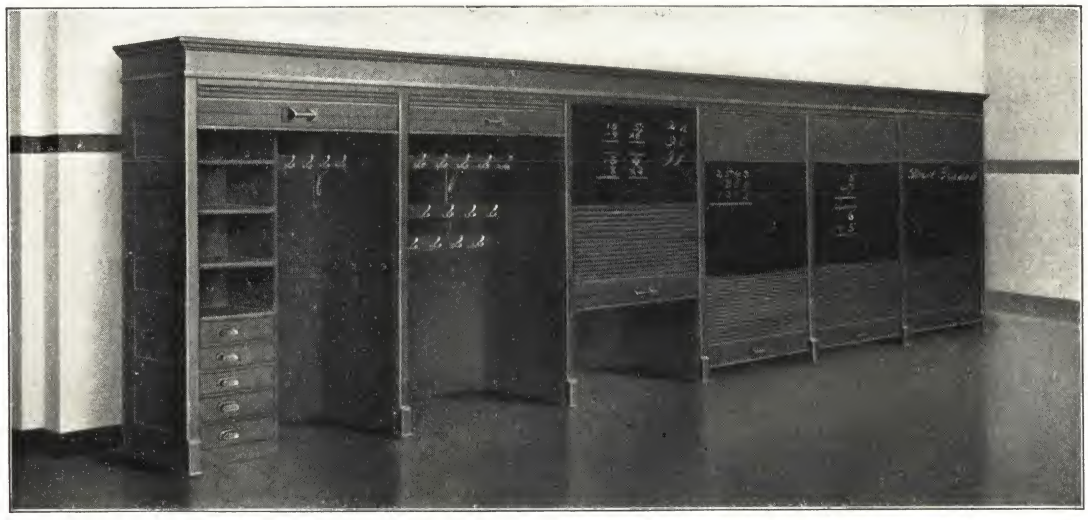
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The Wilson Rolling Front Wardrobe has been manufactured since 1876 and has been used in buildings of inexpensive character as well as in the more elaborate ones.

The fronts are made of various kinds of wood slats strung on steel bands spaced about 18-in. apart, attached to anchor springs in the baseboard to allow for shrinking and swelling due to atmospheric changes. They roll around spring counter balanced shafts, and are easily raised and lowered by pupils of all ages.

**No Floor Guides or Tracks are Used**—When the fronts are raised there is no obstruction on the floor, which may be cleaned as easily as the classroom floor itself (see illustration). Where required, blackboard surface may be applied to them, affording additional blackboard area.

There is less likelihood of damage through misuse or rough handling with this type of wardrobe, and installations made 25 and 30 years ago are still giving satisfaction. They reduce maintenance costs to a minimum.



**A Wilson Type "B" Rolling Front Wardrobe Accommodating 100 Pupils**

Note blackboard surface on rolling fronts, and lack of floor obstruction

*Details, Specifications and Further Information Covering the Above Will be Furnished on Request*

# LYON METAL PRODUCTS, INCORPORATED

935 Montgomery Street, AURORA, ILLINOIS

FACTORIES: Aurora and Chicago Heights, Ill. PLANTS: Los Angeles, Calif.; Jersey City, N. J.

Sales Offices in All Principal Cities—Consult Your Classified Telephone Directory



Double Tier Locker



Two-Person Locker



Gymnasium Locker



Box Locker

## LYON STEEL LOCKERS

For over 30 years Lyon has been providing Lockers for schools, institutions, churches, fraternal organizations, clubs and public buildings. Over 8,000,000 Lyon Lockers are in use; millions more than any other make. Outstanding quality, service, appearance and quiet operation has made this achievement possible. A few of the engineering refinements are illustrated at the bottom of this page. Lyon products, produced by master craftsmen continue to enjoy the highest regard with the architectural profession and building trade.

Lyon factory trained representatives located in all principal cities will gladly co-operate when plans and specifications are being prepared. Experienced erection mechanics assure a satisfactory installation.

## LOCKERS FOR EVERY STORAGE REQUIREMENT

**Gymnasium Lockers**—The gym locker unit handles in a most satisfactory manner the problem of storing gym clothing and safeguarding street apparel while the student is attending gym classes. Unit consists of one full height locker and the smaller compartments vary as to number of gym classes per day—small compartment stores gym clothes. Street apparel is hung without being mussed or wrinkled in full height locker during gym class and padlock transferred from small compartment.

One unit to accommodate 6 students with compartments 9 in. wide uses space only 27 in. wide—single tier lockers would require 54 in. The service of an attendant is not required.

**Single Tier Lockers**—For locker rooms, recessed corridors, and wherever long garments and complete change of clothing is stored.

**Double Tier Lockers**—Where floor space is restricted or for short period occupancy the double tier locker is very satisfactory.

**Two-Person Lockers**—Private compartments for two persons in a floor area ordinarily occupied by a single locker. Each large door has an individual lock and controls the hat compartment door above.

**Box Lockers**—For individual tools, equipment, supplies, and personal belongings, domestic science, vocational training, etc.—wherever small locked compartments are required. Furnished with flat key lock or padlock attachment.

**Seven and Eight-Person Lockers**—Designed to accommodate seven or eight persons in a minimum floor area. Small compartment key opens full height compartment but no other locker. Key cannot be removed from large door until door is closed and locked.

All lockers are available in a variety of sizes; see table at right.



Single Tier Locker

**Single Tier**
Widths—
9″, 12″, 15″, 18″, 24″
Depths—
12″, 15″, 18″, 21″, 24″
Heights—
60″, 72″, plus 6″ legs

**Double Tier**
Widths—
9″, 12″, 15″, 18″
Depths—12″, 15″, 18″
Heights (without legs)
30″, 36″, 42″
Average heights—
60″, 72″, 84″ plus 6″ legs

**Two-Person**
Width—
15″
Depths—
15″, 18″, 21″
Heights—
72″, plus 6″ legs

**Box Locker**
Widths—
9″, 12″, 15″, 18″
Depths—12″, 15″, 18″
Heights—
12″, 14⅖″, 15″, 18″, 20″, 24″

**Seven-Person Locker**
Width—36″ (one large and one small compartment 21″, six small compartments 15″)
Depth—20″
Height—72″ plus 6″ legs (small compartments 11⅝″)

**Eight-Person Locker**
Width—54″ (large and small compartment 18″)
Depth—20″
Height—72″ plus 6″ legs (small compartments 11⅝″)

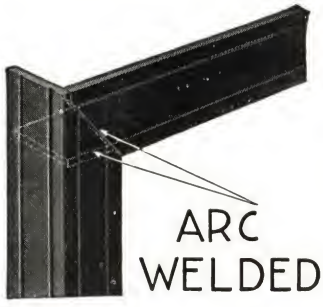
**Gymnasium Locker**
Recommended size—Full height section: 9″w x 12″d x 60″h. Triple tier: 9″w x 12″d x 20″h.

Available also in any combination of single tier and box lockers to make up same depth and height.

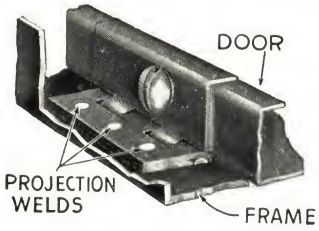
### The Complete Lyon Line

These Catalogs sent on request.

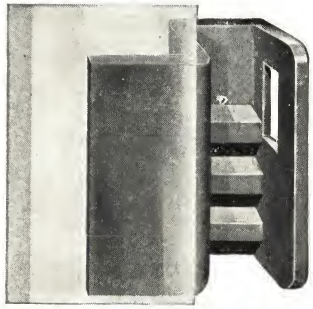
| | | | |
|---|---|---|---|
| Lockers | No. 233 | Folding Tables and Chairs | No. 850 |
| Cloakrobe | No. 242 | Shop Robe | No. 240 |
| Commercial Shelving | No. 118 | Display Fixtures | No. 1260 |
| Standard Shelving | No. 120 | Automotive Equipment | No. 1534 |
| Shop Equipment | No. 323 | Basket Racks | No. 233 |
| Storage Cabinets | No. 421 | Blueprint Cabinets | No. 471 |
| Folding Chairs | No. 835 | Enclosure Panels | No. 117 |




Upright and Horizontal Hard Steel Angle Rabbeted and Welded




Projection Welds at All Vital Points Where Strength Is Needed Most



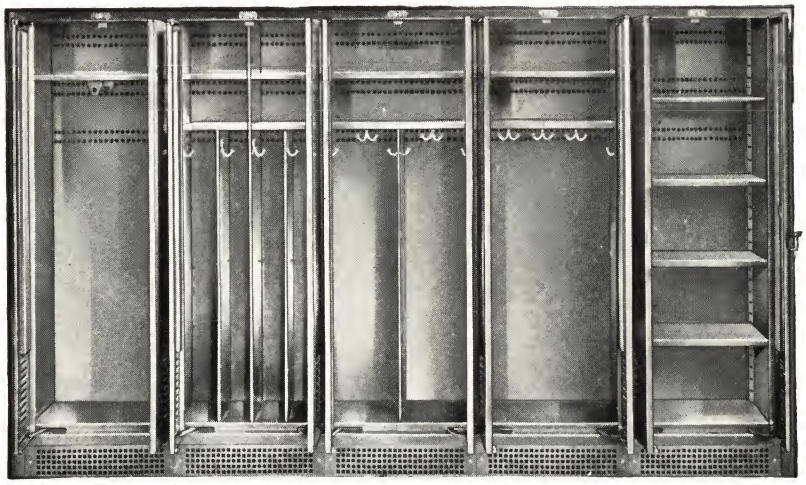
Rubber Silencers in Door Jamb and Wherever Metal Contacts Metal



Standard Handle Cannot Snag Clothing
Easy and Quiet Operation

LYON METAL PRODUCTS, INCORPORATED

## THE LYON CLOAKROBE



**Teachers' Cabinet**
Fitted with shelf and coat rod. Two handles and flat key lock

**Four Compartments**
Four individual hat compartments; four individual coat compartments, each fitted with one single prong hook

**Two Compartments**
Two shelf compartments; two coat compartments, each fitted with one double prong and two single prong hooks

**Without Partitions**
Two shelf compartments, one coat compartment with three double prong hooks and two single prong hooks

**Books and Supplies**
Fitted with four shelves, adjustable on 2-in. centers, two handles and flat key lock



**One Master Door and Key**
Easy to operate. Opening and closing master door actuates all in battery of 10 accommodating 40 pupils

*The above illustrates the variety of interior arrangements which may be selected.*

### EFFICIENT—SAFE—SANITARY—CONVENIENT CLOTHES STORAGE

*Saves Space and Building Costs*




*Cost for purpose of this calculation 35¢ per cu. ft.

## CLOAKROBE

Designed primarily for grade schools. Provides absolute teacher supervision over pupils' belongings. Single master door control—free air circulation about clothing. Attractive and will enhance the appearance of any classroom or corridor.

Ample storage space is provided with a variety of interior arrangements to meet specific requirements. Door for teachers' storage cabinets and wardrobe is individually operated. All of Lyon proven locker refinements are built into Lyon Cloakrobes.

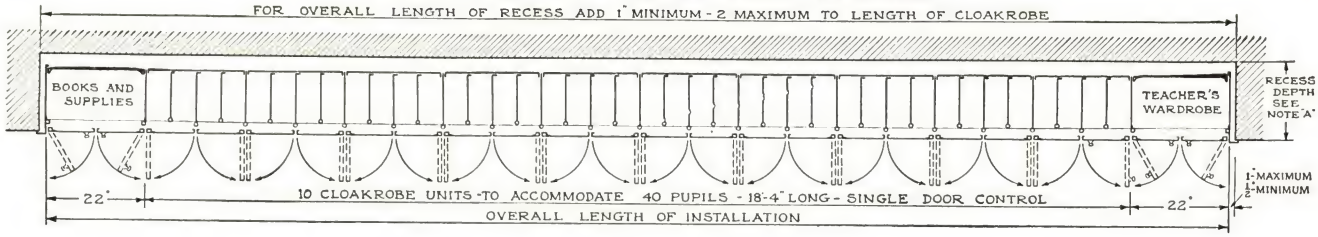
Built of steel—fire resisting, verminproof, durable. Fitted with close-fitting, quiet operating doors that will not sag, warp, shrink nor bind. Write for complete Catalog No. 242.

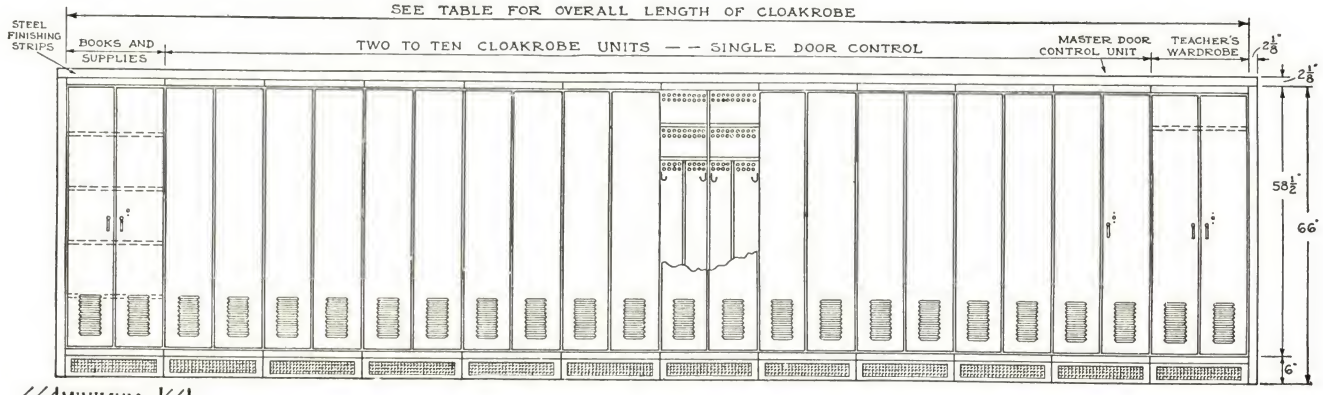
### Space and Cost Saving Features

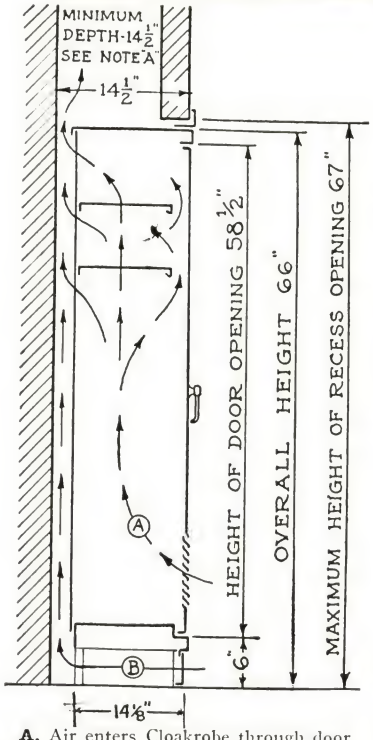
Lyon Cloakrobe permits substantial savings in building cost. In a ten-room school of typical 22x32 ft. 40-pupil classroom with floor to floor height of 13 ft. 4 in. the saving often runs as high as $1,239.00 ($124.00 per room). Sketches above show difference in wall depth requirements between Cloakrobe and two conventional school wardrobes, all three recessed for ventilating systems. A greater saving is possible when used in place of conventional cloakrooms.

Finished floor and wall under and behind Cloakrobe can be eliminated. The Cloakrobe is a self-contained unit and requires no special framing or wall construction.

# ARCHITECTS DETAILS AND SPECIFICATIONS




**A.** Air enters Cloakrobe through door louvres, circulates around clothing and passes out into vent through holes in back. Dimension behind wardrobe should be in accordance with State requirement.

**B.** Foul air is drawn off floor through grilles at bottom of Cloakrobe into vent

**OVER-ALL LENGTH OF ASSEMBLIES**

| Sections | Pupils | Assembly length | Recess length |
|---|---|---|---|
| 2 | 8 | 3′ 8″ | 3′ 10″ |
| 3 | 12 | 5′ 6″ | 5′ 8″ |
| 4 | 16 | 7′ 4″ | 7′ 6″ |
| 5 | 20 | 9′ 2″ | 9′ 4″ |
| 6 | 24 | 11′ 0″ | 11′ 2″ |
| 7 | 28 | 12′ 10″ | 13′ 0″ |
| 8 | 32 | 14′ 8″ | 14′ 10″ |
| 9 | 36 | 16′ 6″ | 16′ 8″ |
| 10 | 40 | 18′ 4″ | 18′ 6″ |

**Not Recessed** — Lyon Cloakrobes may be used as free standing wardrobes against classroom wall. When used in this manner special end panels are supplied.

## Recessing Lyon Cloakrobes

The sketches show the method of recessing Lyon Cloakrobes, and give the architect or builder suggested dimensions for preparing these recesses.

Recesses are provided by the builder as shown in the plans, arranged to receive the locker. Locker contractors provide finishing strips at ends and across the top of all recesses. These strips will be so attached as to form a neat, smooth trim matching the Cloakrobe.

## Architect's Specifications for Cloakrobes

Cloakrobe sections to be furnished [and installed] in classrooms [or corridors], in recesses provided by contractor, as per drawings furnished and specifications below.

Each Cloakrobe section to be 22 in. wide, 14 in. deep and 66 in. high over all.

Sheet steel material to be the best mild annealed patent leveled, free from buckle, loose scale or other imperfections. Tops, bottoms and ends to be 20-gauge; partitions and backs 24-gauge; doors 18-gauge with 22-gauge pan reinforcements. Shelves 24-gauge; grille base 16-gauge.

*Interior arrangement to consist of:*

(a) Four hat and book compartments, 11 in. wide, 7½ in. high; four coat compartments: Outside two 6 in. wide, inside two 5 in. wide, 44 in. high—each fitted with one single prong hook.

(e) Two shelf compartments 22 in. wide, 7½ in. high; two coat compartments 11 in. wide, 44 in. high, each equipped with two single prong and one double prong hooks.

(d) Two shelf compartments 22 in. wide, 7½ in. high; one coat compartment 22 in. wide, 44 in. high fitted with three double prong hooks, and two single prong hooks.

(Use one of above as required—see preceding page).

Each unit fitted with one pair of doors, both operated simultaneously by a single master control door at right hand end of Cloakrobe. Doors to swing on pivot type hinge, and to be provided with rubber cushions to insure quiet operation.

The right-hand door of master unit to control the operation of both doors simultaneously on all units up to and including ten. Controls are to be fitted with strong easily gripped die-cast handle, and a six-lever flat key lock. Operating mechanism to be built so that doors cannot be opened or closed independently to insure absolute teacher control.

Door operating mechanism to be concealed in base behind ventilation grille.

Shelves and backs to be perforated and all doors louvred at bottom only for ventilation.

All steel parts to be thoroughly cleaned before finishing; to be finished with a heavy coat of baking enamel, baked on at 200 degrees or above. Finish must stand a rigid hammer test without flaking.

## Optional

Teacher's wardrobe, bookcases and storage cabinets recessed with, but not connected to the simultaneous door control. To be recessed with regular Cloakrobe. Each teacher's wardrobe, bookcase and storage cabinet to be provided with two handles and separate flat key lock. Over all size same as Cloakrobe section—22 in. wide, 66 in. high, 14 in. deep.



**Wardrobe and Storage Cabinets**

*Note:* If desired, special wardrobe and storage cabinet may be specified for use separate and apart from Cloakrobe; size 36 in. wide, 18 in. deep, 72 in. high

MEMORANDA

# FRED MEDART MANUFACTURING CO.

## Steel Lockers, Wardrobes, Shelving and Cabinets, Gymnasium and Playground Apparatus, Gym Seats and Swimming Pool Equipment

326 W. Madison Street
CHICAGO, ILL.

3562 DeKalb Street
ST. LOUIS, MO.

16 W. 61st Street
NEW YORK, N. Y.

Engineering and Sales Service in Principal Cities—Consult Your Telephone Directory

For Our Page on Basket Ball Backstops, see File Index

## MEDART STEEL LOCKERS

**Doors**—Made of 16-gauge sheet steel, reinforced by flanging top and bottom edges, and channeling side edges. Doors finished with depressed panel.

**Frames**—Made of 16-gauge sheet steel, formed into channel shape with rolled inner edge. Upright and cross members electrically welded together, making a true, square and rigid frame.

**Body of Locker**—Backs, sides, tops and bottoms are made of 24-gauge steel.

**Locking Device**—Three-point rubber-cushioned contact in single-tier lockers; two-point contact in double-tier lockers. Doors are prelocking self-latching type.

**Door Handle**—Automobile type, made of non-rustable aluminum alloy, die cast.

**Locks**—As selected from catalogue.

**Hinges**—Double tier locker doors hung on two hinges; single tier locker doors hung on three hinges; 72-in. doors on four hinges. Hinges bolted to inside of door and electrically spot-welded to frame. Bolts equipped with lock washers.

**Legs**—Adjustable front legs to overcome floor irregularities. According to width of lockers and grouping, legs are spaced 30 to 36 in. apart with clearance of 4⅞ in. above floor.

**Cabinet Base**—An extra 4⅞-in. cabinet base can be furnished at an additional charge.

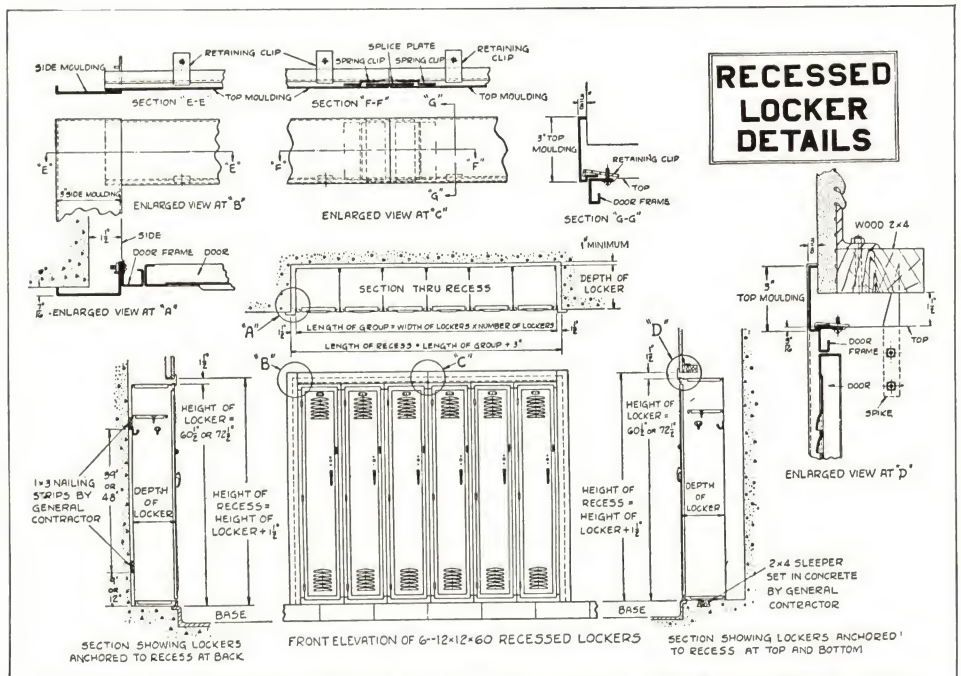
**Ventilation**—All standard locker doors are louvred at top and bottom to provide ventilation 3 louvres top and bottom for 36 and 42-in. lockers, 6 louvres top and bottom for 60-in. lockers and 9 for 72-in. lockers.

**Standard Finish**—School furniture brown or olive green. All parts are thoroughly cleaned before enameling; enamel is baked on to hard finish.

**Hooks**—Made of malleable iron, cadmium plated. Lockers 12 and 15 in. deep have 3 single-prong wall hooks and one double-prong ceiling hook; lockers more than 15 in. deep have single-prong wall hooks.

**Shelves**—Rolled in front and bolted to sides. Multiple tier lockers do not have shelves. Extra shelves can be provided.

**Numbering**—All lockers are equipped with aluminum number plates with black etched numerals.



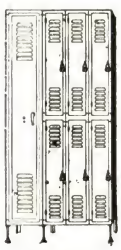

These scale drawings show method of recessing lockers and give detailed dimensions of lockers and of recesses to accommodate them. Further information will be furnished on request.



**Single Tier**
9x12x60″
9x15x60″
*12x12x60″
*12x15x60″
*12x18x60″
*15x15x60″
*15x18x60″
*12x12x72″
*12x15x72″
*12x18x72″
*15x15x72″
*15x18x72″
*18x18x72″
18x24x72″



**Double Tier**
9x12x36″
9x15x36″
*12x12x36″
*12x15x36″
*15x15x36″
12x12x42″
*12x15x42″
*15x15x42″



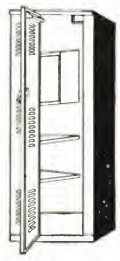
**Gym Suit**
(Shown with Single Tier)
9x12x30″–2 tier
9x12x24″–3 tier



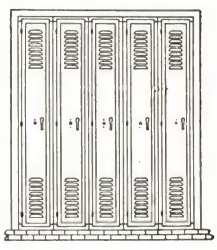
**Box**
*12x12x12″–5 tier
*12x12x12″–6 tier
*12x15x12″–5 tier
*12x15x12″–6 tier
*15x15x15″–4 tier
18x18x12″–5 tier
18x18x12″–6 tier



**Two-person**
15x15x72″
15x18x72″



**Golf**
24x20x60″
Private inner compartment, 3 shelf spaces, hooks and coat rod, golf ball rack.



**Recessed Lockers**
Moulding furnished to match lockers. See recess details

*Locker sizes given are width by depth by height.*
*Standard finishes: Olive green or school furniture brown.*

FRED MEDART MANUFACTURING CO.

# STEEL WARDROBES FOR GRADE SCHOOL CLASSROOMS



*9 Lockerobe pupil units with 22-in. bookcase on left and 22-in. teacher's wardrobe on right.*



*Kindergarten with 9 Lockerobe pupil units.*



*9 Lockerobe pupil units with 22-in. teacher's wardrobe on right.*

**Pioneered by 'Medart'**

**THE**

# LOCKEROBE

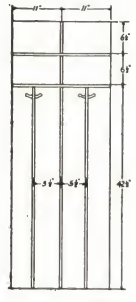
TRADE MARK REGISTERED

Medart Lockerobes—the original Steel Wardrobes with simultaneous door control establish a new standard in Wardrobe Equipment. Hundreds of installations during the past 5 years best evidence the national approval accorded this product. Constructed entirely of steel, the Lockerobe is strictly sanitary, fire resisting, termite-proof, and easy to keep clean.

## General Information

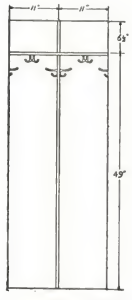
A Lockerobe classroom assembly consists of as many as 12 pupil units, each of which is 22 in. wide and enclosed by one pair of simultaneously controlled doors. Various interior arrangements for the storage of pupils' clothing, books, etc., are available. (See below.) The Lockerobe is a complete, self-contained assembly with all parts finished at factory and interchangeable. A simple door operating mechanism eliminates future maintenance problems. May be had recessed or free standing. When recessed, Lockerobes require a recess depth of only 16 in. This dimension when contrasted to depth required by conventional type wardrobes represents an unusual opportunity to reduce classroom cubage and cut building costs, recesses may be left unfinished. Lockerobes serve as an important adjunct to established ventilation systems (note following page). Auxiliary units—Teacher Wardrobes, Bookcases, and Combination Teacher Wardrobes and Bookcases, in 22 or 36-in. widths, and with doors operating independently of pupil unit doors, are available.

## Interior



**Interior "A"**

*Provides 4 individual hat and 4 individual coat compartments in each pupil unit. Popular. Accommodates 4 pupils.*



**Interior "B"**

*Provides 2 individual hat compartments and 2 individual coat compartments. Recommended for military schools, etc. Accommodates 2 pupils.*

**Partial List of Towns in Which Lockerobes Are Installed**

Augusta, Ga.
Beatrice, Neb.
Branchville, S. C.
Buffalo, Ky.
Catskill, N. Y.
Charlotte, N. C.
Chattanooga, Tenn.
Chicago, Ill.
Cincinnati, Ohio
Cleveland, Ohio
Collyer, Kan.
Danville, Va.
Gadsden, Ala.
Gaffney, S. C.
Gulfport, Miss.
Halifax, Va.
Havre De Grace, Md.
Healdsburg, Cal.
Hempstead, N. Y.
Hillside, N. J.
Jackson, Miss.
Jasper, Ind.
Johnstown, Pa.
Knoxville, Tenn.
Logan, Utah
Long Beach, N. Y.
Minneapolis, Minn.
Mt. Pleasant, Mich.
Odessa, Del.
Oregon City, Ore.
Overton, Tex.
Pensacola, Fla.
Ponca City, Okla.
Putnam, Conn.
Rochester, N. Y.
Rock Hill, N. C.
St. Louis, Mo.
Shakopee, Minn.
Sikeston, Mo.
Smyrna, Del.
South Bridge, Mass.
Terrell, Tex.
Thomasville, N. C.
Urbana, Ill.
Warm Springs, Cal.
Washington, D. C.
Wayne, Neb.
Westfield, N. J.
Wheeling, W. Va.

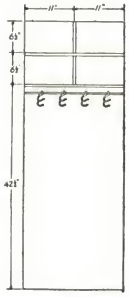
## Simultaneous Door Control

Special attention is directed to the Medart method of simultaneous door control. The right-hand master control door opens all right-hand doors; the left-hand master control door opens all left-hand doors. When doors are fully opened, a safety device prevents right-hand doors from closing until all left-hand doors are first closed. School officials approve this safety feature; it is important, especially when equipment is to be used by children of elementary school age. This safety factor in Medart Lockerobes merits your careful investigation.

## Engineering Service. Cost; Miscellaneous Data

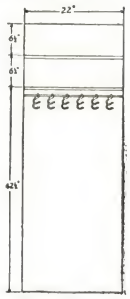
The initial cost of Lockerobes is surprisingly low; future maintenance cost is avoided. Interested architects are urged to consult with "Medart" for complete details including competent engineering service concerning the adoption of Lockerobes to the individual school problem.

## Arrangements



**Interior "C"**

*Provides 4 individual hat compartments and a coat rod with 4 sliding coat hooks. Accommodates 4 pupils.*



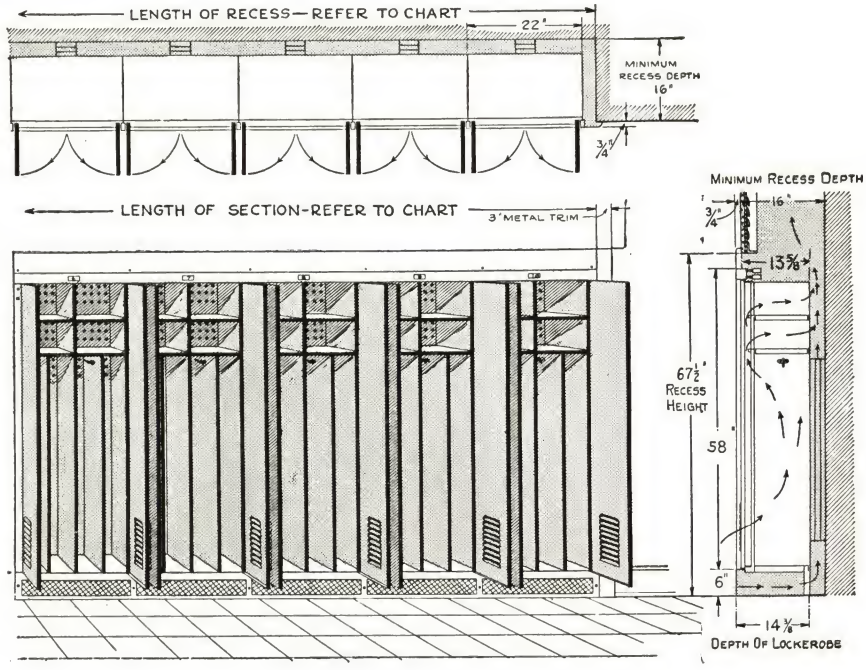
**Interior "D"**

*Provides 2 full width hat shelves and coat rod with 5 or 6 sliding coat hooks. Very popular. Accommodates 5 or 6 pupils.*

## LOCKEROBE RECESS DETAILS

Chart showing number and length of Lockerobe units and length of recess required to accommodate given number of pupils in classroom:

| Number of pupils | Units required | Over-all length of Lockerobes ft. | in. | Length of recess ft. | in. |
|---|---|---|---|---|---|
| 8 | 2 | 3 | 9½ | 3 | 11½ |
| 12 | 3 | 5 | 7½ | 5 | 9½ |
| 16 | 4 | 7 | 5½ | 7 | 7½ |
| 20 | 5 | 9 | 3½ | 9 | 5½ |
| 24 | 6 | 11 | 3 | 11 | 5 |
| 28 | 7 | 13 | 1 | 13 | 3 |
| 32 | 8 | 14 | 11 | 15 | 1 |
| 36 | 9 | 16 | 9 | 16 | 11 |
| 40 | 10 | 18 | 7 | 18 | 9 |
| 44 | 11 | 20 | 6½ | 20 | 8½ |
| 48 | 12 | 22 | 4½ | 22 | 6½ |




## HOW TO SPECIFY THE LOCKEROBE

*When Recessed and in Conjunction with Forced Ventilating System*

In each classroom, as shown on plans and as covered by this specification, install as many steel wardrobe (Lockerobe) units as will completely fill the total length of 16-in. deep recesses provided for wardrobe purposes.

Each wardrobe unit to be approximately 22 in. wide, 14 in. deep, and 64 in. high—to be made entirely of steel, with tops, bottoms, sides, backs, shelves, and coat compartment dividers not less than 24-gauge, doors not less than 18-gauge, and frame not less than 16-gauge best quality sheet steel. All parts to be interchangeable, finished in School Furniture Brown baked-on enamel, shipped knocked-down, and assembled in the required number of units per section by bolting together.

Each pupil's wardrobe unit to have interior arrangement as follows: Two shelves and three vertical dividers providing four individual book and hat compartments size 6½ in. high, 11 in. wide, and 12 in. deep approximate inside dimensions, and four individual coat compartments size 42 in. high, 5½ in. wide, and 12 in. deep approximate inside dimensions. Each coat compartment to have one single prong rustproofed coat hook. (Interior arrangement may be altered as desired. See page opposite.)

Each unit to have one pair of doors opening and closing in opposite directions, controlled and operated by master doors located anywhere in an assembly of units.

The right-hand master control door to be equipped with aluminum alloy die-cast handle, with grooved key lock and two keys, to lock all doors. The left-hand master control door to be equipped with concealed handle exposed only when right-hand control door is open. Right-hand control door to operate right-hand doors of all units simultaneously; left-hand control door to operate left-hand doors of all units simultaneously. Doors shall not open independently of each other but, as described above, shall provide absolute teacher control as made possible by the system which is commonly described as multiple or simultaneous control.

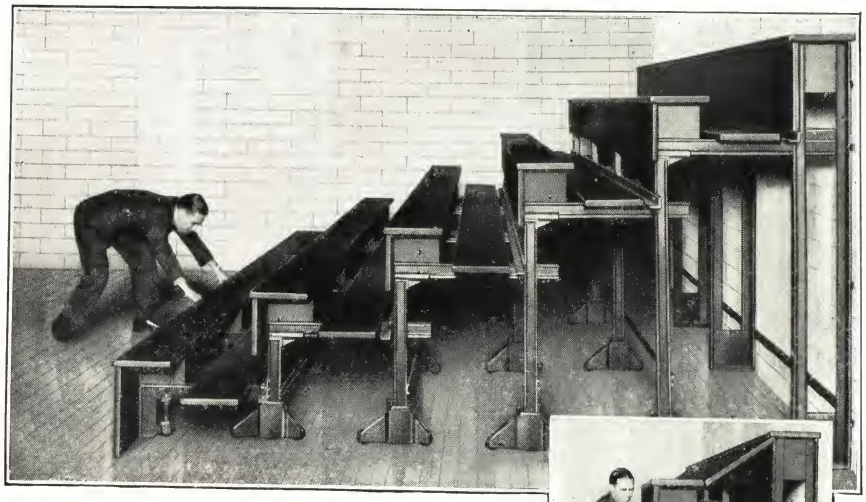
Door operating mechanism to be concealed above wardrobe units, attached to top frame member and accessible by removing top metal trim. Doors to be of continuous hinge type pivoted at top and bottom, operating easily and quietly and closing against rubber cushions. *Door-operating mechanism to be provided with safety device so that when doors are fully opened, right-hand doors cannot be closed until left-hand doors are first closed.*

Doors to be louvred at bottom only, shelves to be perforated and backs to be perforated for ventilation. Provide 4½-in. high metal base with removable ventilation grilles.

(Wardrobes not connected with ventilating systems should have doors louvred at top and bottom and solid 4½-in. high metal base. Backs and shelves require no perforations.)

FRED MEDART MANUFACTURING CO.

# MEDART TELESCOPIC GYM SEATS





## With Floating Locomotion

Outstanding among the many features of this modern seating is the ease with which seats glide in and out of the 'nested' position, in one operation. Use of the telescopic principle eliminates the need for any counterbalance mechanism (springs) and consequently there is nothing to lift up or to pull down; no closure panel and no possibility of any parts of the seat falling on the operator. Understructure is of steel; all lumber parts are full length (not pieced) and are of substantial thickness (even the risers are solid, full length selected lumber—no flimsy material used anywhere in the construction). When Medart Gym Seats are installed in a gymnasium it is possible to quickly and easily provide a bench with a comfortable back rest for dances or special classes of instruction by simply withdrawing the one (lower) row of seats from the 'nested' position, thus eliminating the need for folding chairs or other auxiliary seating. Medart Gym Seats are fully approved and recommended by the structural engineering department of one of our leading universities as a result of an exhaustive analysis and of actual tests made by these authorities. Write for catalog.

**DIMENSIONS—MEDART GYM SEATS**

| Number of rows | Floor space | | Height Open or Closed |
|---|---|---|---|
| | Extended | Closed | |
| 3 | 4 ft. 6 in. | 2 ft. 8 in. | 3 ft. 0 in. |
| 4 | 6 ft. 4 in. | 2 ft. 8 in. | 3 ft. 10 in. |
| 5 | 8 ft. 2 in. | 2 ft. 8 in. | 4 ft. 8 in. |
| 6 | 10 ft. 0 in. | 2 ft. 8 in. | 5 ft. 6 in. |
| 7 | 11 ft. 10 in. | 2 ft. 8 in. | 6 ft. 4 in. |
| 8 | 13 ft. 8 in. | 2 ft. 8 in. | 7 ft. 2 in. |
| 9 | 15 ft. 6 in. | 2 ft. 8 in. | 8 ft. 0 in. |

## Specifications

As shown on plans and as covered by these specifications, contractor will deliver (and install) the following standard (and special) length units of Medart Telescopic Gym Seats, as manufactured by Fred Medart Manufacturing Co., St. Louis, Mo., or the approved equal in the opinion of the architect.

...standard 14-ft. long units, ...rows high
...special..... long units, ...rows high

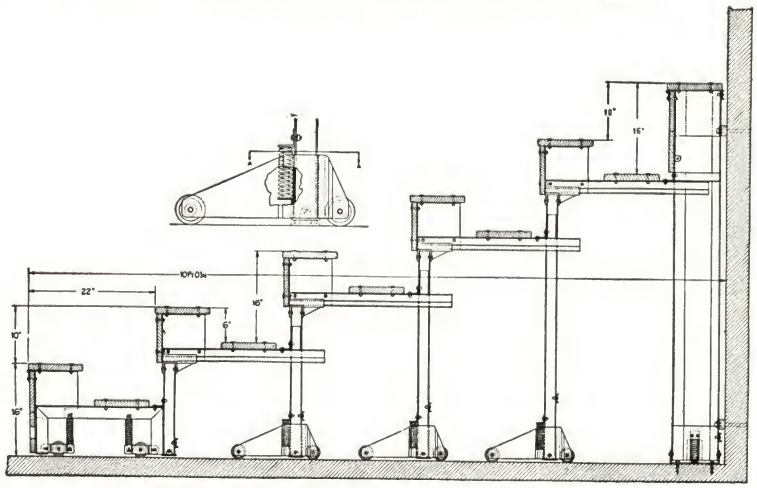
Gym Seats shall operate on the telescopic principle, which requires only one operation for opening (or closing) and shall permit one or more rows of seats to be opened for use, while the remaining rows are left in the closed or 'nested' position. When closed, Gym Seats shall not extend from the wall in excess of 2 ft. 8 in.; when in open position, Gym Seats shall not extend from wall in excess of ... (see table below). The height of the Gym Seat in the closed or 'nested' position shall not exceed the height of the top seat when the Gym Seats are fully open ready for use.

Each standard length unit shall not exceed 14 ft.—and shall consist of seat boards, foot boards and risers (kick boards) of first quality, clear lumber which shall be carefully sanded, finished with rounded corners and bolted securely to steel members. All wood to be stained, shellacked and varnished.

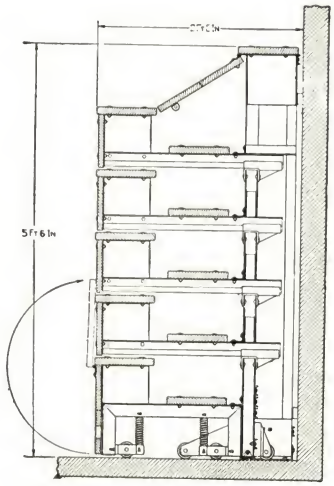
The understructure shall be entirely of steel with uprights or posts of formed steel, double channel construction for maximum strength. Each standard length of seat to be supported by four such uprights or posts which are transported in and out of the closed or 'nested' position by means of a multiple of rubber rollers with bronze bushings. When live load is applied, the added weight shall automatically overcome the tension of the compression springs attached to each upright, thus bringing the uprights or posts in direct contact with the floor. All steel parts shall be finished with two coats of baked-on enamel.

Each unit shall be provided with two special heavy duty lock bolts which attach to standard gym floor plates when unit is in open or closed position.

To provide proper circulation of air, steel grilles shall be inserted in the riser (kick board) of the first (bottom) and top row of seats wherever a unit of Gym Seats is placed in front of a heating or ventilating unit. (...units shall be furnished with grilles.)



*Six Rows of Gym Seats in open position.*



*Six Rows of Gym Seats in closed position.*

# SECTION 21

CONTINUED ⟶

# BECKLEY-CARDY COMPANY

ESTABLISHED 1907

Manufacturers of Blackboards, Bulletin Boards, Metal Mouldings, Map and Bulletin Rails, and School Equipment

MAIN OFFICE AND FACTORY

1632 Indiana Avenue, CHICAGO, ILL.

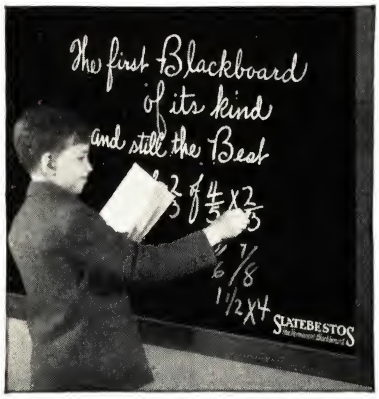
DISTRICT SALES REPRESENTATIVES IN ALL PRINCIPAL CITIES

For Sightsaver Window Shades, see File Index

## SLATEBESTOS—THE PERMANENT BLACKBOARD

**THE FIRST BLACKBOARD OF ITS KIND—NOW INSTALLED IN OVER 3,000 SCHOOLS IN 48 STATES**

SLATEBESTOS Blackboard has been on the market for many years. It was the first cement asbestos blackboard manufactured and even now no other blackboard of this type possesses the rigidity, the great physical strength and excellent writing surface which has made SLATEBESTOS the outstanding manufactured blackboard. It is adapted to all types of building construction and to all locations. It is installed in more than three thousand schools in forty-eight states. No special wall construction or treatment is required for SLATEBESTOS for it only weighs 2½ lbs. a sq. ft. and can be attached directly to brick, cement, or plastered walls, or fastened directly to wood grounds or studding. Any competent carpenter can erect SLATEBESTOS by following the simple directions furnished with each shipment. Complete drafting details and specifications will be mailed on request.




**Writing Surfaces**—Black, brown, and green—are equally smooth, with just the proper carborundum content to make writing with all types of crayon easy and rapid. These close-grained surfaces consume very little chalk. The chalk marks are clear and distinct, and being sharply contrasted against the surfaces they are clearly visible from any angle or position in the room.

**Dimensions**—Stock widths are 3, 3½, and 4 ft. Stock lengths are 5, 6, 7, and 8 ft. Thickness, ¼ in.

## OTHER PRODUCTS

### Slaterock Blackboard

SLATEROCK HIGH QUALITY BLACKBOARD LOW COST

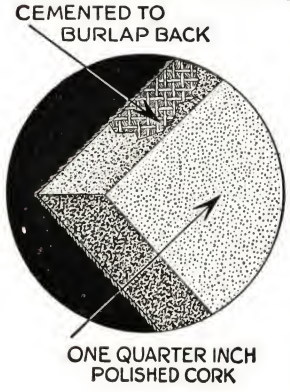
A permanent blackboard made of gypsum rock refined and toughened, and pressed into large panels, surfaced with mineral color pigments and carborundum properly blended to produce its permanent uniform color and finish. SLATEROCK has an exceptionally good writing surface.

**Sizes**—¼-in. uniform thickness; 3, 3½ and 4-ft. widths; 5, 6, 7 and 8-ft. lengths.

**Colors**—Non-fading Black, Brown and Green.

### Simplex Cork Bulletin Board

Made of the finest quality compressed cork ¼-in. thick, polished surface, cemented to heavy burlap backing. SIMPLEX Bulletin Board is especially adapted for installation on smoothly and evenly finished walls. It may be had in any width up to 72 in. and any length up to 20 ft., without joints. Fractions of an inch in width or length are charged for on the basis of a full inch. The colors are tan and dark green. The shipping weight is 1-lb. a sq. ft.




### Slatoplate Blackboard

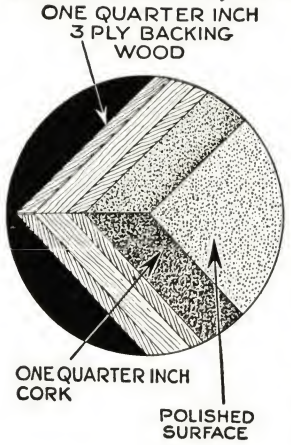
SLATOPLATE The Perfect Low Priced BLACKBOARD

Made of high grade wood fibre compressed into 5-ply woodlike panels, surfaced with carborundum surfacer carefully applied and finished. Possesses exceptional writing and erasing qualities.

**Sizes**—¼-in. uniform thickness; widths, 3, 3½ and 4 ft.; lengths, 6 to 12 ft. inclusive.

### Duplex Cork Bulletin Board

Made of the finest quality compressed cork ¼-in. thick, cemented to ¼-in. 3-ply wood panel back. DUPLEX Bulletin Board may be attached directly to the studding or grounds. The over-all thickness is ½-in.




DUPLEX Bulletin Board may be had in any size up to 48 in. in width and 12 ft. in length. Fractions of an inch are charged for on the basis of a full inch. The colors are tan and dark green. The shipping weight is 2 lbs. a sq. ft.

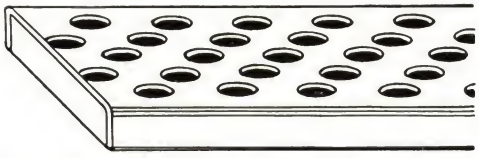
*This company offers products of the highest quality, based on 30 years of dependable service.*

## SIMPLEX METAL BLACKBOARD MOULDINGS

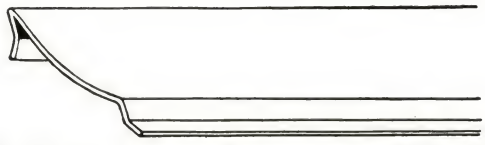
Metal blackboard trim is increasing in popularity because of its adaptability to varying conditions, its exceptional durability and comparatively low cost. It is easily erected in any building, old or new; no special wall construction is required; simply fasten it to grounds provided for either natural slate or any type of manufactured blackboard. The average carpenter can erect SIMPLEX Metal Trim and SIMPLEX Metal Chalk Trough in much less time than wood trim. The mouldings are all cut to fit at the factory and are properly marked for the various blackboard spaces, thus eliminating sawing, mitering, and fitting, which consume much costly time. Cast metal corners and chalk trough ends are neatly designed to match mouldings.



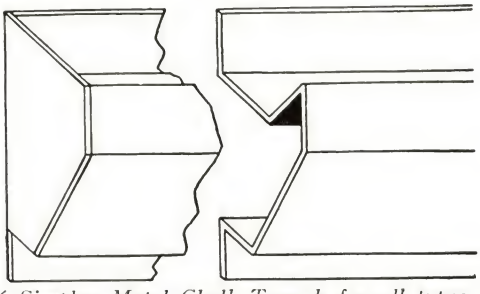

*Illustrating the application of Simplex Metal Trim and Chalk Trough.*



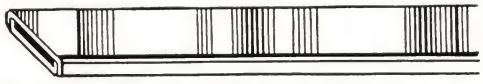
*No. 55 Simplex Chalk Tray and Screen for use in Simplex metal chalk trough or wood chalk trough, shown under figure number 4 in illustration to the right.*



*No. 57 Simplex Metal Trim for top, bottom and both ends of blackboard, shown under figure number 1 in illustration above, may be used with various types of manufactured boards and natural slate.*



*No. 56 Simplex Metal Chalk Trough for all types of wood trim and metal trim; especially designed for Simplex Trim, shown under figure number 2 in illustration above.*

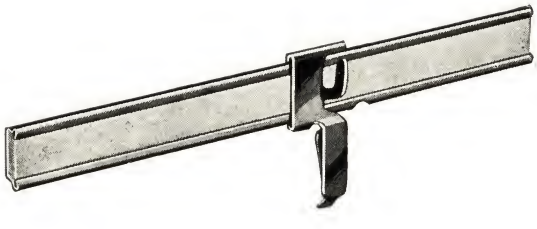


*No. 58 Simplex Metal Mullion for covering joints between blackboards and bulletin boards, shown under figure number 3 in illustration above.*

## PEERLESS DISPLAY RAIL

PEERLESS Display Rail provides for neat display of maps, bulletins, pictures, specimens of pupils' work, etc., without defacing walls, blackboards, or blackboard mouldings. Displays may be suspended on PEERLESS Hooks, Spring Clips, or fastened by thumb tacks. Hooks support map cases and the heavier objects, and they may be attached anywhere along the rail without moving other displays or exhibits.

The Rail is formed out of 16-gauge rolled steel. The track is double thickness; thus more than ample strength and stability are provided. It may be attached to wood or steel blackboard trim, or directly to the plastered wall. Furnished in 4 and 6-ft. lengths for easy installation. The finish is statuary bronze enamel baked on. The cork insert lining is ¾-in. wide, ¼-in. thick, and runs the full length of the rail.



## STANDARD SPECIFICATIONS

**Blackboards**—Where blackboard is specified or shown on the plans, it shall be SLATEBESTOS as manufactured by BECKLEY-CARDY COMPANY, Chicago, Ill., or its equivalent. *(Note:* If SLATEROCK or SLATOPLATE is desired, insert brand name instead of SLATEBESTOS), meeting fully this manufacturer's standard of quality. Installation to be made in accordance with printed instructions furnished with the blackboard.

**Bulletin Boards**—Where bulletin board is specified or shown on the plans, it shall be SIMPLEX or DUPLEX as manufactured by BECKLEY-CARDY COMPANY, Chicago, Ill., or its equivalent meeting fully this manufacturer's standard of quality.

**Map Rail**—Equip space above blackboards in all classrooms with PEERLESS Map Rail having cork insert and spring clip hooks, one hook for every 3 ft. of rail, as manufactured by BECKLEY-CARDY COMPANY, Chicago, Ill., or its equivalent meeting fully this manufacturer's standard of quality.

**Metal Moulding**—All blackboard spaces where specified or shown on plans are to be trimmed with SIMPLEX Metal Moulding and Chalk Trough fully equipped with chalk tray and screen as manufactured by BECKLEY-CARDY COMANY, Chicago, Ill., or their equivalent meeting fully this manufacturer's standard of quality. Installation to be made in accordance with printed instructions furnished with the materials.

# S. H. HAMM & SON

## Slate Blackboards, Roofing and Structural Slate

BANGOR, PA.

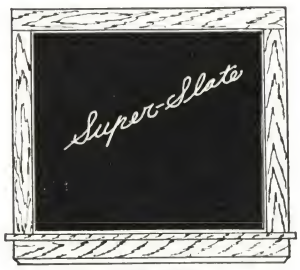
SALES REPRESENTATIVES IN PRINCIPAL CITIES

### THE COMPANY

For each of the past twenty-five years S. H. HAMM & SON have been extending and increasing their sale of slate products.

For each of the past fifty years D. STODDARD & SONS have been availing themselves of every refinement in the manufacture of slate which presented itself.

It is this combination of experience which is back of the product we offer.




TRADE-MARK

### THE PRODUCT

In presenting SUPER-SLATE, we give you an old product, natural slate in its most perfect form, finished with the most modern refinements.

A natural product unique in that it is free from natural markings and imperfections; a natural slate especially finished to provide a perfect surface for marking and erasing chalk marks.

Truly a SUPER-SLATE and a Super-Blackboard.

## SUPER-SLATE BLACKBOARDS

### Characteristics and Advantages

Slate Blackboards have long been the quality standard of marking surfaces with architects, school boards and educational authorities. The characteristics of slate and particularly SUPER-SLATE which make it so valuable for blackboards are described below:

**Non-absorption**—The dense, compact structure of SUPER-SLATE renders it one of the least absorptive materials and it is ideally suited for blackboards since it is impervious to moisture and can be quickly cleaned and maintained in a sanitary condition. Tests by the U. S. Bureau of Standards have shown that the greatest absorption of slate either by weight or volume is one hundred and fifty-one thousandths less than one percent.

**Toughness** — An important requirement for any blackboard material is toughness and elasticity in order that it may withstand strain, shock, blows and the effects of building settlement. This resistance, slate—because of its laminated structure — possesses to a remarkable degree, as has been proven by many laboratory tests as well as by thousands of installations.

**Non-expansion** — Another of the special qualifications of slate for blackboards is its lack of expansion and contraction. Heat, cold and other atmospheric changes do not affect it. This characteristic eliminates the necessity of strips to cover joints. Joints can be made practically invisible when installed and will remain that way. No allowance need be made for expansion or contraction.

**Color and Erasing** — The color of slate is natural and uniform from face to back of material. There is no surface coloring to wear off nor artificial color to bleach. It will retain its color indefinitely. Its dark color provides a perfect contrast with chalk thereby eliminating eyestrain.

The removal of chalk marks is as important in a blackboard as their application. Slate erases perfectly.

### Sizes and Thicknesses

SUPER-SLATE Blackboards are carried in stock in standard 3 ft., 3 ft. 6 in. and 4 ft. widths (heights), which widths should be adhered to whenever possible for economy and prompt shipment. For special conditions, slate may be cut to practically any dimensions required. Thickness ranges from ¼ to ⅜ in. This variation in thickness does not prevent the slabs from being properly set with true, uniform surfaces and flush joints.

They weigh approximately 5½ lbs. per sq. ft.

## SPECIFICATIONS FOR THE INSTALLATION OF SLATE BLACKBOARDS ON PLASTERED WALLS WITH PLASTIC COMPOUND

### (A) Correlative Work

**(A1) Include Under Carpentry Work—**

**(1)** The carpenter contractor shall furnish and fasten securely to the walls kiln-dried wood ground strips *(3/4 in. thickness generally to finish 1/4 in. above face of brown coat unless thickness is modified by number of coats and kind of plaster)* at top, bottom and ends of all spaces to be occupied by blackboards. Ground strips shall be securely fastened *(by nailing for stud walls; expansion shields for brick, masonry, cinder or concrete block walls; toggle bolts for hollow tile and terra cotta walls)* on not more than 24 in. centers. Grounds for blackboards shall be set absolutely true, level and plumb and in perfect surface and alignment.

**(2)** Securely fasten to these grounds, trim including chalk trough and apron as detailed, which trim shall be furnished by the millman and set by the carpenter.

**(3)** After the blackboards are installed, carpenter contractor shall firmly secure a quarter round as detailed to trim and chalk trough in order to hold slate blackboards in place and shall be held strictly accountable for any damage to slate work in so doing.

**(A2) Include Under Plastering Work—**

*Note: This section may be omitted if wood wedge method of installation is used instead of setting in plastic.*

**(1)** This contractor shall plaster all spaces back of blackboards. Finish coat of plaster may be omitted but the brown coat shall be floated to a true plane within ¼ in. of the face of ground strips.

**(2)** Before plastering unfurred outside walls where blackboards are installed, the masonry shall be given two coats of damp-proof paint.

**(A3) Include Under Painting—**

**(1)** All blackboard trim, except loose quarter round moulding shall be completely finished before blackboards are set. Loose quarter round shall be finished, except last coat which shall be applied after the blackboards are set and moulding is attached.

**(2)** Any varnish or finish, which this contractor, through accident or otherwise, applies to blackboard surface, shall be removed at this contractor's expense.

### (B) Blackboard Installation

**(B1) Include Under Slate Work—**

(1) This contractor shall furnish and install SUPER-SLATE Blackboards *(specify height)* in all classrooms and other portions of the building as shown on the plans.

(2) This slate shall be even in color, free from natural markings or imperfections; each piece shall be honed to a perfect writing surface; joints shall be straight, true and carefully fitted.

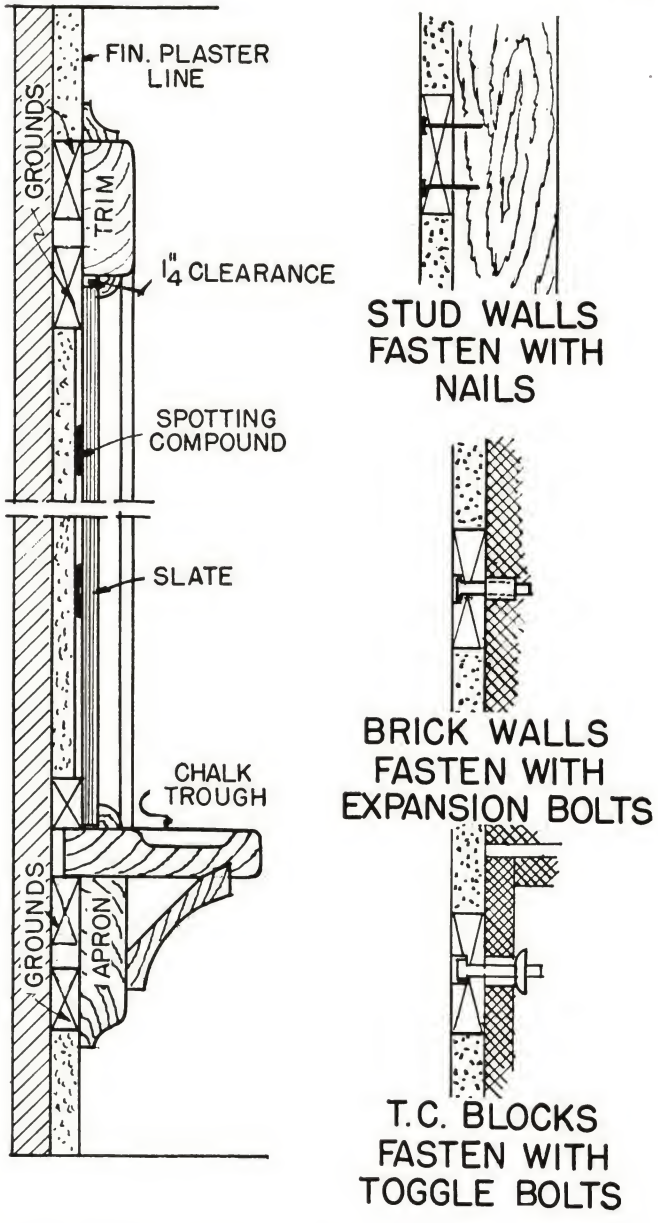
(3) Length of slabs forming each space shall be in accord with Simplified Practice Recommendations No. 15 of the U.S. Department of Commerce as follows:

Up to 5 ft., one slab; over 5 ft., but not exceeding 9 ft., two slabs; over 9 ft., but not exceeding 13 ft. 6 in., three slabs; over 13 ft. 6 in., but not exceeding 18 ft., four slabs; over 18 ft., but not exceeding 22 ft. 6 in., five slabs; over 22 ft. 6 in., but not exceeding 27 ft., six slabs. The slabs forming each space shall be approximately equal in length, i. e., there shall not be a variation greater than 3 in. in either direction of what would be exactly equal spacing.

(4) After plastered surfaces have hardened and immediately before installing slate blackboards, this contractor shall apply an approved fibrous bituminous plastic compound to form a 1 in. wide strip of compound approximately 1/8 in. thick against grounds and a 2 in. wide strip approximately 1/4 in. thick full height of all vertical joints. At least four spots of this same compound 1/4 in. thick and approximately 5 in. in diameter shall be distributed uniformly in back of each slab of blackboard. Each slab shall then be pressed firmly into plastic to form a solid even surface.

(5) Apply an approved jointing compound or waterproof glue to the adjoining joint edges of each slab, and tap the slab being set tight against adjoining slab to form as tight a joint as possible.

(6) After completion of installation, uneven joints shall be carefully finished so that adjoining surfaces shall have the appearance of one continuous slab.




**Typical Blackboard Section and Details for Fastening Grounds to Various Types of Walls**

## STRUCTURAL SLATE

The characteristics and advantages of Slate as stated above make it particularly suitable wherever sanitation, fire-resistance and long life are desired.

There is an ever-increasing recognition of its unusual features for the following applications:

| | |
|---|---|
| Copings | Store fronts |
| Chimney caps | Damp courses |
| Fireplace facings | Stair treads and platforms |
| Hearths | Stair risers |
| Counter and table tops | Thresholds |
| Base and plinths | Urinal stalls |
| Spandrels | Shower stalls |
| Stringers | Toilet stalls |
| Window sills and stools | Floors and border |

We will welcome an opportunity to co-operate with the architect in developing special applications of slate to meet unusual requirements.

## ROOFING SLATE

Slate roofing has long been recognized as one of the most satisfactory, long lived and beautiful roofs available. A wide variety of colors, sizes, thicknesses and textures offer the designer infinite possibilities to achieve the unusual.

S. H. HAMM & SON have had long experience in the slate roofing field and will be glad to work with the architect to produce exactly the effect desired on any type of building.

# ANDREW HOFFMAN

5034-5038 State Street, CHICAGO, ILL.

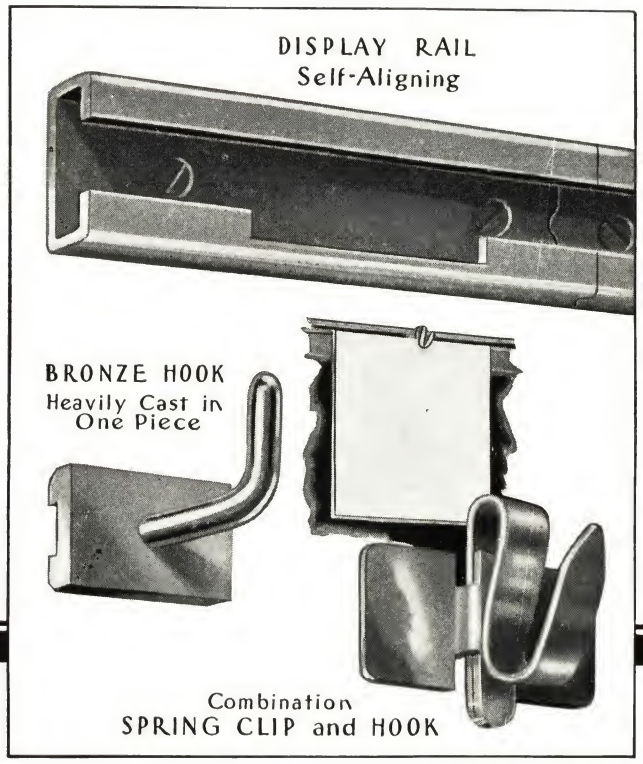
For Casement Window Hardware, see File Index

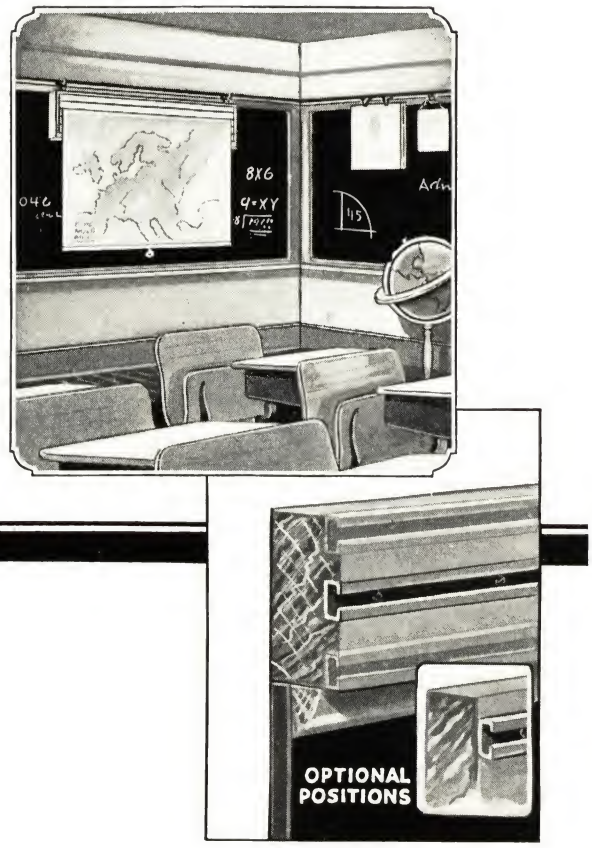
## THE IDEAL MAP AND DISPLAY RAIL

*Used in Schoolrooms, Offices, Conference Rooms, Hospitals*

The Andrew Hoffman display rail is applied to the walls on old or new trim at a convenient height, for the purpose of hanging map cases, maps, charts, posters, bulletins, drawings, and things of a similar nature.

Display rail 15c per foot.
Solid bronze hook 10c each.
Combination bronze hook 7c each.




### Description

This display rail consists of a substantial steel rail of special channel section, in which slide hooks and clips. In schoolrooms, the rail is screwed to the trim at the top of the blackboards. In rooms without blackboards, it is screwed at a convenient height to trim, grounds, or directly to the wall. The screws, which we furnish, are closely spaced for maximum strength.

To provide for the most efficient hanging of various objects, there are three types of hooks: one of very strong one-piece bronze construction that will support the heaviest map cases without turning or twisting—furnished, one to each 5 ft. of rail; and a lighter spring-steel combination hook and spring clip that supports lighter maps, charts, posters, bulletins, etc.—furnished, one to each 1½ ft. of rail.

Either hook may be removed from the rail by lifting it out through the notch. The bodies of hooks are *inside* rail; consequently hooks slide freely without interference, and appearance is neater. Additional hooks may be inserted through the notches.

Available also is a spring fastener which is inexpensive, and can be easily inserted, moved along the rail or taken out.

### Finish

The display rail is finished in statuary enamel to harmonize with the trim customarily used.

### Sizes

The display rail comes in sections 30 in. long. It is ⅞ in. wide and $\frac{5}{16}$ in. deep. If the rail is to be mortised, the mortise should be only ¼ in. deep to prevent hooks scratching the trim.

### Advantages

This display rail is designed and built to give a lifetime of satisfactory and trouble-free service.

Thumb tacks and cork pads are eliminated by the use of the combination hook and spring clip. When the spring hook is lifted, the poster, etc., may be placed beneath, where it is held firmly, yet without injury, by spring pressure, which is, we believe, the only permanently satisfactory method.

The rail may be mortised or rabbeted in any position on the face of the trim or may be screwed to the surface. The rail should be mortised in a groove to attain the most attractive appearance. A mortised rail blends into the ensemble so completely as to be very inconspicuous. See the optional positions in small drawing.

The sections of the rail are self-aligning, through the use of the dovetail joint, thus assuring the smooth passage of the hooks and clips. Being firmly fastened with screws, the rail cannot pull loose.

It is extremely versatile in its use: the two different hooks provide for the display or hanging of anything from a sheet of paper to a map case weighing 100 lbs.

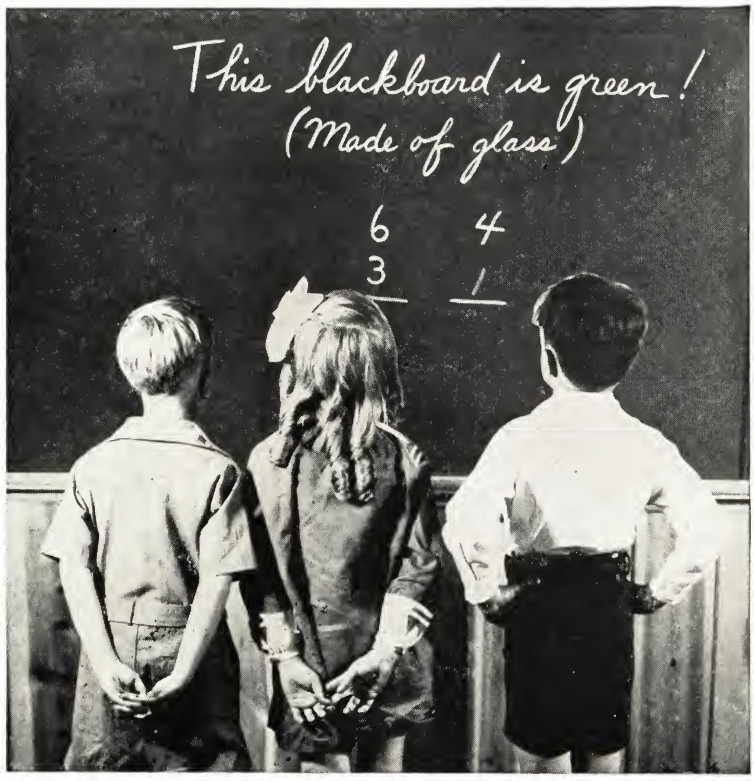
# BLUE RIDGE GLASS CORPORATION

KINGSPORT, TENNESSEE

## BLUE RIDGE OPTEX GLASS BLACKBOARDS

*Distributed by Libbey - Owens - Ford Glass Company*

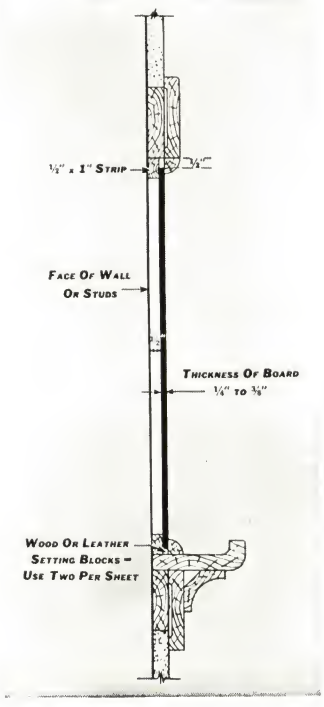
FOR COMPLETE DESCRIPTION AND DETAILS, SEE FILE INDEX




• Optex Glass Blackboards are more serviceable, more efficient and more attractive. For several years highly successful results have been obtained with Optex Glass Blackboards by schools, offices and industrial plants in various sections of the country.

Available in black and green or other colors on special orders, Optex blackboards fit any color scheme. Reflection of light, always a problem, is practically eliminated—eyestrain is reduced and visibility increased. Colors are permanent and uniform—no matching or grading of sections is required. The hard, vitreous surface of Optex glass is highly resistant to wear and offers greater protection against accidental scratching. Its machine-smoothed finish is not injured by washing with water, soap, alcohol or naphtha—even oil paints come off easily with a paint remover. Available in 12-ft. lengths, as well as in smaller sections, Optex boards provide a larger unbroken writing area. Clearly visible and permanent rulings can be applied to Optex at the factory.

The back surface of Optex is coated with a special enamel unaffected by moisture, heat, free lime in plaster or frost in brick walls. A special elastic fibrous backing protects the enamel and adapts itself to variations in expansion of glass. The air cushion between the Optex board and the wall insures ventilation and combines with the fibrous backing to deaden noise. Optex will not break unless subjected to exceptional shock and, if broken, pieces of glass tend to adhere to the elastic backing.




### INSTALLATION DETAILS

Optex blackboards are not cemented to the wall, therefore all finish back of the board can be omitted. Two strips of lumber ½x1 in. are affixed to the wall, *level and plumb*, so that Optex boards may lean against them without undue strain. Where vertical joints are necessary, a zinc "H" joint-moulding is furnished, and a small amount of putty should be placed on the back portion of the board which fits into this section—*otherwise no putty or mastic of any kind should be used.* As the zinc section is thicker than the Optex board, the ½x1 in. strips, top and bottom, should be relieved where the joints occur. Opening sizes: Height of board, plus ¾ in. Length of board, plus 1 in. Weight is 4.5 lbs. per sq. ft. Optex can be installed easily by carpenters or glaziers at a saving which represents a considerable item in the final cost. Frames and chalk rails to be supplied by others.

### SPECIFICATIONS

Wherever blackboards are specified or indicated on the drawings, the contractor shall furnish and install ¼-in. thick Optex glass blackboards as manufactured by the Blue Ridge Glass Corporation, Kingsport, Tenn., and distributed by The Libbey-Owens-Ford Glass Company, Telodo, Ohio.

The color of these boards shall be....., (State color desired—black or green.)

Each piece must be marked by the manufacturer with the word "Optex" in the lower left hand corner.

# MUNDET CORK CORP.

450 Seventh Avenue, NEW YORK, N. Y.

INSULATION FACTORIES: HILLSIDE, N. J., BROOKLYN, N. Y.

BRANCHES

ALBANY, N. Y.
ATLANTA, GA.
BOSTON, MASS.
CHICAGO, ILL.
CINCINNATI, OHIO
DALLAS, TEX.
DES MOINES, IOWA
DETROIT, MICH.
HOUSTON, TEX.
KANSAS CITY, MO.
LOS ANGELES, CAL.
MEMPHIS, TENN.
NEW ORLEANS, LA.
PHILADELPHIA, PA.
ST. LOUIS, MO.
SAN FRANCISCO, CAL.

CANADA

MUNDET CORK AND INSULATION, LTD., MONTREAL, QUE., TORONTO, ONT., WINNIPEG, MAN., VANCOUVER, B. C.

PORTUGAL

MUNDET ET CIA, SEIXAL

GREAT BRITAIN

MUNDET CORK PRODUCTS, LTD., LONDON, ENGLAND

DISTRIBUTORS

BALTIMORE, MD., McCormick Asbestos Co.
BUFFALO, N. Y., Claxton Asbestos Co.
CHARLOTTE, N. C., C. R. Howard
CLEVELAND, OHIO, C. S. Ross
FREDERICKSBURG, VA., Fredericksburg Insulation Co.
HARTFORD, CONN., The Hartford Cement Co.
MINNEAPOLIS, MINN., Asbestos Building Materials Co.
NASHVILLE, TENN., John Bouchard & Sons Co.
NORFOLK, VA., F. H. Gaskins Corp.
OKLAHOMA CITY, OKLA., Standard Roofing & Material Co.
PORTLAND, ORE., Pacific Asbestos & Supply Co.
SALT LAKE CITY, UTAH, Louis A. Roser
SEATTLE, WASH., Pioneer Sand & Gravel Co.
TULSA, OKLA., Standard Roofings & Material Co.
UTICA, N. Y., Geo. Weisenberger

For other Mundet products, including Cork Insulation and Cork Flooring Tile, see File Index

## MUNDET "JOINTITE" BULLETIN BOARD

### Uses

Mundet "Jointite" Cork Bulletin Boards are used extensively in schools, colleges, factories, offices, hotels, club rooms and, in general, wherever a soft and durable surface must be provided for the posting of notices. They are easily penetrated by thumbtacks.

### Description

Mundet "Jointite" Cork Bulletin Boards are composed of a layer of composition cork ¼ in. thick which has been securely cemented to a backing of ¼-in. 3-ply, wood insert, compoboard. It is a neutral brown in color and makes an ideal background in its natural state.

### Advantages of Mundet "Jointite" Bulletin Boards

Cork bulletin boards have several advantages peculiar to the material of which they are constructed. They are so much superior to the conventional wooden bulletin board as to render the latter obsolete. The chief reasons the cork bulletin boards are so superior to those of wood construction are:

(1) A thumbtack can be pushed in with little effort but is held with a firm grip.

(2) No knife or tack puller is necessary to remove thumbtacks.

(3) Due to the resiliency of cork, holes made by thumbtacks have a tendency to gradually close. This results in a far better appearing board than one in which there are many unsightly holes.

### Sizes

Mundet "Jointite" Cork Bulletin Boards are furnished cut to any size required. The standard mounted sheets measure 4x6 ft. Unmounted, the cork bulletin board can be furnished in rolls measuring 6x60 ft. Cork bulletin boards can be installed by any carpenter. They are easily cut with a saw.

### Specifications

*Note:* Due to the nature of the material, it is usual to include same in the Carpentry Section of the General Specifications as follows:

**Cork Bulletin Boards**—Furnish and install Mundet "Jointite" Cork Bulletin Boards where indicated on the drawings and as specified.

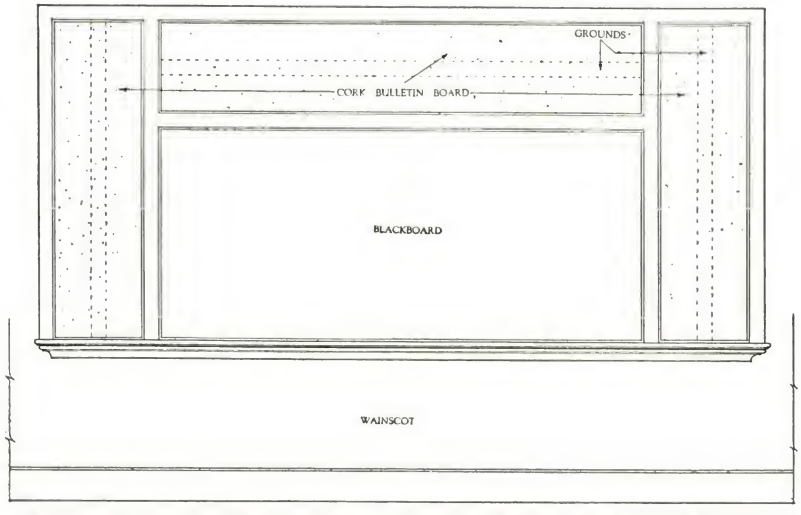
*Note:* Specifications should further contain a schedule of locations and sizes.

All bulletin boards shall be Mundet "Jointite" Cork Bulletin Boards as manufactured by MUNDET CORK CORP., New York, N. Y.

The Material shall be a full ½ in. in thickness, consisting of a ¼-in. layer of composition cork reinforced with a burlap back, securely mounted by cementing same to a 3-ply backing of compoboard with wood core.

All frames shall match the trim and shall have loose cover mould around all cork bulletin boards. All cork bulletin boards shall be securely nailed at edges before cover mould is installed.

**Grounds**—Set 2-in. wide grounds, of such thicknesses as will be required to conform with that necessary for adjacent trim, to receive Mundet "Jointite" Cork Bulletin Board as called for on drawings, or in specifications. All grounds shall be set straight and level.




A Suggestion for Installation of Mundet "Jointite" Bulletin Board—Front Elevation

# NATURAL SLATE BLACKBOARD COMPANY

PEN ARGYL, PA.

For Branch Offices, Refer to Catalog of Structural Slate Company

## Advantages of Slate for Blackboards

The natural characteristics of slate quarried in Pennsylvania make it particularly suitable for blackboard purposes. The smooth, even dark finish provides an ideal writing surface. Slate is one of the least absorptive of nature's products. This assures a surface which will not warp under repeated cleanings. The first cost of natural slate blackboards is the only cost.

The "Pyramid" brand, which is the name given to all slate furnished by the NATURAL SLATE BLACKBOARD COMPANY, guarantees strict enforcement of the most rigid rules of workmanship and protects the architect from receiving imported blackboards. The lime content of slate quarried in the United States is less than 4 percent, while the lime content of foreign slates is from 24 to 26 percent, causing such slate to inevitably bleach to a light color. Hence the desirability of specifying a "Pyramid" blackboard.

## Specification for Natural Slate Blackboards

### Installed by "Spotting and Bedding" Method on Plastered Backgrounds

1. The contractor for this work shall furnish natural slate blackboards and arrange for their complete installation in every class room and in all other portions of the building where so shown or noted on the plans, sections or detail drawing or herein specifically called for.

2. On all walls where blackboards occur they shall be run full from trim to trim, as indicated, exclusive of bulletin boards which shall be (here state size of bulletin boards, if any, at end of blackboards, and later specify the bulletin boards). The heights of the slate itself shall be as follows: (State heights of slate and whether or not tack strips are to be located above in certain rooms, also specify by locations and areas all blackboards required that are not shown by the drawings).

3. Where wardrobes occur, place slate blackboards (surfaced on each exposed surface) in each door, as shown on details, or as follows: (Here describe slate and other panels, etc. unless wardrobes are selected from manufacturers' catalogues showing slate panels and are specified or provided for accordingly).

4. If any sliding blackboards are shown or called for include and install slate in same (state whether or not double faced) and wherever indicated or called for install swinging blackboards with double faced slate, including metal frames, (standards or brackets) etc. complete (Consult manufacturers' descriptions for types, finish, etc. and refer to same).

5. The slate shall be quarried in the United States and be of the finest quality selected blackboard stock, even in color, free from ribbons or imperfections that would impair its use or durability as a marking surface and be not less than ¼ inch nor more than ⅜ inch thick. A maximum deviation of 1/16 inch from this thickness will be permitted when an average thickness of at least ¼ inch is maintained except that double surfaced slate shall be of uniform thickness. The exposed face of each piece of slate shall be carborundum surfaced to a perfect writing plane, in accordance with the Natural Slate Blackboard Company's Standards, and the approval of the architect, and each piece shall be labeled with the "Pyramid" Trade-Mark. Slate shall be furnished with joints ground straight, true and neatly fitted.

6. The lengths or lineal dimensions of the slate slabs in each assembly of blackboards shall be in accordance with the U. S. Department of Commerce Simplified Practice Recommendations No. 15, as follows: Up to 5 feet, one slab; over 5 feet, but not exceeding 9 feet, two slabs; over 9 feet but not exceeding 13 feet 6 inches, three slabs; over 13 feet 6 inches but not exceeding 18 feet, four slabs; over 18 feet but not exceeding 22 feet 6 inches, five slabs; over 22 feet 6 inches but not exceeding 27 feet, six slabs. The joints in each assembly shall be in accordance with the same Departmental Recommendation namely, at or near the middle of the space for two slabs, one third of the space for three slabs, one fourth of the space for four slabs, one fifth of the space for five slabs and one sixth of the space for six slabs. By "at or near" is meant that any slab may be used which places the joint within three inches in either direction of what would be exact spacing of the units stated.

7. The Carpenter Contractor will furnish and securely set all wood grounds to accurate levels and true planes. All wood trim will be furnished by the millman and set by the carpenter. The complete installation shall be in accordance with the architect's details, and with the printed directions, of the "Natural Slate Blackboard Company," consistent herewith.

8. Fasten securely to the walls, kiln-dried wood "ground" strips (¾ inch thick or other thicknesses according to number of coats and kind of plastering) at top, bottom and ends of all spaces to be occupied by blackboards (and intermediate strips as detailed where bulletin boards or tack-strips abut or adjoin blackboards).

9. To the "ground" strips, securely set (1⅜ x 3½ inches) trim, slightly rounded at edges (or as detailed) at the sides and top of all blackboard spaces. (Specify trims in connection with bulletin boards, tack-strips, cabinets, closets, etc. wherever they occur adjacent to blackboards).

10. At bottoms of blackboards place (5½ x 1¼ inches) countersunk chalk troughs carefully leveled, extending under blackboards and securely nailed to "ground" strips and to (4½ inches) molded aprons. Chalk trough shall be (molded or rounded) on all exposed edges and returned at ends (or left open for cleaning), as detailed. (If wire covers are to be installed in chalk troughs specify here).

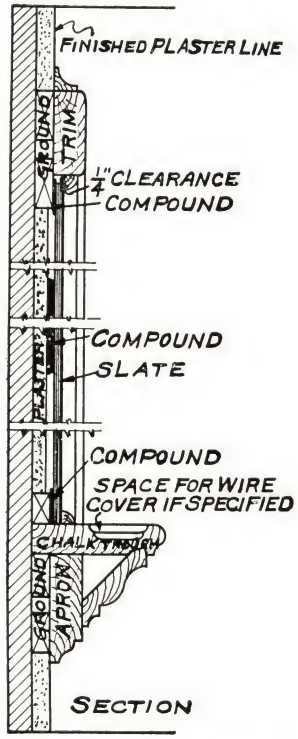
11. Where slate is set against walls or partitions the space to be occupied by the blackboards will have been plastered by the plastering contractor with a scratch and brown coat, wood or carpet floated, to within not less than ¼ inch of the back of the slate. When these surfaces have hardened, but not until immediately previous to the setting of the slate, they and the backs of the wood grounds, or the backs of the blackboards shall be bedded and spotted with "Pyramid" "Spotting and Bedding Compound", or other approved fibrous, bituminous, plastic compound to a thickness averaging 1/16 in. against wood and ¼ in. against plaster. Each slab of the blackboard shall be pressed into place to form a substantial contact with this material on the edge bedding, joint strips and spotting so that the blackboards will form a solid, continuous, even plane, jointed between each slab as hereafter described. The edge bedding against wood shall consist of one inch wide strips of the compound. The joint bedding shall be a two inch wide strip the full height of each vertical joint and centered thereon. The size of the "spots" shall be from four to 6 inches in diameter and the spots shall be placed at intervals not exceeding 18 inches in each direction.

12. As each slab of slate is set there shall be applied to the adjoining joint edges of slate a thin strip of Pyramid jointing compound, and the slab being set shall be tapped tight against the preceding slab till the joint is as nearly invisible as possible.

13. As the blackboards are set, a (⅝ x ⅝ inches quarter-round) shall be well secured to surrounding trims and chalk trough, firmly holding slate in place. Any free-standing end trims and all tops shall be back-banded with (⅞ inches) coved scotia mold (1¼ inches if on frame walls).

14. The slabs at joints between slate, upon completion of setting, shall if uneven be thoroughly honed and finished without humps or abruptness until they have the appearance of a smooth plane with adjoining surfaces.

15. All slate blackboards shall be left whole, sound and clean, ready for use and in every way a complete and satisfactory installation.




**Typical Detail of Blackboard Installation**

Showing back plastering and setting compound at edges, and "spots"

FOUNDED 1865

# NEW YORK SILICATE BOOK SLATE CO., INC.

TELEPHONE
COrtlandt 7-8077

20 Vesey Street
NEW YORK, N. Y.
FACTORY: HOBOKEN, N. J.

CABLE ADDRESS
"Silibook New York"

## Neatsnap

**EXTRUDED ALUMINUM BLACKBOARD FRAMING**

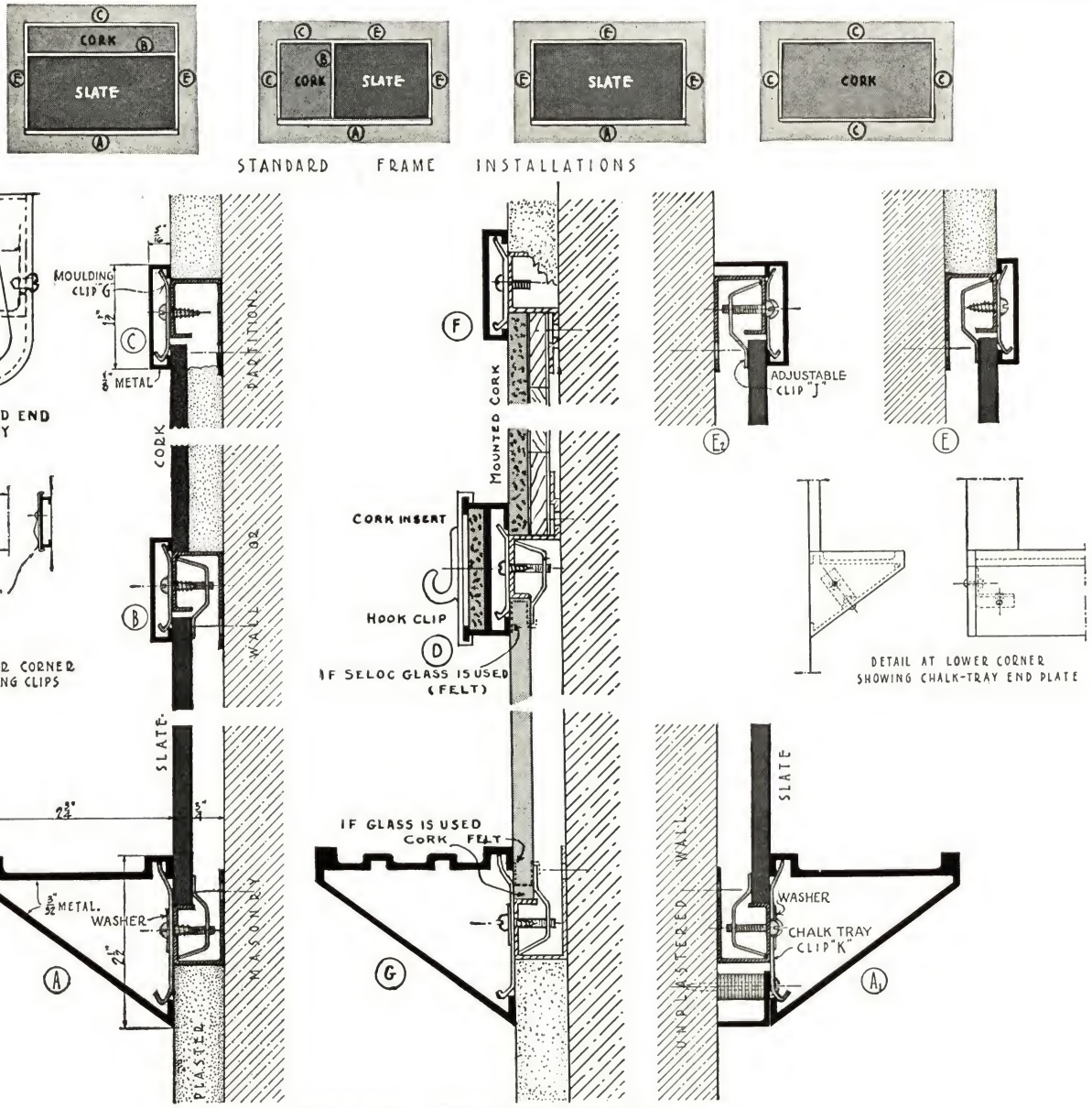
FORMERLY CALLED KALMAN

*Dill Patents*

*Finished in Dull or Bright Finish*

### A Few of Many Neatsnap Installations

Pierre S. DuPont High School, Wilmington, Del.
Amanda E. Stout Grade School, Reading, Pa.
Northwest Jr. High School, Reading, Pa.
Consolidated School, Kennett Square, Pa.
Southwest Jr. High School, Reading, Pa.
Queens College, Flushing, L. I., N. Y.




## STANDARD FRAMING DETAILS

Continuous 16 gauge steel grounds securely fastened to unplastered walls or partitions. (1) Fastenings 12-in. centers under slate and 20-in. centers at top and sides of frames. (2) Steel clips "G" secured by sheet metal screws 16-in. centers. (3) Steel clips "J" secured by machine screws and staggered with clips "G." (4) Clips "K," supporting chalk tray are also fastened with sheet metal screws spaced 12-in. centers. (5) Sliding clips "L" with hook, or "M" with steel spring, for hanging maps, exhibiting papers, etc., may be installed if desired. (6) End plates for chalk tray are fastened with corner angles and machine screws. (7) Chalk tray, top, bottom, and intermediate frame sections are of extruded metal.

## INSTALLATION OF NEATSNAP EXTRUDED-ALUMINUM FRAMING MATERIAL

The installing of *Neatsnap* Extruded-Aluminum Blackboard Framing is a simple procedure, readily understood by the average workman. Once started, the work progresses rapidly.

Before the interior partition plastering is applied, the continuous galvanized steel-grounds are fastened securely to the partition with nails, toggle bolts or expansion bolts as conditions may require. After the slate-setter has fastened the slate in position by the use of steel clips, the extruded metal is cut to exact lengths, mitered where necessary, and with end-plates attached, the mouldings are clipped or sprung over the steel clips and the installation is complete.

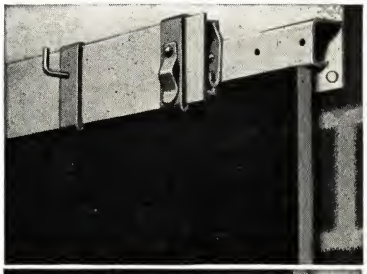
The work can be done by any skilled carpenter accustomed to doing trimming or finishing. Neat workmanship is essential to bring out the full beauty of the framing. No special tools are required, except a metal saw and a soft-metal file.

The spacing of the various clips is indicated in the details on preceding page. Grounds arrive on the job with holes 4 in. on centers, to allow for any variance in the spacing.

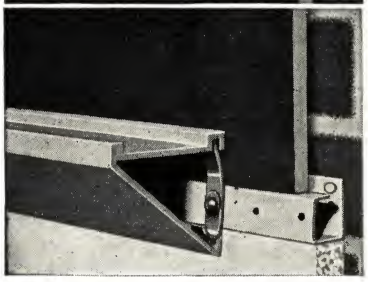
Complete instructions are provided for the proper installation of these materials.



*At once apparent is the neat, attractive appearance of this Neatsnap Extruded-Metal Blackboard and Corkboard Framing. The metal framing is easily kept clean, and has a permanent, pleasing lustre.*



*Note the way blackboard sets firmly upon grounds. No other extruded frame has this feature.*



*Top moulding can be fitted with slides, as shown, for holding papers, maps, etc.*

### Modern Schoolrooms

Old-fashioned wooden blackboard framing, which has changed but little since the day of the one-room schoolhouse, is entirely out of keeping with the present-day trend in school interiors.

*Neatsnap* Extruded-Aluminum Blackboard Framing, with its simple clean-cut lines, is on a par with the most modern interior finishing. Practically everlasting, these attractive metal frames with their dull or bright finish, as desired, have a logical place in the up-to-date school building.

A *Neatsnap* Extruded-Aluminum Blackboard Frame consists of an assembly of chalk tray and side and top mouldings of extruded metal, together with continuous steel grounds and the necessary clips.

This metal frame harmonizes perfectly with other up-to-date appurtenances, and it contributes much to the modernity of the school room.

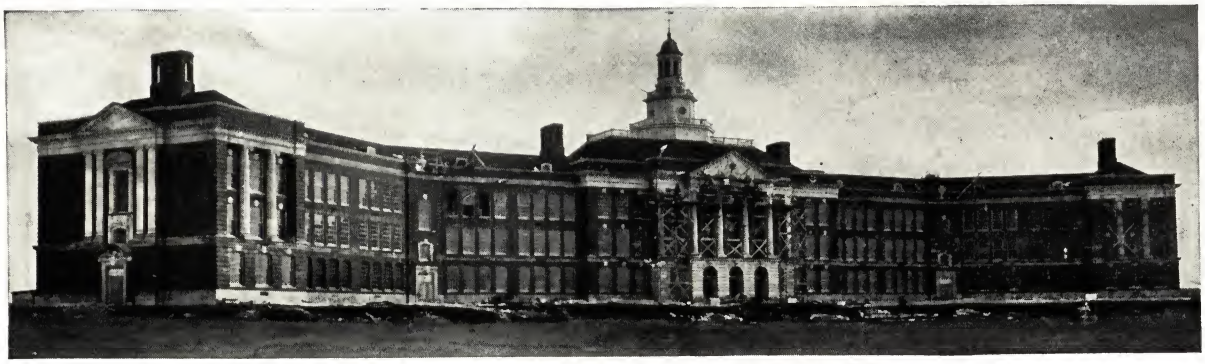
Although *Neatsnap* Extruded-Aluminum Blackboard Framing is made of an expensive grade of rustless metal which need not be painted, the cost is actually less than for high-grade oak millwork.

These metal frames are simple to install—carpenters can erect them readily. Cutting to proper lengths on the job is done as easily as if hardwood were used.

They cannot be defaced by the usual childish pranks, and are easily kept clean and sanitary with soap and water. They never become nicked, scarred, or chalk-soaked.

*Neatsnap* Extruded-Aluminum Blackboard Framing never permits the slate to become loose as a result of shrinkage or warpage. The slightest amount of shrinkage will cause slate set in wood frames to separate and become uneven at the joints, a condition not only unsightly but one that causes excessive chalk breakage, and eventual cracking and chipping of the slate itself. With *Neatsnap* Metal Framing the joints between slate slabs remain as close and tight as when first installed. Rigid clips, gripping both front and back of the slate, insure perfect alignment and smooth, tight-butted joints. Furthermore, slate is easier to install in *Neatsnap* Metal Frames.

The present-day movement toward fire-safe schools demands the use of fireproof materials whenever possible. Metal blackboard frames are in line with this trend.



**The New Pierre S. duPont High School at Wilmington, Del.**

E. William Martin, Architect  Karno-Smith Company, Contractor

*Neatsnap* Extruded-Metal Blackboard Framing in every classroom

## SPECIFICATIONS FOR NEATSNAP EXTRUDED-ALUMINUM BLACKBOARD FRAMES

### Blackboard Frames

*(To be incorporated in Carpentry and Millwork Specifications)*

This Sub-contractor shall furnish and erect all Blackboard Frames, Corkboard Frames and Corkboards.

All materials for blackboard and corkboard frames shall be of aluminum throughout as manufactured by NEW YORK SILICATE BOOK SLATE CO., INC., and shall be furnished in stock lengths to be cut on job to suit.

Continuous steel ground shall be set to dimensions specified, and shall be accurately aligned and securely fastened to rough wall by means of expansion bolts, toggle bolts or galvanized nails as conditions may require and as directed by Architect. Fastenings shall be made through holes provided and shall be applied at intervals of not over 12 in. under slate and not over 20 in. elsewhere.

*(For installation of slate see slate specifications)*

After slate has been installed, extruded metal chalk tray and mouldings shall be cut, mitred and fitted on job, and sprung into place over steel clips provided. Ends of chalk tray shall be closed by the attachment of metal end plates.

Before erecting these materials, this Sub-contractor shall verify the spacing of chalk tray and moulding clips and shall attach additional clips where their spacing exceeds the maximum specified.

Corkboards shall be a full ½-in. thick and shall consist of ¼-in. tan composition cork reinforced with a burlap back, cemented to a waterproofed compressed fibre backing. Wall area in back of corkboards must be plastered so that surface of cork will be flush with surface of continuous steel grounds. Corkboards must be cut to accurately fit recesses formed by grounds.

*(To be incorporated in Slate and Seloc Glass Specifications)*

### Slate or Seloc Glass Chalkboards

All slate or Seloc Glass shall be not less than ¼-in. nor more than ⅜-in. in thickness at any point. All exposed surfaces shall be "Honed Finish." Edges shall be machine dressed accurately to straight and sharp rectangular lines. Sections of slate or Seloc Glass shall be not less than 5 ft. horizontally, except where otherwise permitted by Architect.

Before manufacture, this Sub-contractor shall take field measurements of all recesses formed by continuous steel grounds in place, and will be responsible for fitting slate properly. *(See Carpentry and Millwork Specifications.)* The clearance between edges of slate and steel grounds at sides and top shall preferably not exceed ⅛-in. and a clearance in excess of ¼-in. will be cause for rejection.

Slate shall be erected by setting lower edge on continuous steel grounds and fastening accurately into place with proper clips so that surface of slate is exactly flush with surface of grounds. Spotting compound shall be applied to rough wall, midway between top and bottom of slate, behind joints and at horizontal intervals of approximately 2 ft., to provide a solid backing.

Adjustable clips (secured with machine screws) and moulding clips (secured with sheet metal screws) shall be staggered and spaced not more than 16 in. apart, with extra clips at corners of slate sections. Chalk tray clips (secured with sheet metal screws) shall be spaced not over 12 in. apart, with an extra clip at ends. Clips and screws are to be furnished by Contractor for blackboard frames, but shall be installed by this Sub-contractor.

As each section of slate is set, a thin strip of jointing compound shall be applied to the joint edges and the slate tapped tight against the preceding section until joints are as nearly invisible as possible.

## CHALKBOARDS WITH AN INTERNATIONAL REPUTATION

### Paragon Chalkboard

Paragon Chalkboard is the answer to a long felt need for a high quality chalkboard of great strength, and at a low cost. This product is composed of long fibre wood, mixed in oil, and formed under pressure of 8,000 lbs. to the sq. in. It cannot be broken with a hammer, and is guaranteed against warping or bulging under normal conditions. It takes a full clean chalk mark, is easily erased, and under normal use is guaranteed for ten years.

It has a uniform thickness of ¼-in., with true edges, and can be set with matched joints the same as natural slate. Can also be set with "Writo Metal Joints." Also, it can be nailed to wood grounds at top and one-half rounds used to cover joints.

Furnished in widths of 3, 3½ or 4 ft., and in lengths from 6 to 12 ft. Can be had in black, green, canary or white.

### Armor Chalkboard

The most popular of medium priced chalkboards, because it represents quality at low cost. Made of specially processed wood fibres that are compressed to an even thickness of ¼-in. It is noted for its resiliency and fine long lasting surface.

Can be nailed to wood grounds at top, and "Writo Metal Joints" or one-half rounds used to cover the joints.

Furnished in widths of 3, 3½ or 4 ft., and in lengths from 6 to 12 ft. Can be had in black, green, canary or white.

### Regal Chalkboard

This product is the oldest composition chalkboard manufactured in the United States, having been made by this company for seventy-two years. Its incomparable writing surface that will not crack or peel makes it a standard of comparison for all other chalkboards.

It is made from four laminated layers of wood pulp (special process of this company), is easy to write on, and is easily erased. It is absolutely free from all glare. It is easy to install either with "Writo Metal Joints", or with half-rounds to cover the joints. Its weight is only 1 lb. per sq. ft., and there is never any breakage. It is the best answer where price is the factor. Made in black, green, canary or white. Furnished in any length up to 12 ft. and in widths of 3, 3½ and 4 ft.

## CREST CORK BULLETIN BOARDS

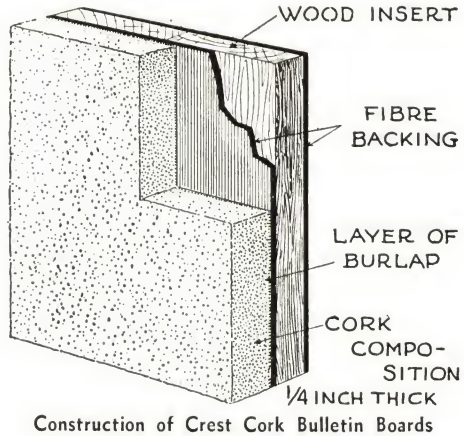
### Mounted

Made of first quality ¼-in. thick cork carpet, reinforced with burlap backing. This is securely cemented to 3-ply compo-board with wood core making the total thickness ½-in.

Guaranteed against warping or bulging. Furnished in tan or green, and in any length up to 14 ft., and in widths up to 4 ft.

### Unmounted

Same as above without compo-board backing. Can be cemented direct to smooth wall surfaces, and furnished in lengths large enough to eliminate joints on most any size wall.




Construction of Crest Cork Bulletin Boards

# SELOC GLASS CHALKBOARDS FOR PERMANENCE



High School, Lawrence, L. I., N. Y., Completely Equipped with Seloc Glass Chalkboards

## A Few of the Many Schools Using Seloc Glass Chalkboard

Scarsdale, N. Y.—High School
Washingtonville, N. Y.—High School
Pine Island, N. Y.—Central High School
Peekskill, N. Y.—McKinley High School
Richmondville, N. Y.—Central High School
University of California
University of Florida
University of Minnesota
Newton, N. J.—Little Flower Monastery
Waltham, Mass.—High School
South Portland, Me.—High School
Hartford, Conn.—Trinity College

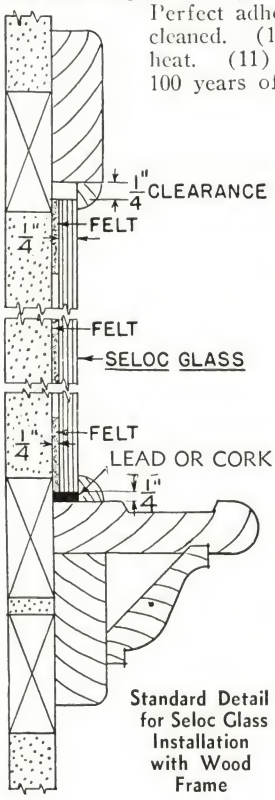
## Advantages

(1) Made of black or green plate glass, with a *suspended abrasive* uniformly dispersed throughout the glass *while molten.* (2) Permanently and uniformly black. (3) Permanent velvet finish throughout. (4) Free from irregularities, markings or scratches. (5) Never wears smooth. (6) No resurfacing ever required. (7) Perfect uniform writing surface. (8) Perfect adhesion of chalk to board. (9) Easily cleaned. (10) Not affected by water, cold or heat. (11) Experimental tests equal to over 100 years of wear have left Seloc Glass Chalkboards as good as new. (12) Non-fading, since color is uniform throughout. (13) Furnished in sizes 3, 3½, 4x6 ft. (14) Weight per ft. and purchase price is little more than that of slate.

**Seloc Glass Chalkboard improves with age**

## Bonded for 40 Years

Because installations have been in for over six years, demonstrating that the perfect writing texture of the Seloc Glass Chalkboards will never change, and because they never need refinishing or recoloring, we are bonding installations for a period of 40 years—longer than the life of most schools.




Standard Detail for Seloc Glass Installation with Wood Frame

## Specifications for Seloc Glass Chalkboards

(1) Whenever blackboards are specified or indicated on the drawings, the Contractor shall furnish and install ⅛ in. thick Seloc Glass Chalkboards as manufactured by the New York Silicate Book Slate Co., Inc., of 20 Vesey Street, New York City.

(2) These chalkboards shall be of a deep black color throughout their entire thickness and there shall be uniformly incorporated therein a suitable abrasive material which shall cause the surface to remain permanently of the same uniform texture during the total life of the board.

(3) The sizes of all chalkboards shall be as indicated on the drawings and as hereinafter specified.

(4) All grounds, trim and chalk rails shall be furnished and set by others. The grounds are to be set true and properly secured to walls to adequately support the chalkboards. Quarter rounds or other cover mouldings are to be fitted by others but installed by the Chalkboard Contractors.

(5) All areas behind chalkboards shall be brown plastered only. The plaster shall be screeded flush with face of grounds to a true and even surface.

(6) The Chalkboard Contractor shall set his chalkboards against a felt cushion ¼ in. thick by 1 in. wide which shall be run along all edges of each slab section. Abutting joints shall be backed with a single 2x¼-in. felt strip running full length of joint. Each section shall be supported on strips of lead or cork ¼ in. thick by ¼ in. wide by about 2 in. long, placed under the board on not over 24-in. centers with not less than three to a board section. Single felt strips ¼ in. thick by 1 in. wide shall be run in a vertical fashion from top to bottom of chalkboard, abutting against the above mentioned marginal felt strips and shall be spaced about 20 in. apart.

(7) Clearances of ¼ in. are to be allowed over and above actual specified chalkboard dimensions, except where two slabs of chalkboard sections are to abut each other.

(8) Where abutting joints occur in chalkboard sections, they shall be fitted as close as possible and Seloc joint compound shall be used only to fill in the joint. When this jointing compound has set, the joints shall be rubbed down with a solution to be furnished by the New York Silicate Book Slate Co., Inc., after which the chalkboards are to be thoroughly cleaned of all foreign matter.

(9) If Neatsnap Extruded-Aluminum Framing is used, see separate specification under that heading.

FOUNDED 1896

# E. W. A. ROWLES CO.

CABLE ADDRESS: ROWLES

## Blackboard Manufacturers, Metal Blackboard Trim, Display Rails, Bulletin Boards, Miscellaneous School Equipment

TELEPHONE
Victory 3812

EXECUTIVE OFFICE
2500 Prairie Avenue, CHICAGO, ILL.

FACTORY
ARLINGTON HEIGHTS, ILL.

SALES REPRESENTATIVES THROUGHOUT THE UNITED STATES AND ABROAD

For Mastermade Window Shades, see File Index

## THE COMPANY—ITS FACILITIES

**Experience**—The E. W. A. Rowles Co., one of the largest manufacturers of blackboards in the United States, has been continuously in business under the same management for forty-one years.

The guarantees covering the company's products are backed by an established financial integrity.

**Facilities**—Our factory, a model of efficiency, devotes approximately 30,000 sq. ft. of space to the manufacture of blackboards. Plant capacity is from 5000 to 8000 sq. ft. of finished blackboards per day. All products are manufactured under rigidly supervised, controlled processes. Uniformity of quality is positively guaranteed.

### ENDURAROC BLACKBOARD

TRADE MARK ENDURAROC BLACKBOARD

**Composition**—Enduraroc is a synthetic slate blackboard compound of asbestos fibre, finely ground slate, black mineral pigment, Portland cement and carborundum, combined by our own distinctive process. The sheets are pressed into dense homogeneous slate colored panels, colored clear through. Its tensile strength, hardness and toughness increase with age. It is harder than natural slate and weighs only half as much. Surface is smooth and of uniform color, free from such defects as webs, metallic veins, streaks, hard and soft spots, etc.

**Sizes**—Enduraroc is carried in stock 3½ and 4 ft. wide and in 6, 7, and 8-ft. lengths. Thickness, ¼ in.

**Colors**—Black, green, brown.

### PERMAROC BLACKBOARD

PERMAROC BLACKBOARD SOLID AS A ROCK

**Composition**—The base or body is composed of gypsum rock (black core), carefully ground and treated, pressed into uniform sheets between two layers of mineralized fibre board.

Permaroc is fireproof, moistureproof and is guaranteed not to warp, contract or expand. The thick writing surface is applied over the surface of the body.

**Thickness**—The finished thickness is full ¼ in.

**Sizes**—Permaroc is carried in stock 3, 3½, and 4 ft. wide and in 6, 7, and 8-ft. lengths.

**Colors**—Black, green, brown.

### DUROPLATE BLACKBOARD

DUROPLATE THE GUARANTEED BLACKBOARD

**Composition**—The base or body is composed of specially selected, long, wiry spruce fibres, so combined as to prevent warpage. Each panel is scientifically kiln cured, waterproofed and surface filled under an exclusive original process.

Duroplate is permanently moistureproof and is guaranteed, when properly installed, not to warp. It is readily cut to a clean, sharp edge.

The writing surface is identical with the surface of Enduraroc and Permaroc.

**Thickness**—The finished thickness is ¼ in.

**Sizes**—Duroplate is carried in stock 3, 3½, and 4 ft. wide and in lengths from 1 to 12 ft. inclusive.

**Colors**—Black, green, brown.

**Special Duroplate Clincher**—Duroplate is held firmly and permanently against the wall with special metal clinchers (an exclusive feature).

### METAL BLACKBOARD TRIM

The constant demand for greater economy in schoolhouse construction has popularized Rowles Metal Blackboard Trim. All fittings at corners and intersections are made by close fitting castings. Rowles Metal Trim can be erected in much less time than wood trim, and attached to wood grounds by small oval headed screws.

Metal trim is not affected by climatic conditions. Rowles Metal Trim can be taken down and re-erected quickly without being injured. The cost, erected and finished, is less than the cost of the average wood trim. All mouldings are of accurately rolled cold rolled selected stock. Rowles Metal Trim is primed both sides, over which may be applied any paint finish to harmonize with wall decorations.

### PERMA KORKBORD

**Perma Korkbord Mounted**—Is made of pressed cork cemented to 3-ply wood panels, approximately ½ in. thick; standard color, tan. It provides a space to display material. Approximate weight for shipment 1½ lbs. per sq. ft. in any even inch width to 48 in. and lengths to 96 in. (Greater lengths at added cost.)

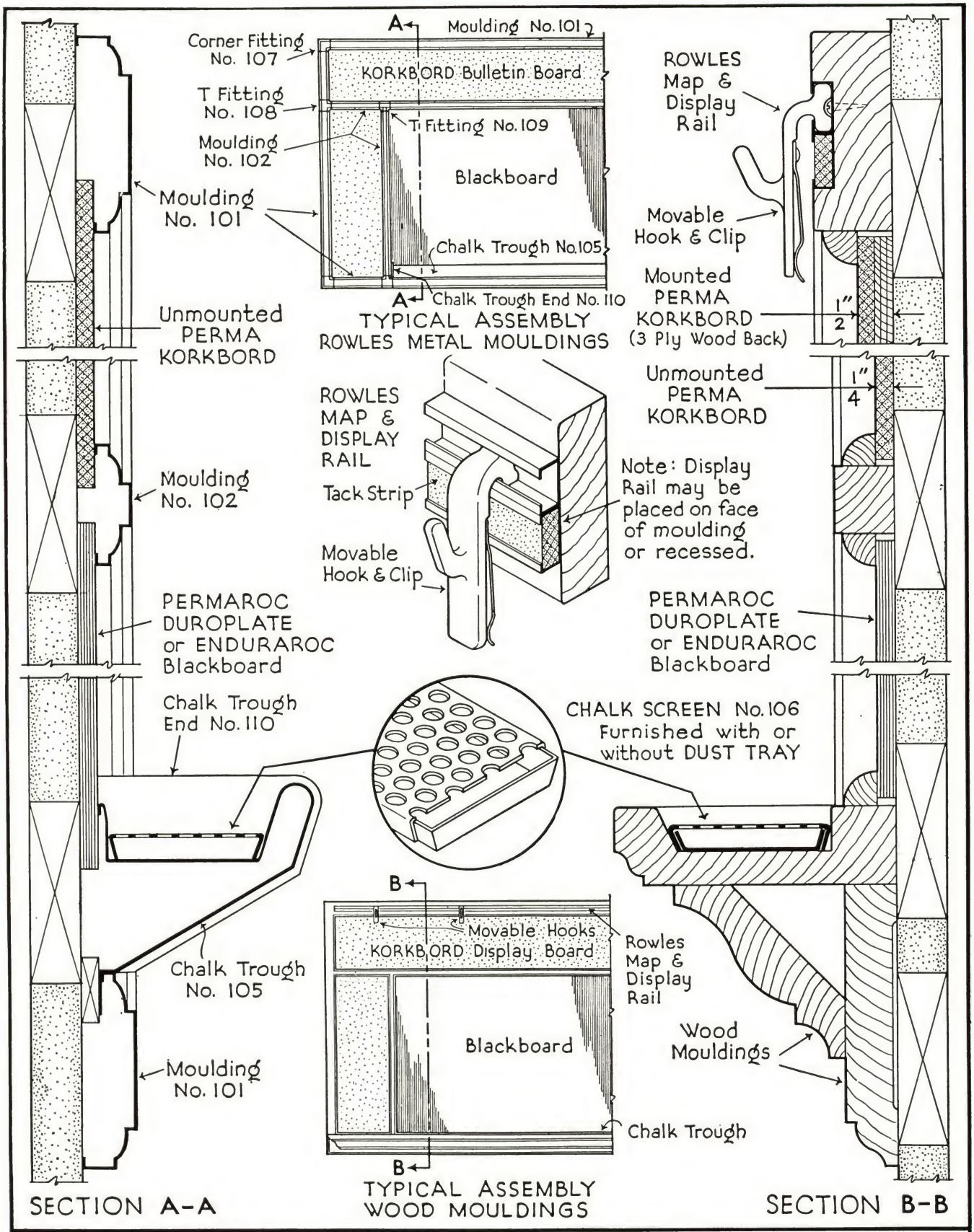
**Perma Korkbord Unmounted**—Is pressed cork, standard color, tan with heavy burlap back. Measurement approximately ¼ in. thick. In any even inch width up to 72 in. and lengths to 80 ft. Approximate weight for shipment 1 lb. per sq. ft.

### MAP AND DISPLAY RAIL—SINGLE AND DOUBLE

Rowles Map and Display Rail is supplied as single or a double rail. The rails are equipped with hooks and spring clips, the double rail also with cork strip. The hooks are adjustable and removable.

The finish is School Brown lacquer. This is an inexpensive device to display bulletins, maps, charts and exhibits of all kinds. The rail may be placed on face of moulding or recessed.

Standard lengths are 3, 4, 6, 8 and 10 ft. Page 2 illustrates assembly details. Send for samples of our display rails.




# DETAILS OF ROWLES BLACKBOARDS

# MASTER SPECIFICATIONS FOR BLACKBOARDS

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## (A) Correlative Provisions

***Note:*** *To assist in providing a perfect blackboard installation, the following clauses should be included under specification divisions where and when they apply.*

***Note:*** *It is suggested that blackboards be included under a separate specification division.*

### (A1) Include Under Carpentry Work

**(A1a)** All blackboards, except as hereinafter otherwise mentioned, will be furnished and set by others.

**(A1b)** The following blackboards will be furnished cut to size and crated separately by the Blackboard Contractor to be set by this Contractor who shall be entirely responsible for their good condition after delivery.

***Note:*** *Here list blackboards which are to be set by the Carpentry Contractor, such as those in wardrobe or other door panels, etc.*

The list and sizes (allowing ¼-in. clearance) shall be furnished by the Carpentry Contractor to the Blackboard Contractor.

**(A1c)** Provide accurately set grounds in accordance with the detailed drawings surrounding all blackboards and cork bulletin boards. These grounds shall not only form proper nailing base for the blackboards but shall provide nailing at the top for blackboards and form accurate screeds for plaster surfaces back of blackboards.

**(A1d)** In addition to grounds above, provide horizontal grounds the full length of the blackboard space to receive Duroplate Clinchers. For boards 3 ft. wide, provide 2 rows of horizontal grounds; for boards 3½ and 4 ft. wide, provide 3 rows of horizontal grounds.

***Note:*** *Omit if Enduraroc or Permaroc blackboards are specified.*

**(A1e)** All grounds shall be sound S4S material free from knots, sap, or other defects for *(here specify thickness and number of coats for plastering).*

Grounds shall be substantially secured in position every 16 in. on centers, set absolutely true to line, level, plumb and in perfect surface alignment. All nails shall be slightly set.

### (A2) Include Under Lathing and Plastering

**(A2a)** This contractor shall check all grounds for blackboards as specified in paragraphs ——, pages —— under division of "Carpentry Work". Thickness of grounds shall be such that plastering back of blackboards is flush with ground surfaces.

**(A2b)** Plaster all spaces back of blackboards flush with grounds. Surfaces shall be in a true plane without projections beyond the face of the ground work.

**(A2c)** The finished coat of plaster may be omitted back of blackboards, but the brown coat shall be floated to a true plane in perfect alignment with the grounds.

**(A2d)** Wherever blackboards are installed on outside walls which are not furred, the masonry back of plastering shall be given two good coats of damp-proof paint.

### (A3) Include Under Painting

**(A3a)** All blackboard trim (except inner loose tack mould) shall be completely finished before blackboards are set.

**(A3b)** The inner loose tack mould of blackboard trim shall be finished up to the last coat before installation. After blackboards are set and the inner mould attached, this contractor shall apply the last coat of finish.

**(A3c)** Great care shall be exercised by this contractor that no painter's finish, by accident or otherwise, is applied to the blackboard surfaces. Any varnish or other finish appearing on blackboard surfaces will be removed and the surface refinished (or new boards erected) by the Blackboard Contractor at this contractor's expense.

## (B) Blackboard Installation

***Note:*** *The following clauses shall be included under the blackboard specifications where and when they apply.*

### (B1) Preliminary Work

**(B1a) General**—The following preliminary work is done under other contracts and is covered under the following specification divisions. Before the erection of blackboards, this contractor shall examine all preliminary work and shall report to the architect in writing any inaccuracies or variations from the specification requirements which will in any way deleteriously affect work under this contract. Failure to so report defects, etc., if any, is construed as acceptance of the work as executed and release of those responsible.

**(B1b) Carpentry Work**—*(Here refer to paragraphs under this heading of preliminary work affecting this contract.)*

**(B1c) Lathing and Plastering**—*(Here refer to paragraphs under this heading of preliminary work affecting contract.)*

**(B1d) Painting**—*(Here refer to paragraphs under this heading of preliminary work affecting this contract.)*

### (B2) Diagrams and Cutting Schedules

**(B2a)** This contractor shall furnish to the architect in triplicate for his approval cutting diagrams and cutting schedules showing disposition of joints and blackboard and bulletin board sizes for the various rooms distinctly and accurately allocated.

### (B3) Materials

**(B3a) Blackboards**—Blackboards shall be *(Enduraroc) (Permaroc) (Duroplate)* as manufactured by E. W. A. Rowles Co., 2500 Prairie Avenue, Chicago, Illinois, or equivalent meeting fully this manufacturer's standards of quality as described in detail in their catalog contained in Sweet's Catalog File (Architectural).

All blackboards shall have surfaces perfectly true and smooth, free from defects, depressions, or projecting particles. Joint edges shall be sharp. The bottom edge shall be parallel with the top edge.

**(B3b) Cement**—Cement for spot cementing shall be Rowles Blackboard Cement.

***Note:*** *Omit if Duroplate is specified.*

**(B3c) Metal Clinchers**—Metal clinchers shall be as manufactured by E. W. A. Rowles Co.

***Note:*** *Omit if Enduraroc or Permaroc Blackboards are specified.*

**(B3d) Metal Blackboard Joints**—Blackboard joints shall be made with Rowles Zinc Metal Joints, dull black finish. All joint mouldings shall be without surface defects, smooth and straight.

***Note:*** *Omit if butted cement joint is specified for Enduraroc or Permaroc. Always include with Duroplate.*

**(B3e) Bulletin Boards**—All bulletin boards shall be Perma Korkbord *(mounted) (unmounted)* as manufactured by E. W. A. Rowles Co.

## (B4) Sizes and Lengths

**(B4a) Widths**—All blackboard widths (height from chalk rail to top) shall be as designated on the detail drawings and schedules.

**(B4b) Lengths**—All sections up to 6, 7, or 8 ft. shall be in one piece; all sections over 8 ft. and up to 16 ft. shall be in two pieces; longer sections shall be in multiples of 6, 7, or 8 or fractions thereof, but arranged with joints symmetrically spaced and with no piece for filling out less than 3 ft. in its horizontal dimension.

## (B5) Storing

All blackboard and bulletin board material shall be properly stored at the building site in such manner as to adequately protect it from damage.

## (B6) Uncrating and Distributing

**(B6a)** All material which is to be set by the carpentry contractor shall be shipped in separate crates and delivered to him crated as received from the manufacturer.

**(B6b)** All material to be erected by this contractor shall be uncrated in accordance with the manufacturer's directions. Distribute the material to the rooms and to the spaces in each room in their order as indicated on the crates and sections to conform with the diagrams and schedules.

## (B7) Sizing

On outside walls not furred and not dampproofed back of plaster, thoroughly size the plaster surface back of blackboards with glue sizing.

***Note:*** *Wherever dampness is apparent or possible, sizing is advisable; otherwise the spotting cement may be affected.*

## (B8) Setting Blackboards

**(B8a)** The setting, leveling, and cutting of blackboard installation shall be in accordance with the manufacturer's recommendations and his standard specifications.

**(B8b)** No blackboard shall be set until the final coat of finish has been applied and has dried on the blackboard woodwork trim (except loose tack mould).

**(B8c)** All blackboards shall be set so that all edges shall be adequately covered by the loose tack mould. The writing surfaces shall be plumb and in a true plane with ¼-in. clearance on all sides.

***Note:*** *Clearance is necessary to allow for swelling of wood trim.*

**(B8d)** Where nailing is required to secure or hang the blackboard sections, use 6d wire nails placed approximately ⅜ in. from the edge and not over 18 in. on centers driven through holes drilled in board. Boards showing splits at nailing points below the finishing tack mould will be rejected and must be replaced at this contractor's expense.

**(B8e)** Enduraroc shall be nailed at top edge only. The balance of the blackboard surface shall be secured to the wall with three horizontal rows of spot-cement with continuous strips of cement at all joints. Spot-cement shall be applied to the plaster in globules about half the size of an egg. The top and bottom rows shall be from 10 to 12 in. from the board edge and from 12 to 16 in. on centers horizontally. The spots of the middle horizontal row shall stagger centrally between the spots of the top and bottom rows. Sufficient cement shall be used at the joints to firmly bed these for a space of 1 in. on each side. The boards shall be firmly pressed in position over the cement and leveled plumb and true. Sufficient pressure shall be maintained for a period of from 2 to 3 days to assure thorough adhesion without springiness for the entire surface. Pressure shall be accomplished by wood cleats secured at top and bottom with wedges beneath spaced in accordance with the manufacturer's directions or otherwise as may be approved by him.

***Note:*** *Omit if Duroplate or Permaroc Blackboards are specified.*

**(B8f)** Permaroc Blackboard shall be nailed at top edge only. First, nail the blackboard at the top edge allowing ¼ in. clearance at trim. After the panel is securely nailed along the upper edge, press it firmly against the plastered wall and nail at the bottom edge allowing ⅛-in. clearance at bottom trim. When panels must be joined, shove the metal joint over the edge of panel on the wall and securely toe-nail the joint to the wall or wood furring. Blackboards shall be installed in exact accordance with the manufacturer's instructions.

**(B8g)** Duroplate shall be set as follows: Place horizontal rows of Rowles Duroplate Clinchers secured to each horizontal wood ground from 12 to 16 in. on centers (two rows are required on boards 3 ft. wide; three rows are required on boards 3½ and 4 ft. wide). First nail the blackboard at top edge only, allowing ¼-in. clearance at trim. After the panel has been securely nailed along the upper edge, clinch each fastener by holding a padded block against the surface of the board and drive back with a hammer. Allow ¼-in. clearance at bottom trim. If more than one panel is required to fill the space, insert the metal joint before nailing the second panel in place and toe-nail metal joint to wall or wood furring.

***Note:*** *See (A1d) for clincher grounds.*

***Note:*** *See (B9a) for metal joint.*

***Note:*** *Omit if Enduraroc or Permaroc Blackboards are specified.*

**(B8h)** Tack mould shall be carefully and accurately braded in position by this contractor with firm, continuous contact at all edges and brads neatly set for puttying.

## (B9) Blackboard Joints

**(B9a) Metal Blackboard Joints**—All joints shall be made with Rowles Metal Joints. The moulding shall be the full width of the blackboard extending back of the tack mouldings which shall be neatly notched out over it at top and bottom. The moulding shall be shoved tight against the first board set and plumbed, and securely toe-nailed to the wall or wood furring; shove the next section of board into the groove of the moulding as far as possible and level and plumb the board. Mouldings with surface imperfections or which are warped out of line shall not be used.

***Note:*** *The manufacturer advocates this joint on all blackboards. Metal joints should always be used on Duroplate.*

**(B9b) Cement Joints**—All joints shall be butt joints in accordance with the manufacturer's standard detail. The joints shall be plumb and adjoining surfaces in a true plane, boards shoved tight, and the joint well bedded in setting cement.

***Note:*** *Use only on Enduraroc. (See (B9a) above.)*

***Note:*** *Omit if Duroplate and Permaroc are specified.*

## (B10) Bulletin Boards

Set all bulletin boards where noted on plans in accordance with the manufacturer's directions. Where joints occur, these shall be symmetrically spaced to correspond with blackboard joints and shall be joined with metal Joint Moulding to match cork. Apply tack mouldings surrounding bulletin boards as specified above for blackboards.

## (B11) Display Rails

This contractor shall furnish and install above all blackboards spaces Display Rail with spring clips, hooks and cork inserts as manufactured by E. W. A. Rowles Co., 2500 Prairie Avenue, Chicago, Illinois or equivalent, meeting fully their standards of quality as described in their catalog contained in Sweet's Catalog File (Architectural). The Display Rail shall be securely fastened to the blackboard trim in exact accordance with the manufacturer's recommendations.

## (B12) Final Cleaning

After the painter has applied the final coat of finish to the tack mould, this contractor shall do the final cleaning of all blackboard surfaces, charging the reasonable cost thereof to those responsible for any damage. All varnish spots or streaks shall be removed with steel wool; apply Rowles Blackboard Surfacer rubbed down with fine pumice and water, blending the spots with the rest of the board surface.

E. W. A. ROWLES CO.

# MASTER SPECIFICATIONS

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# METAL BLACKBOARD TRIM WITH OFFSET OR FLUSH MOULDINGS

***Note:*** *Notes are explanatory or advisory only and should not be included in the specifications.*

***Note:*** *Select and include only those clauses which apply to the particular work. Words and clauses within brackets in italics are selective.*

## (1) Preliminary Work

***Note:*** *Include the following clauses under the proper specification divisions.*

**(1a) General**—The following preliminary work is done under other contracts and is covered under the following specification divisions. Before the erection of blackboard trim, this contractor shall examine all preliminary work and shall report to the architect in writing any inaccuracies or variation from the specification requirements which will in any way deleteriously affect work under this contract. Failure to so report defects, etc., if any, is construed as acceptance of the work as executed and release of those responsible.

**(1b) Carpentry Work—**

**(1b1) Grounds**—Provide accurately set grounds in accordance with the detailed drawings surrounding all blackboards and bulletin boards. These grounds shall not only form proper base for the blackboard trim but shall provide nailing at the top for blackboards and form accurate screeds for plaster surfaces back of blackboards. All grounds shall be sound S4S material free from knots, sap, or other defects for *(here specify thickness and number of coats for plastering).*

Grounds shall be substantially secured in position every 16 in. on centers, set absolutely true to line, level, plumb, and in perfect surface alignment. All nails shall be slightly set.

**(1b2) Lathing and Plastering**—This contractor shall check all grounds for blackboards as specified in paragraphs ....., pages ....., under division of "Carpentry Work." Thickness of grounds shall be such that plastering back of blackboards is flush with ground surfaces. Plaster all spaces back of blackboards flush with grounds. Surfaces shall be in a true plane without projections beyond the face of ground work.

The finished coat of plaster may be omitted back of blackboards, but the brown coat shall be floated to a true plane in perfect alignment with the grounds. Wherever blackboards are installed on outside walls which are not furred, the masonry back of plastering shall be given two good coats of dampproof paint.

## (2) Materials

Metal Blackboard Trim shall be as manufactured by E. W. A. Rowles Co., 2500 Prairie Avenue, Chicago, Illinois or equivalent, meeting fully this manufacturer's standards of quality. All mouldings and fittings shall be delivered primed both sides for subsequent face finish after erection.

Mouldings and fittings shall be No. 101 Outside Trim, No. 102 Divisional Mouldings, and No. 105 Chalk Trough with No. 106 Chalk Screen together with the necessary flush metal fittings Nos. 107, 108, 109, 110, and 111 as required for the particular blackboard design detailed.

## (3) Cutting and Fitting

The Metal Trim shall be accurately cut at the factory to the various lengths detailed and assembled with the necessary fittings in accordance with the manufacturer's standard erection details. All joints shall be true and smooth. All mouldings are accurately drilled for screw attachment, spaced approximately 12 in. apart on centers symmetrically placed.

## (4) Erection

Erect the blackboard trim over the blackboard. Mouldings and fittings shall be secured to wood grounds with round headed screws. All trim shall be set level, plumb and true. All mouldings shall join fittings with close, practically invisible joints.

## (5) Finishing

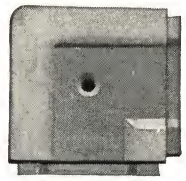
Finish all metal blackboard trim with *(1) (2)* coats of *(specify paint)* of color selected by the architect.

***Note:*** *A standard metal trim enamel is advocated.*

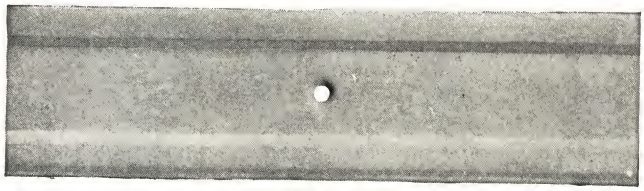
Great care shall be exercised by this contractor that no painter's finish, by accident or otherwise, is applied to the blackboard surfaces. Any painter's finish appearing on blackboard surfaces will be removed and the surface refinished (or new boards erected) by the Blackboard Contractor at this contractor's expense.

### METAL BLACKBOARD TRIM

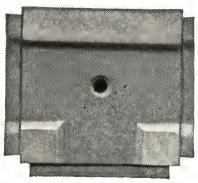
*(See page 2 for Assembly Detail)*



No. 226 Corner Fitting



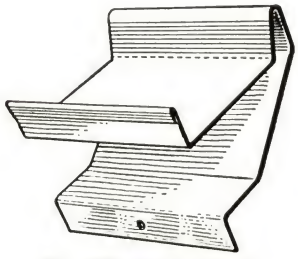
No. 225 Moulding



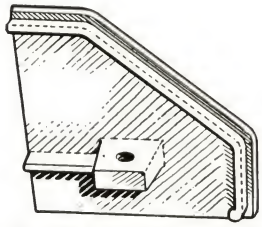
No. 227 T Fitting



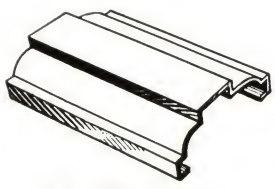
No. 101 Moulding



No. 105 Chalk Trough



No. 110 Chalk Trough End



No. 102 Moulding

# SECTION 21

CONTINUED ⟶

# WEBER COSTELLO COMPANY

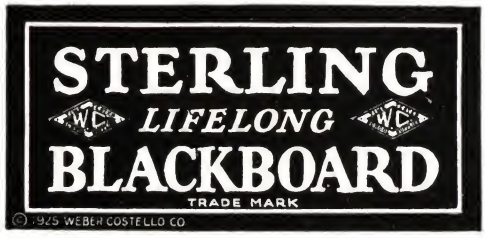
MANUFACTURERS OF

Blackboard—Map and Display Rail—Swinging Leaf Blackboard

CHICAGO HEIGHTS, ILLINOIS

## Service to Architects

- √ Master Specifications in detail
- √ Complete Installation Instructions
- √ Samples of Blackboard in green and black
- √ Authentic Tables on Area and Placement of Blackboard







**COMPOSITION**—Sterling Blackboard body is made of Portland cement, long fibre asbestos, and black coloring pigment thoroughly and permanently combined by a special laminating process and subjected to a pressure of 9,000 tons per slab, producing an extremely hard, resilient blackboard body of uniform composition, thickness and color. After curing and the elimination of all excess moisture, the board is waterproofed. Then the time-tested, velvety writing surface, is carefully applied with mechanical precision over the face of the body. Sterling Blackboard is fireproof and moistureproof—will not warp and expands and contracts very little.

**COLORS**—Jet black and green, both non-fading.

**SIZES**—Sterling blackboard is uniformly $\frac{3}{16}$ in. thick, 3 ft., 3 ft. 6 in., and 4 ft. wide and 5, 6, 7 and 8 ft. long. It weighs 2 lbs. a sq. ft. (2.5 lbs. crated).

**ADVANTAGES—**

Perfect writing surface.
Long lengths—few joints.
Economical to install.
Non-light reflecting.
Easy to install.
Long life.
Inexpensive.

**COMPOSITION**—Old Reliable Hyloplate is made of live spruce wood pulp by a special lamination process. It is regularly furnished in 4-ply construction with one face finished in the Weber Costello five-coat, velvet writing surface. It can be furnished in either 4 or 5-ply construction with a writing surface on both sides. Over 50,000,000 sq. ft. in use. While genuine Old Reliable Hyloplate is made only by WEBER COSTELLO COMPANY this product is so standard and well known that the name "Hyloplate" is commonly (though erroneously) applied to similar (though inferior) blackboard.

**COLORS**—Jet black and green, both non-fading.

**SIZES**—Old Reliable Hyloplate Blackboard is made uniformly ¼ in. thick, 3 ft., 3 ft. 6 in., and 4 ft. wide and any even foot up to 12 ft. long. It weighs ¾ lbs. per sq. ft. (1 lb. crated).

**ADVANTAGES—**

Velvety writing surface—noiseless to write upon.
Non-light reflecting—never wears glossy.
Will not crack, chip, or spider-check.
Light in weight—economically transported.
Durable—lasts for years.
Long lengths—cheap and easy to install.
Very inexpensive.

# VELVASTONE TRADE MARK BLACKBOARD

**COMPOSITION**—Velvastone Blackboard body is made from specially processed, calcined gypsum rock, moulded while plastic between two sheets of tough heavy surfaced paper, resulting in a durable, slightly flexible body. Completely waterproofed and five-coated with Weber Costello velvety writing surface. Practically no expansion or contraction, and no warpage.

**COLORS**—Jet black, non-fading.

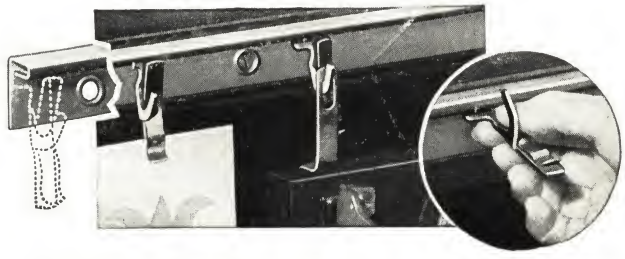
**SIZES**—Uniformly ⅜ in. thick, 3 ft., 3 ft. 6 in., and 4 ft. wide and 5, 6, 7, and 8 ft. long. It weighs 2 lbs. per sq. ft. (2½ lbs. crated).

**ADVANTAGES**—

Excellent writing qualities. Inexpensive.
Durable. Long lengths. Easy to install.

## WEBCO MAP AND DISPLAY RAIL

Improved Webco Map and Display Rail is made of heavy gauge well finished metal, and is formed to give unusual strength. The combination hook and clip can be inserted or removed from any place on the rail; there are no notches or cut-outs. The hook part of the combination hook and clip will hold over 300 lbs. and the clip part is designed to securely hold paper and cardboard displays.



Simply and easily installed to any wall, trim, or molding and therefore particularly adaptable to either new or old buildings. The City of Chicago just bought 28,000 ft.

## WEBCO SWINGING LEAF BLACKBOARD



The New Webco Swinging Leaf Blackboard can be quickly and easily installed in either new or old buildings. It is especially practical for laboratories, libraries, auditoriums, gymnasiums, or any place where adequate blackboards or bulletin boards are not provided.

This multi-leaf blackboard consists of four swinging leaves, each 3 ft. by 3½ ft. in area of double faced Old Reliable Hyloplate Blackboard or Cork Bulletin Board. Each panel is framed in a neat, well finished metal frame. Any individual leaf or the entire unit may be removed for use in another classroom if additional mounting fixtures are provided. A locking device is furnished to hold the leaves together when they are not in use.

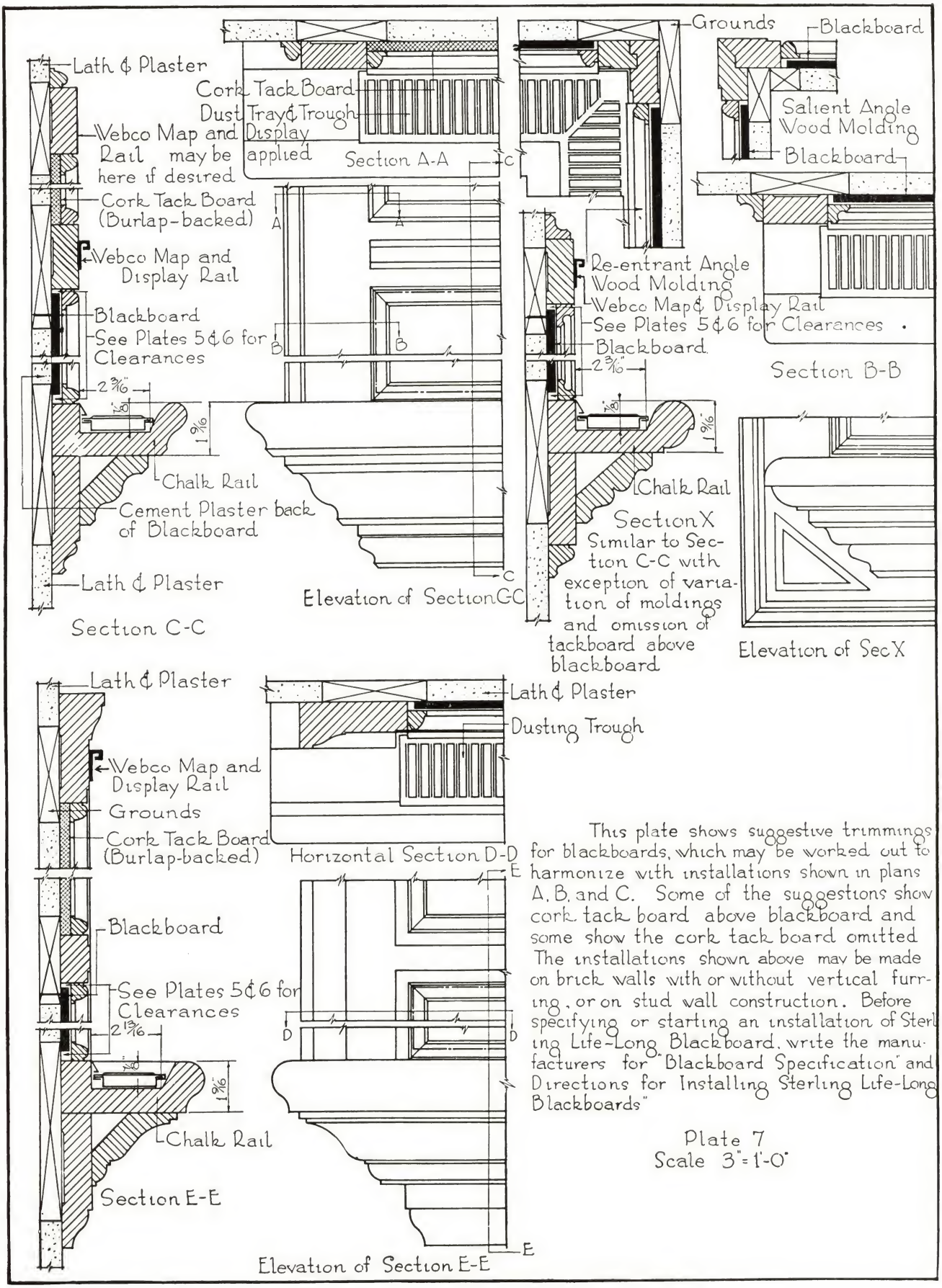
Since each panel is composed of genuine Old Reliable Hyloplate it is light in weight. The metal frames, however, hold the panel rigid so that they may be used the same as any framed blackboard. The entire unit weighs less than 50 lb. and is thus easily transported for use in another room. No tools are required—just remove one thumb nut.

The New Webco Swinging Leaf Blackboard is regularly manufactured in two assemblies. The No. 1 Unit is equipped with four leaves of double surfaced Old Reliable Hyloplate Blackboard, complete with hinges and one set of brackets mounted on a heavy oak backboard. The metal frames, hinges, and brackets are finished in antique bronze plate, and the backboard is finished in school (medium dark) brown. The No. 2 Webco Swinging Leaf Blackboard is the same as Unit No. 1, except that a cork surface has been substituted for one of the blackboard spaces. This is a high quality cork especially selected and applied to the swinging leaf blackboard. It is soft and spongy, so that it remains "live" indefinitely, yet it is sufficiently firm to hold pins and thumb tacks securely. Unless otherwise specified the cork is placed on the outside panel as illustrated.




A patented locking device is a feature of these units. Tests and examination questions may be prepared in advance of class periods and kept under lock and key until they are ready to be presented.

WEBER COSTELLO COMPANY




This plate shows suggestive trimmings for blackboards, which may be worked out to harmonize with installations shown in plans A, B, and C. Some of the suggestions show cork tack board above blackboard and some show the cork tack board omitted. The installations shown above may be made on brick walls with or without vertical furring, or on stud wall construction. Before specifying or starting an installation of Sterling Life-Long Blackboard, write the manufacturers for "Blackboard Specification" and "Directions for Installing Sterling Life-Long Blackboards"

Plate 7
Scale 3" = 1'-0"

# MASTER SPECIFICATIONS FOR BLACKBOARDS

## (A) PRELIMINARY PROVISIONS

***Note:*** *To assist in providing a perfect blackboard installation, the following clauses should be included under specification divisions where and when they apply.*

***Note:*** *It is suggested that blackboards be included under a separate specification division.*

### (A1) Include Under Carpentry Work

**(A1a)** All blackboards, except as hereinafter otherwise mentioned, will be furnished and set by others.

**(A1b)** The following blackboards will be furnished cut to size and crated separately by the Blackboard Contractor to be set by this Contractor who shall be entirely responsible for their good condition after delivery.

***Note:*** *Here list blackboards which are to be set by the Carpentry Contractor, such as those in wardrobe or other door panels, etc.*

The list and sizes (allowing ¼-in. clearance) shall be furnished by the Carpentry Contractor to the Blackboard Contractor.

**(A1c)** Provide accurately set grounds in accordance with the detailed drawings surrounding all blackboards and cork bulletin boards. These grounds shall form proper nailing base for the blackboard trim, provide nailing at the top for blackboards, and form accurate screeds for plaster surfaces back of blackboards.

**(A1d)** All grounds shall be sound S4S material free from knots, sap, or other defects for *(here specify thickness and number of coats for plastering).*

Grounds shall be substantially secured in position every 16 in. on centers, set absolutely true to line, level, plumb, and in perfect surface alignment. All nails shall be slightly set.

### (A2) Include Under Lathing and Plastering

**(A2a)** This contractor shall check all grounds for blackboards as specified in paragraphs——, pages—— under division of "Carpentry Work". Thickness of grounds shall be such that plastering back of blackboards is flush with ground surfaces.

**(A2b)** Plaster all spaces back of blackboards flush with grounds. Surfaces shall be in a true plane without projections beyond the face of the ground work.

**(A2c)** The finished coat of plaster may be omitted back of blackboards, but the brown coat shall be floated to a true plane in perfect alignment with the grounds.

**(A2d)** Wherever blackboards are installed on outside walls which are not furred, the masonry back of plastering shall be given two good coats of damp-proof paint.

### (A3) Include Under Painting

**(A3a)** All blackboard trim (except inner loose tack mould) shall be completely finished before blackboards are set.

**(A3b)** The inner loose tack mould of blackboard trim shall be finished up to the last coat before installation. After blackboards are set and the inner mould attached, this contractor shall apply the last coat of finish.

**(A3c)** Great care shall be exercised by this contractor that no painter's finish, by accident or otherwise, is applied to the blackboard surfaces. Any varnish or other finish appearing on blackboard surfaces will be removed and the surface refinished (or new boards erected) by the Blackboard Contractor at this contractor's expense.

## (B) BLACKBOARD INSTALLATION

***Note:*** *The following clauses shall be included under the blackboard specifications where and when they apply.*

### (B1) Preliminary Work

**(B1a) General**—The following preliminary work is done under other contracts and is covered under the following specification divisions. Before the erection of blackboards, this contractor shall examine all preliminary work and shall report to the architect in writing any inaccuracies or variations from the specification requirements which will in any way deleteriously affect work under this contract. Failure to so report defects, etc., if any, will be construed as acceptance of the work as executed and release of those responsible.

**(B1b) Carpentry Work**—*(Here refer to paragraphs under this heading of preliminary work affecting this contract.)*

**(B1c) Lathing and Plastering**—*(Here refer to paragraphs under this heading of preliminary work affecting contract.)*

**(B1d) Painting**—*(Here refer to paragraphs under this heading of preliminary work affecting this contract.)*

### (B2) Diagrams and Cutting Schedules

This contractor shall furnish to the architect in triplicate for his approval cutting diagrams and cutting schedules showing disposition of joints and blackboard and bulletin board sizes for the various rooms accurately allocated.

### (B3) Materials

**(B3a) Blackboards**—Blackboards shall be *(Sterling) (Velvastone) (Hyloplate)* Blackboards as manufactured by Weber Costello Company, Chicago Heights, Illinois, or equivalent, meeting fully this manufacturer's standard quality.

All blackboards shall have surfaces perfectly true and uniform, and free from defects. Joint edges shall make angles of 90 degrees with top or hanging edge. Bottom edge shall be parallel with the top edge.

**(B3b) Cement**—Cement for spot cementing the blackboard to the wall shall be W. C. Sterling Cement (No. 50).

**(B3c) Metal Blackboard Joints**—Blackboard joints shall be made with W. C. Rustproof Metal Joints, slated finish. All joint mouldings shall be without surface defects, smooth and straight.

**(B3d) Bulletin Boards**—All bulletin boards shall be *(W. C. Cork Tackboard) (W. C. Mounted Corkboard).*

**(B3e) Map and Display Rails**—All map and display rails shall be made by Weber Costello Company equipped with combined hooks and clips.

### (B4) Sizes and Lengths

**(B4a) Widths**—All blackboard widths (height from chalk rail to top) shall be as designated on the detail drawings and schedules.

**(B4b) Lengths**—All sections up to 8 ft. (12 ft. for Hyloplate) shall be in one piece; all sections over 8 ft. (12 ft. for Hyloplate) and up to 16 ft. shall be in two pieces; longer sections shall be in multiples of 6 ft., 7 ft., or 8 ft. or fractions thereof, but arranged with joints symmetrically spaced and with no piece for filling out less than 3 ft. in its horizontal dimensions.

### (B5) Storing

All blackboard and bulletin board material shall be properly stored at the building site in such manner as to adequately protect it from damage.

## (B6) Uncrating and Distributing

**(B6a)** All material which is to be set by the carpentry contractor shall be shipped in separate crates and delivered to him crated as received from the manufacturer.

**(B6b)** All material to be erected by this contractor shall be uncrated in accordance with the manufacturer's directions. Distribute the material to the rooms and to the spaces in each room in their order as indicated on the crates and sections to conform with the diagrams and schedules.

## (B7) Setting

**(B7a)** The setting, leveling, and cutting of blackboard shall be in accordance with the manufacturer's recommendations and specifications, furnished with each shipment of blackboard.

***Note:*** *In the states of Texas, Louisiana, Mississippi, Alabama, Florida, Georgia, North Carolina, and South Carolina where the climate is hot and humid, blackboard will be almost certain to sweat unless installed by* Weber Costello Company's *special patented Ventilated method of installation. Be sure to secure these directions. They must be followed to insure satisfactory results. (Insert the paragraph (B7b) in specifications covering installation to be made in these states.)*

**(B7b)** The setting, leveling, and cutting of blackboard shall be in accordance with the manufacturer's special patented Ventilated method. (Details supplied upon request.)

**(B7c)** No blackboard shall be set until the final coat of finish has been applied and has dried on the blackboard woodwork trim (except loose tack mould).

**(B7d)** All blackboards shall be set by competent mechanics so that all edges shall be adequately covered by the loose tack mould. The writing surfaces shall be plumb and in a true plane.

**(B7e)** Tack mould shall be carefully and accurately bradded in position by this Contractor with firm, continuous contact at all edges and brads neatly set for puttying.

**(B7f) Sterling**—Lay slab face down on a padded bench. (Made very easily by using one of the crates.) Wipe all dust and dirt off the back of the blackboard. Go over wall with a stiff brush and remove all loose particles of plaster and dust.

Sterling cement No. 50 is supplied with every shipment of Sterling Blackboard. It is in form of a powder (in bags) and a liquid (in cans).

The powder and liquid must be stirred together until all granules and solid particles disappear, and the cement is soft and easily worked (like a thick paste). Thorough mixing or working produces the correct consistency. Mix for only one blackboard at a time.

Place globules of cement every 12 inches in a horizontal row along the center of slab lengthwise and two (2) extra at each edge at joints.

Side slab, at once, into position and, equalizing space at top and bottom, apply pressure over cement globules. Immediately put clamps in place and insert wedges over the cement globules to hold slab in proper contact with the cement and wall. Two or three light weight clamps are sufficient for each slab. Wrap the wedges in paper to protect the blackboard surface. Drill holes along top of blackboard every 16 to 18 inches and countersink for wood screws. Screw slab securely to top ground, using a ¾ in. No. 8 flat headed wood screw countersunk. Insert metal rustproof joint at right end to receive next slab. Proceed with second and successive slabs. After the cement has been allowed to set at least 10 hours (over night), take off clamps. Then place quarter round or cove mouldings at top and bottom of blackboard to complete the installation. Mouldings must be toe-nailed as tightly against the surface of the blackboard as possible.

**(B7g) Velvastone**—Blackboard should not be installed over "green" or damp plaster. The plaster must be thoroughly dry.

Slide first slab into place and nail securely along top edge every sixteen to thirty inches with three-penny lath nails. Proceed with second and successive slabs until space is completely filled, using Metal Rustproof Joints to join the slabs where more than one is required to fill the space. When space is complete, nail wood moulding around the slabs as tightly against the blackboard as possible.

**(B7h) Hyloplate**—Walls must be thoroughly dry.

Hang Hyloplate in space it is to occupy by driving nails through the top edge only about every twenty to thirty inches. Do not nail ends or bottom. Allow at least ⅜ inch for expansion at each end. Allow at least ⅝ inch for expansion at bottom. Allow at least ¼ inch for expansion between pieces where two or more are used to fill a space. Where two or more pieces are necessary for a space, cover the joint or opening between the pieces with Metal Rustproof Joints.

In applying tack mould, place a piece of cardboard between the Hyloplate and the moulding while nailing it in place, afterward removing the cardboard. This leaves the necessary free space. Be careful that the nails holding the moulding be driven in in such a way that they will not go through nor even near the edge of Hyloplate. Leave the expansion space absolutely free from any obstruction.

**(B7i) Metal Blackboard Joints**—All joints shall be made with metal blackboard joints. The moulding shall be the full width of the blackboard extending back of the tack mouldings which shall be neatly notched out over it at top and bottom. Shove the moulding tight against the first board set and plumb and securely toe-nail it to the wood grounds; shove the next section of board into the groove of the moulding as far as possible and level and plumb the board.

## (B8) Bulletin Boards

Set all bulletin boards where noted on plans in accordance with the manufacturer's directions. Where joints occur, these shall be symmetrically spaced to correspond with blackboard joints and shall be joined with metal joint moulding to match cork. Apply tack mouldings surrounding bulletin boards as specified above for blackboards.

## (B9) Map and Display Rails

This contractor shall furnish and install where indicated above blackboard spaces Map and Display Rails and shall furnish to the *(school superintendent) (specify)* a package, distinctly marked, containing a total of (*specify number*) of hook-clips to fit the rail

## (B10) Final Cleaning

After the painter has applied the final coat of finish to the tack mould, this contractor shall do the final cleaning of all blackboard surfaces, charging the reasonable cost thereof to those responsible for any damage. All varnish spots or streaks shall be removed; apply W. C. Liquid Blackboard Surfacer rubbed down with fine pumice and water, blending the spots with the rest of the board surface.

## (B11) Direction Plates

In each room fasten permanently where directed by the Architect the metal plate furnished by the blackboard manufacturer bearing directions for breaking in and care of blackboard surface.

## (B12) Breaking in Blackboard Surfaces

This contractor shall break in all blackboard surfaces and leave in clean, perfect, ready-to-use condition as follows:

**(1)** With the side of a piece of good quality crayon, chalk the entire surface of the blackboard. (Use only good grade crayon free from grease or grit. If the crayon is glazed or enameled, it should be scraped off.)

**(2)** Work the crayon into the surface lightly by erasing with a blackboard eraser. (No pressure is necessary.)

**(3)** Erase with a clean eraser and follow with a soft cloth or a chamois skin.

## (B13) Webco Swinging Leaf Blackboard

Furnish and erect Webco Swinging Leaf Blackboards as follows:

***Note:*** *Here list the various rooms so equipped. If cork bulletin boards are inter-leaved with blackboard panels, so note and locate separately.*

# SECTION 21

CONTINUED ⟶

# MIDWEST CONCEALED BED CORPORATION

## Manufacturers of All Types of Concealed Bed Equipment

ATLANTA OFFICE
Percy R. Baker,
1302 Piedmont Avenue

Main Office and Plant, EVANSVILLE, IND.
PHILADELPHIA OFFICE, Jos. M. Baker, 1700 Walnut Street
AGENTS IN PRINCIPAL CITIES

PACIFIC COAST PLANT
L. A. Wall Bed Co.,
LOS ANGELES, CALIF.

### FEATURES OF MIDWEST CONCEALED BEDS

The Midwest Line of Concealed beds carries the prestige and refinement of twenty-four years of continuous research and development. These pages illustrate and describe a few of the many features developed by this company during its long experience in this field to add to the comfort of concealed beds.

**Bed Ends**—Art line tubing 1¾ ins. diameter furnished in variety of designs and finishes.

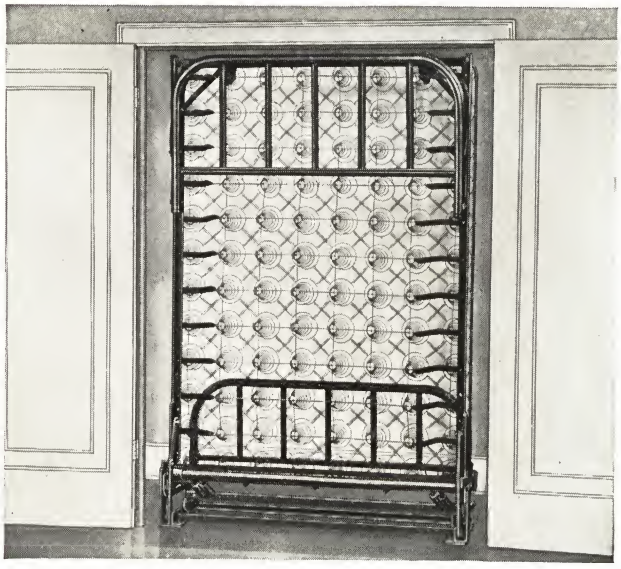
**Spring Equipment**—Springs are made of high tempered Premier wire tied together with high tempered Premier helicals with ample depth of coils to insure maximum comfort.

**Finishes**—Standard finishes: Wood brown and hand grained Walnut. Our hand grained wood finishes are beautiful reproductions of natural woods. These artistic finishes represent the handwork of experts. We produce an unsurpassed finish, both in appearance and durability.

Midwest Concealed beds are unusually attractive and durable. In addition to the installations described we manufacture many other distinctly different types that will meet practically any peculiar condition that may arise in the planning of a new building or in the remodeling of an old one.

**Catalogue**—And full details of the complete Midwest line on application to factory or nearest representative.

### COME-OUT RECESS HINGED DOOR TYPE



**Come-Out Recess Installation No. 36**
Showing bed in recess



**Come-Out Recess Installation No. 36**
Showing bed lowered with head end out of enclosure

### Installation No. 36

Bed is attached to floor in a recess 20 in. in depth from inside plaster line to face of doors. Bed as it is lowered automatically moves forward bringing head portion out of enclosure. Folding feature of head end retains pillows when bed is in upright position. *The come-out recess type is a decided improvement over the stationary recess bed with head portion remaining back in recess.*

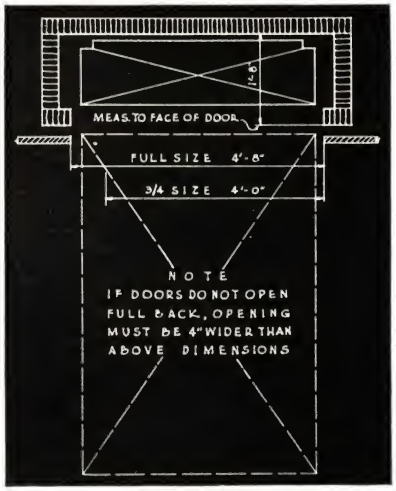
For full size beds the minimum width of opening may be 4 ft. 8 in., providing both doors open full back, otherwise the standard width of 5 ft. 0 in. is recommended. Minimum opening height 6 ft. 8½ in.

For ¾ size beds, opening may be 6 in. less than standard.

For twin size beds, opening may be 1 ft. 4 in. less than standard.

Recess is concealed with a pair of hinged doors. Door height may vary from 6 ft. 8 in. to 7 ft. 0 in.

*Note:* This installation may be accommodated in a minimum closet depth of 18 in. from inside plaster line to face of doors providing door thickness does not exceed 1⅜ in. and back base board is omitted or set flush with plaster line.




**Detail Showing Measurements**

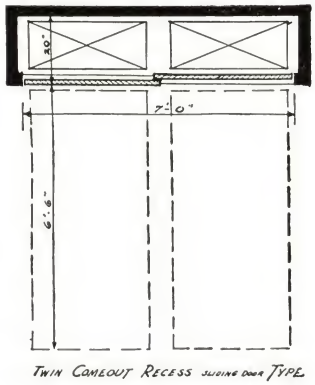
## MIDWEST TWIN COME-OUT RECESS BEDS, ROLLING DOOR TYPE

A method of twin bed concealment designed especially for use where only minimum space is available. A special feature of this installation is that the doors may be closed while the beds are in use. Although the space required is small these beds embody all the sturdy features and unusual sleeping comfort of the entire Midwest Line.

Minimum closet depth 20 in. Size of opening 7x7 ft. with two sliding doors each 3 ft. 6½ in. x 7 ft.



Twin Come-Out Recess Installation No. 35, with Beds Concealed




TWIN COMEOUT RECESS SLIDING DOOR TYPE



Twin Come-Out Recess Installation No. 35, Beds Lowered, Recess Closed

## MIDWEST PORTABLE CLOSET BEDS—ROLLER TYPE

A scientifically, all-steel-constructed bed designed to occupy a minimum of space, which, being free of all cumbersome mechanism, can be rolled from concealment to desired position in room with but slight effort.

**Individual Features**—Circular carriage or base construction (no sharp corners) only 20½ in. wide; all contact surfaces fully protected with felt buffer strip.

**Exceptional Balance**—Solely by tension springs (eliminating excessive weight existing in counterbalance types).

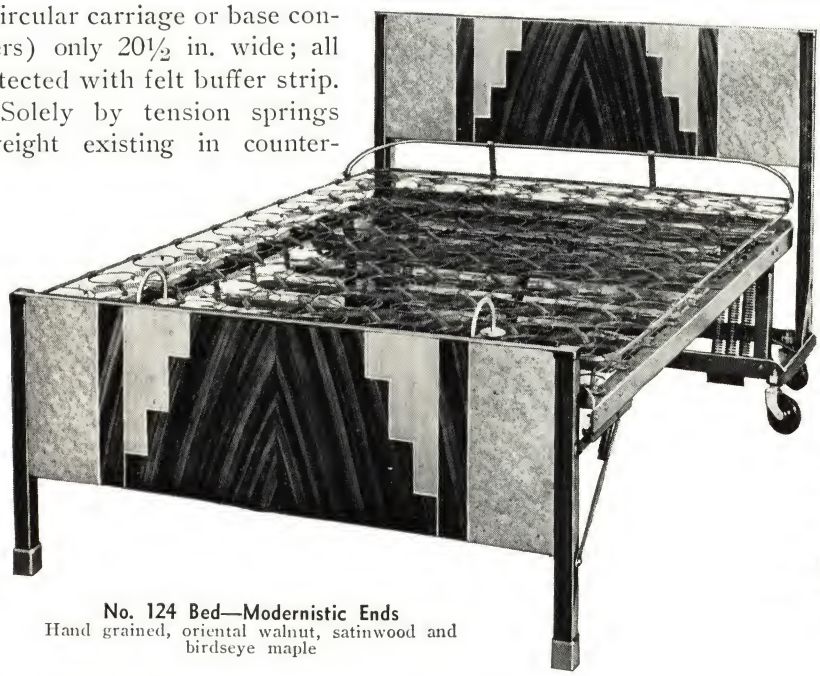
**Automatically Controlled Center Swing Leg**—A positive guarantee against jackknifing or folding over of head end when bed is in lowered position.

**Ball Bearing Casters**—Faultless ball bearing "rubberex" casters, 4-in. diameter, insure easy rolling.

**Spring Frames**—When raised or lowered, swing well within back line of carriage, insuring against defacement of walls or interior trim.

Over-all dimensions of carriage or base of bed

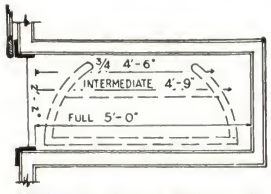
| Size bed | Length | Width |
|---|---|---|
| Full size..... | 4 ft. 10 in. | 20½ in. |
| Intermediate.. | 4 ft. 7 in. | 20½ in. |
| Three-quarter. | 4 ft. 4 in. | 20½ in. |
| Twin..... | 3 ft. 7 in. | 20½ in. |



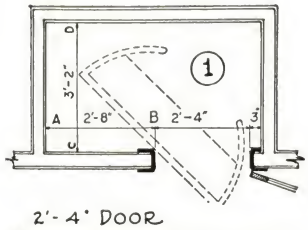
**No. 124 Bed—Modernistic Ends**
Hand grained, oriental walnut, satinwood and birdseye maple



**Midwest Bed**
Upright position, showing narrow base only 20½ in. wide

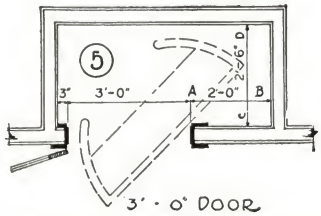



Minimum door width 2 ft. where door opens full back



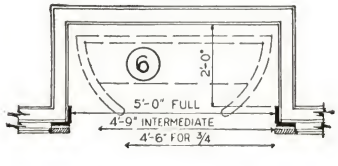

2'-4" DOOR

Minimum depth of closet in combination with a 2 ft. 4-in. door




3'-0" DOOR

Minimum depth of closet in combination with a 3-ft. door




TWO 2'-6" FRENCH DOORS

One pair of 2 ft. 6-in. doors, minimum depth of closet 2 ft.

*Note:* All dimensions are based on full size beds. On Plans 1 and 5 for intermediate size bed, closet can be 3 ins. less between A and B and 1½ in. less between C and D. For three-quarter size bed, closet can be 6 in. less between A and B and 3 in. less between C and D. All doors 6 ft. 8 in. high.

# MITCHELL MANUFACTURING COMPANY

FORT SMITH, ARKANSAS

## THE MITCHELL ROLL-IN CLOSET BED—TWELVE IMPORTANT POINTS

(1) A space saver—adds another bedroom without adding the room. Fits into closet and still leaves space for hanging clothes.

(2) Convenient, in that it is always ready for instant service. Roll bed out into the room, lower it—just a few seconds and it is ready "for bed."



No. M-1 Patent Applied For

Sizes, 4 ft. 6 in. and 3 ft. 3 in. Height, 6 ft. 5 in.; depth, 25¼ in.; width (over all), 4 ft. 10⅝ in. Approximate weight, 225 lbs., crated

(3) Folks who "air" their beds regularly may roll the Mitchell out on the porch—to a window—quickly, easily, noiselessly.

(4) For unexpected guests, a bed that is ready at a moment's notice.

(5) No special installation—all that is needed is a convenient closet.

(6) Emphasis is placed on the casters—their self-lubricating, ball bearing bushings make for instant response to the lightest touch (a child can move the bed with ease).

(7) Foot-ends are a unit—not "spliced" or hinged, but just as you find on a regular bed. Absence of joints and hinges contribute much to the appearance, besides being more staunch and rigid.

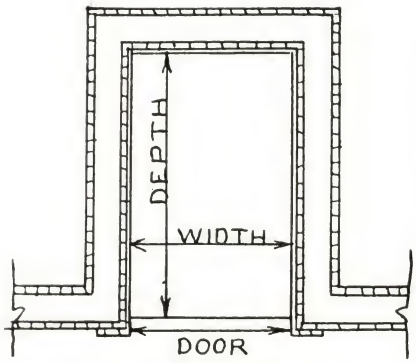
(8) Rubber fenders prevent damage to furniture or woodwork.

(9) In addition to mattress clamps, strong straps are furnished to hold mattress in place when bed is closed.

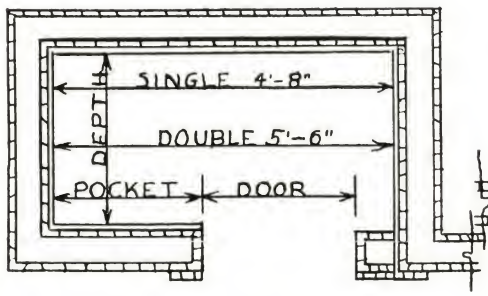
(10) Will not accidentally close.

(11) Lightness of weight of the Mitchell Roll-in Closet Bed is an item of concern, as this lighter weight bed is more easily moved about.

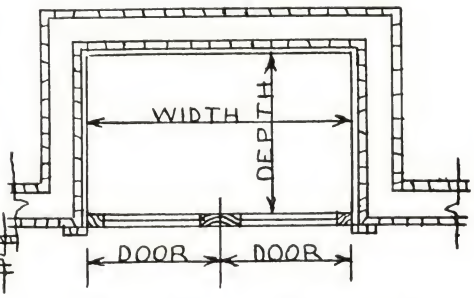
(12) The Mitchell Roll-in Closet Bed is made to last. The best grade of steel in all its construction as well as the most enduring finishes.




INSTALLATION NO. 1.




INSTALLATION NO. 2.




INSTALLATION NO. 3

| SIZE OF BED | DOOR | WIDTH | DEPTH |
|---|---|---|---|
| SINGLE 3'-3" WIDE | 2'-3"x6'-8" | 2'-3" | 3'-9" |
| DOUBLE 4'-6" WIDE | 2'-3"x6'-8" | 2'-3" | 5'-0" |

| DOOR | 3'-0" | DOOR | 2'-10" | DOOR | 2'-8" |
|---|---|---|---|---|---|
| POCKET | DEPTH | POCKET | DEPTH | POCKET | DEPTH |
| SINGLE 1'-2" | 2'-4" | 1'-4" | 2'-6" | 1'-6" | 2'-8" |
| DOUBLE 2'-0" | 2'-9" | 2'-2" | 2'-11" | 2'-4" | 3'-1" |

| DOOR | WIDTH | DEPTH |
|---|---|---|
| SINGLE 2-22½"x6'-8" | 2'-3" | 3'-9" |
| DOUBLE 2-2'-6"x6'-8" | 5'-0" | 2'-3" |

# MURPHY DOOR BED COMPANY

19 West 44th St. NEW YORK, N. Y. | 173 West Madison St. CHICAGO, ILL. | 315 North Tenth St. ST. LOUIS, MO. | 2459 Grand River Ave. DETROIT, MICH.

OFFICES AND DISPLAY ROOMS IN PRINCIPAL CITIES

## A Complete New Line

Pioneer and leader in Concealed Beds, Murphy offers for 1938, a complete new line. Retaining the many features which have made these beds famous in more than a quarter-century of trouble-free service, plus tested improvements, there is now available a selection of smart styles to fit modern buildings.

Two types of Pivot Beds, offset pivot and two-door pivot, two types of Recess Beds and the remarkable Murphy Roller Bed comprise an array with which to meet almost any requirement.

Standard size mattresses are used. Improved ribbon fabric, single or double deck coil or box springs are furnished as desired.

**Slumber Luxury at Night**

**MURPHY IN-A-DOR BEDS**

**Out of the Way by Day.**

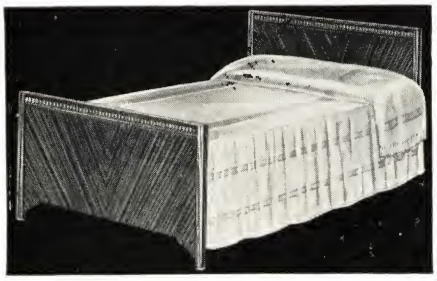
## Technical Service for Architects, Builders and Owners

Murphy offices are eager to work with architects, builders and owners in devising the most satisfactory methods for utilizing Murphy products in every type of building.

This service does not presume to trespass upon the field of the architect or builder. It is offered in the belief that accumulated experience of other architects and builders, recorded in the extensive Murphy files, must be of great value.

Murphy technical service involves neither charge or obligation. Write the nearest Murphy office for literature and for suggestions before completing building plans.

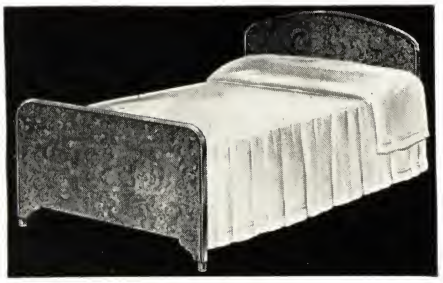
## Smartness—Utility in These 1938 Murphy Beds



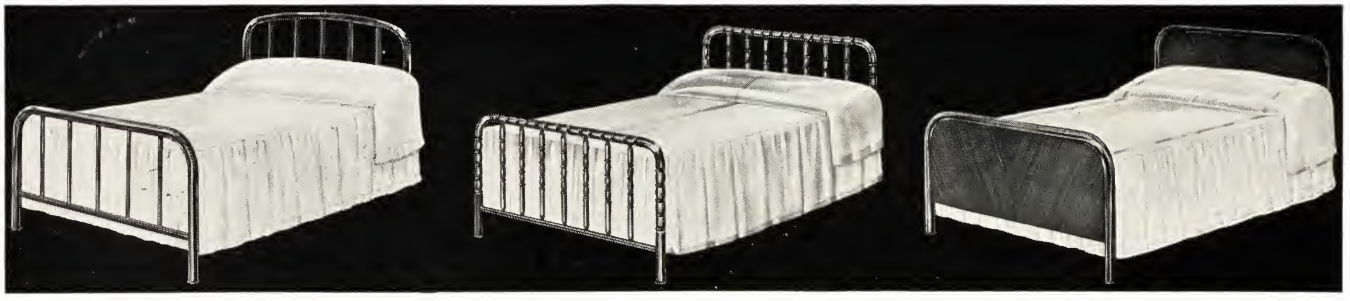
Moderne—No. 11

All "A" Type Murphy Beds are available with any of the new ends shown here. "B" Type Beds may be had only with Styles Nos. 1 and 5.

Rich wood facsimile of unusual fidelity give new beauty to Murphy Beds, beauty that reveals itself when these comfortable beds are drawn down to the floor for use.



Burl Panel—No. 12



Graceline 5 Filler—No. 1 | Jenny Lind—No. 6 | Framed Panel—No. 5 (on "B" Beds Only)

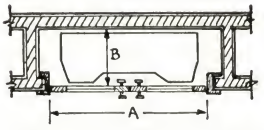
## THE IMPROVED MURPHY ROLLER BEDS



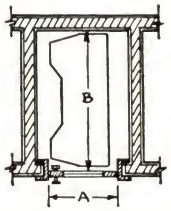
Scientifically designed with minimum number of working parts. Special 4-in. casters with ball bearings on both shaft and axle. Improved locking device holds foot end firmly in position. Base carriage only 23 in. deep when bed is in vertical position. Heavy bumper material around base prevents marring walls or furniture.

May be had in all styles of ends and with either ribbon fabric or coil springs.

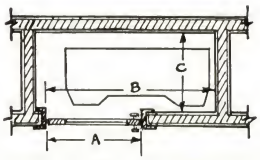
*Special spring bottom may be had to meet unusual low-door conditions. Standard sizes are for use with 6 ft. 8 in. doors.*



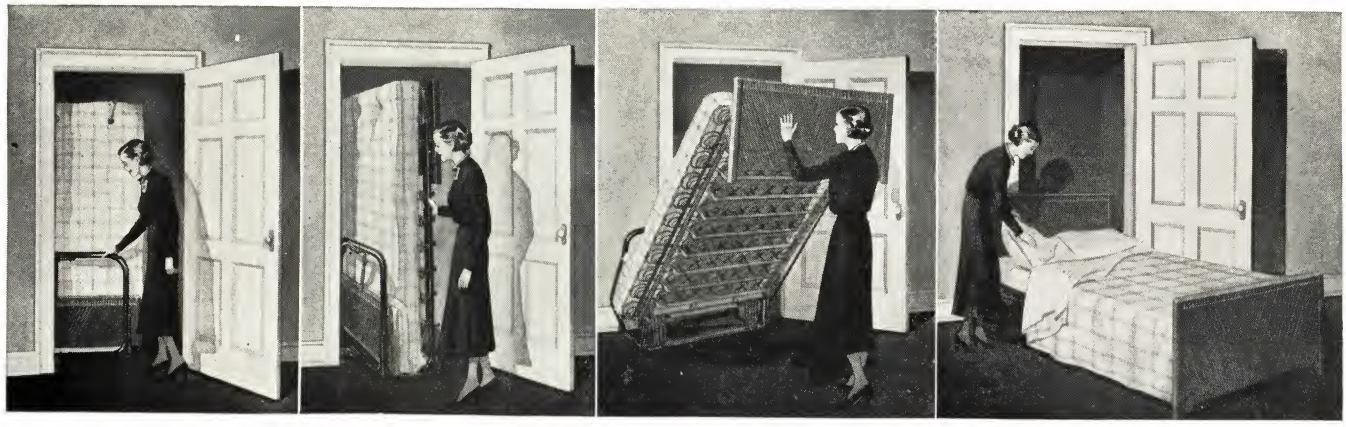

| Bed | A | B |
|---|---|---|
| 4′ 6″ | 4′ 8″ | 24″ |
| 4′ 0″ | 4′ 4″ | 24″ |
| 3′ 3″ | 3′ 8″ | 24″ |




| Bed | A | B |
|---|---|---|
| 4′ 6″ | 24″ | 55″ |
| 4′ 0″ | 24″ | 51″ |
| 3′ 3″ | 24″ | 43″ |




| Bed | Door | B | C | Door | B | C |
|---|---|---|---|---|---|---|
| 4′ 6″ | 30″ | 57″ | 32″ | 32″ | 57″ | 30″ |
| 4′ 0″ | 30″ | 54″ | 30″ | 32″ | 54″ | 28″ |
| 3′ 3″ | 30″ | 45″ | 25″ | 32″ | 45″ | 24″ |



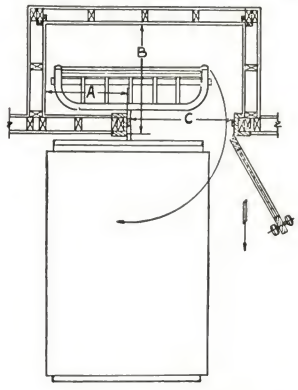


B Type Pivot Bed
Model 35-2-46

## THE FAMOUS MURPHY PIVOT BEDS — NEW MODELS

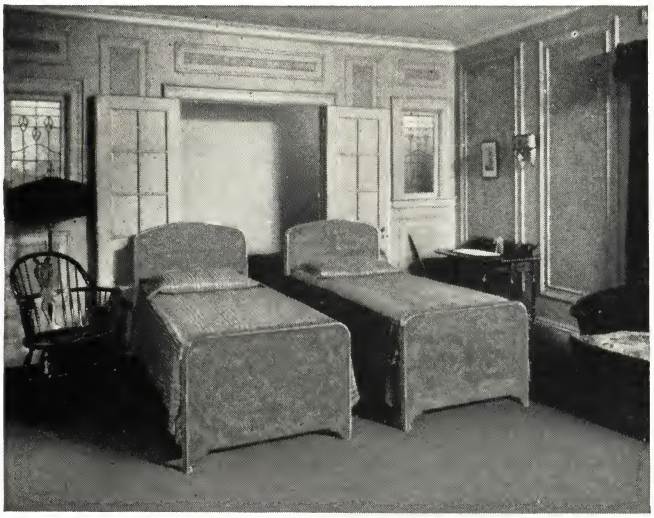
*Type A,* shown above, was the pioneer. Today, with its refinements, it remains the outstanding concealed bed. This bed is "lowered at the touch of the hand", even by a child, to solid rest upon the floor. At all stages in lowering, the bed remains in perfect balance. It cannot drop or move upward. Available in any of the four standard styles of ends as shown on preceding page, in 39-in. twin, 48- or 54-in. widths. May be had with ribbon fabric, single or double deck coil or box springs. Standard mattresses used.

*Type B,* shown at the left, is a dependable pivot bed at low cost. While lacking some of the refinements of Type A, it is as easily and safely handled, is equally long-lived, free from any maintenance troubles. Furnished only with Style 1 and Style 5 ends, in brown walnut finish.




TYPICAL INSTALLATION

| Bed Ft. | Bed In. | A Ft. | A In. | B Ft. | B In. | C Ft. | C In. |
|---|---|---|---|---|---|---|---|
| 4 | 6 | 2 | 4 | 3 | | 3 | |
| 4 | 0 | 2 | 1 | 2 | 10 | 2 | 10 |
| 3 | 3 | 1 | 9 | 2 | 8 | 2 | 8 |



### Twin Murphy Pivot Beds

Twin Murphy Beds are available in any of the smart styles of ends shown on preceding page. This illustration shows twin beds brought through one opening with French doors. Optional arrangements permit beds emerging through separate doors. Installation can be made to permit use of one twin bed and one full-sized bed.

The complete Murphy-In-A-Dor Bed catalog shows all sorts of installations for the several types of beds. Write for it.



### Murphy Recess Bed — Type A

Most simple and compact concealed bed installation. Fastened to floor in shallow (19 in.) recess. It lowers to floor; does not pivot. Head end is almost in line with recess opening; sleeper's head is out of the recess. May be had in all sizes with any of the ends shown on opposite page.

RECESS DIMENSIONS

| | |
|---|---|
| 4 ft. 6 in. bed | Recess, 5 ft. x 19 in. |
| 4 ft. 0 in. bed | Recess, 4 ft. 6 in. x 19 in. |
| 3 ft. 3 in. bed | Recess, 3 ft. 8 in. x 19 in. |

FOUNDED 1888

# H. KAMRASS & SON, INC.

INCORPORATED 1931

Upholstery

TELEPHONE
Chelsea 3-0908-0909

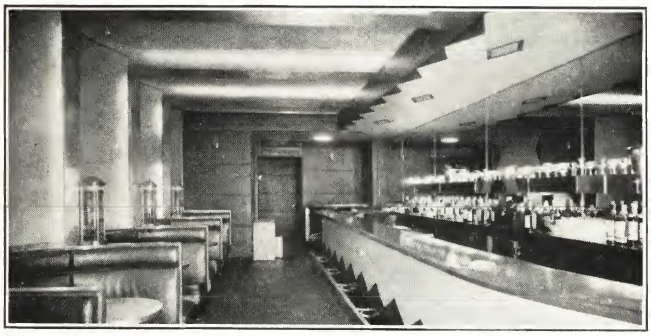
110 West 17th Street, NEW YORK, N. Y.

## KAMRASS PRODUCTS

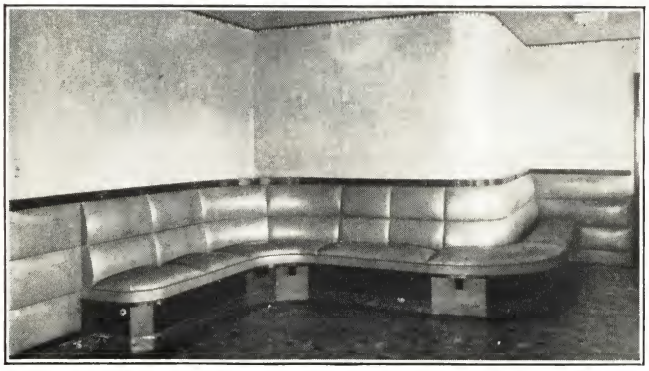
Cushions—Seat and Back.
Leather Wall Coverings.
Leather Door Coverings.
Hand Rail and Rope Coverings.

UPHOLSTERY BY KAMRASS NEW YORK

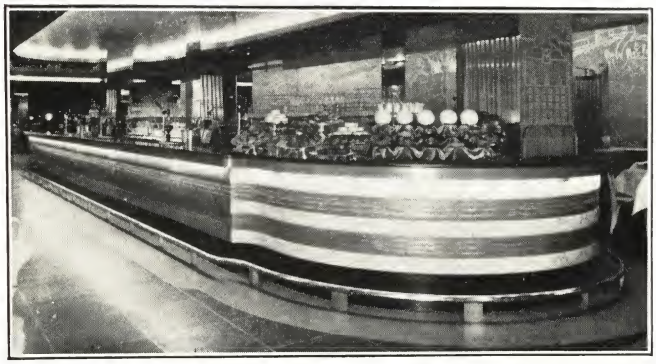
Special Furniture.
Draperies.
Bar Stool Seats.
Bar Facing.



Topps Restaurant, New York, Mark Joseph, *Architect*



Uptown Club, New York, James G. Rogers, *Architect*



Longchamps Restaurant, New York, L. A. Abramson, *Architect*

### UPHOLSTERY IS VERSATILE

The trend in upholstery today extends beyond mere furniture into the various facing details such as walls, wainscoting, doors, and bar fronts. Some outstanding examples of our work are shown herewith.

### EXPERIENCE

Almost half a century of designing and executing special upholstery has prepared our shops to meet the requirements of the present mode for a perfect harmony of economy in cost, durability in construction and beauty in design.

### CO-OPERATIVE SERVICE

Our service to the contractor includes the preparation of detailed drawings showing the best possible design for each job in accordance with the architect's finished treatment.

### OUR ARTISANS

Mechanics skilled in all the intricate as well as simple types of upholstery construction are here to serve your most exacting requirements.

### COVERING MATERIALS

An aid to you is our experience in the proper selection and use of all materials from the sheerest of silks to toughest of leathers. Covering for each job must be selected for its consistency with the surrounding treatment and for its suitability to the service expected of it. Leather and leatherette have proved their preeminence as covering materials for most projects where novel design must cope with practicability of use. Our years of intimacy with these materials assures a perfect job.

### STANDARD CONSTRUCTION

There are several types of construction that have been standardized by our shops for the convenience of those jobs requiring speedy service in completion and economy in cost.

### MODELS

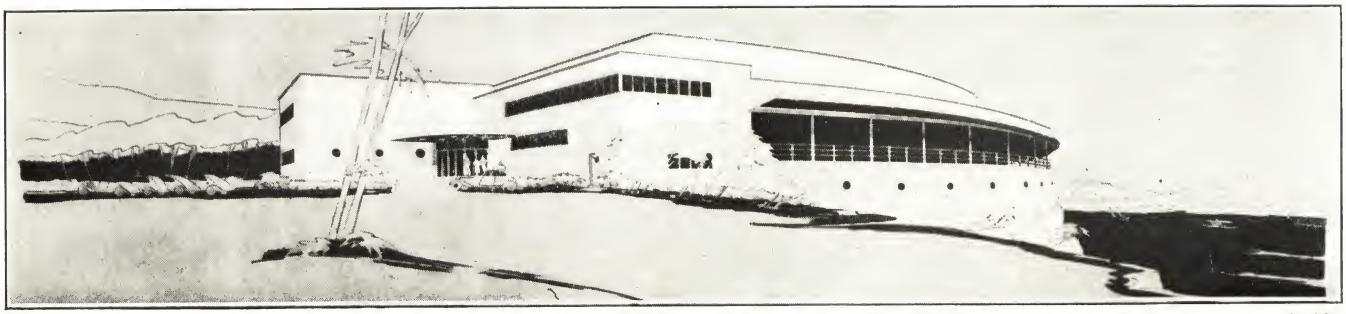
To co-operate with owners, it is our practice to create and submit full size or scale models for the job before final construction is begun.

### INFORMATION

Information on any phase of your upholstery problems will be furnished on request.

### PAST PERFORMANCES

The illustrations shown on this page represent some of the special installations carried out by us for famous hostelries.



Ben Mardens Riviera, Fort Lee, N. J. L. A. Abramson, *Architect*

# GRINNELL COMPANY, INC.

MANUFACTURERS AND CONTRACTORS

## AUTOMATIC SPRINKLER SYSTEMS

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GRINNELL COMPANY OF THE PACIFIC

OAKLAND, CAL.
SAN FRANCISCO, CAL.
LOS ANGELES, CAL.
SEATTLE, WASH.

For Grinnell Heating Specialties, Fittings, Hangers, Prefabricated Piping and Unit Heaters, see File Index

### Automatic Sprinkler Systems

Grinnell has been a leader in automatic sprinkler-protection for more than fifty years.

Over 30,000,000 Grinnell Sprinklers have been installed and are safeguarding property valued at more than 10 billion dollars.

The average loss per fire in Grinnell protected buildings in over 26,000 recorded fires is less than $300, an estimated saving of over 90% as compared to the average fire loss in similar properties without sprinklers.

### Grinnell DuraSpeed Sprinkler

(Patented)




The new DuraSpeed Sprinkler is Grinnell's latest major contribution to automatic fire protection. Although its operating element is solder, it is exceptionally durable and speedy. The amount of solder exposed to corrosive influence is small and is further protected by a coating of corrosion-proof wax.

The DuraSpeed Sprinkler excels in speed because its opening is assisted by a principle new in devices of this kind. A perforated extension of one of the soldered surfaces, the heat collector, materially hastens melting of the solder by conducting to it heat that would otherwise be wasted. The streamline deflector and smooth, tapered nozzle assure a proper distribution of water without unnecessary loss of energy.

### Types of Systems

**Wet-Pipe**—Water in the pipes under pressure.

**Dry-Pipe**—Air in the pipes under pressure.

**Simplex**—This is a simplified type of system having a pressure tank for a water supply. There is no dry-pipe valve and the same air pressure is automatically maintained in the tank and system. It is especially intended for use in properties where the fire hazard is not severe and where city water is not available.

**Outside Open Head (Water Curtains)**—For protection against exposure fires.

### Grinnell Quartzoid Bulb Sprinkler

(Patented)




Proof of the fundamental soundness of the Grinnell "bulb" type sprinkler head is found in the fact that more than 1,000,000 of them have already been installed and are giving noteworthy service. This type of head is firmly established as superior to the solder type in many respects and is preferred by insurance interests and industrial engineers for many services.

Discarding solder as an operating element, this sprinkler head utilizes a "quartzoid" bulb partially filled with a special, colored liquid. It can be manufactured to operate at any desired temperature and the ordinary bulb sprinkler operates at 135° as compared to the 165° solder type.

The bulb itself is non-corrosive and the rest of the head can be lead coated or otherwise protected to safeguard it from corrosive influences, making the Grinnell Quartzoid Bulb Sprinkler especially desirable for protecting Chemical and allied plants where severe corrosive conditions exist.

Due to the introduction of new processes, and the use of new chemicals, conditions in various industries are constantly changing. Grinnell Engineers are prepared to give special consideration to specific needs and will make recommendations covering the preferable type of the Grinnell Quartzoid Bulb Sprinkler Head for use under abnormal service conditions.

### Installation

Grinnell Automatic Sprinkler Systems are factory-assembled to blue prints, fittings being made-on as far as possible by machinery. This assures the equipment being delivered for quick and botherless installation by our highly trained erecting crews.

### Designs and Estimates

Inquiries addressed to the offices of GRINNELL COMPANY, INC., 277 West Exchange Street, Providence, R. I., or to any of the offices will immediately receive the attention of the engineering staff, who will promptly furnish expert advice with designs or estimates as required, without cost or obligation.

# POWER PIPING CORPORATION

SUBSIDIARY OF BLAW-KNOX COMPANY

829 Beaver Avenue
PITTSBURGH, PA.

## BLAW-KNOX AUTOMATIC SPRINKLER SYSTEMS

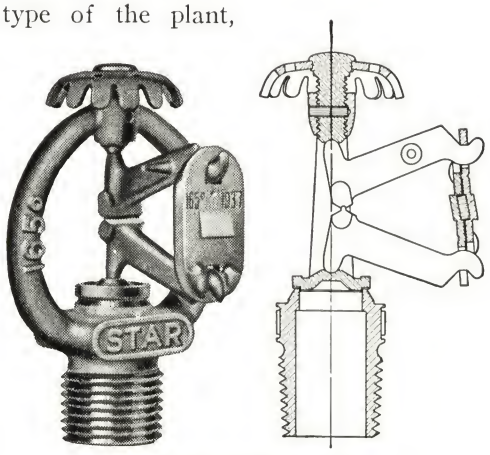
### Carefully Planned

Blaw-Knox Automatic Sprinkler Systems are carefully planned to fit the fire hazards of the particular plant. Experienced engineers make a detailed study of each building to be protected. Efficiency and economy in the original installation and low maintenance costs are given careful consideration.

Power Piping Corporation offers full co-operation in making estimates, specifications and Underwriters' approved layouts without obligation.

No matter what the size or type of the plant, Power Piping Corporation invites an opportunity to submit a plan and estimate for a Blaw-Knox Sprinkler System that is guaranteed not only to meet all insurance requirements, but to be scientifically and correctly engineered into your plant.

A well equipped plant, strategically located with railroad sidings right in the plant, provides excellent shipping facilities to any point. All equipment is factory assembled reducing field assembly to a minimum.




Star Automatic Sprinkler Head

Experienced erection crews install Blaw-Knox Sprinkler Systems without interference with plant operations.

### Wet Pipe System

This system is used in heated buildings and has the water in the pipes at all times. When fire opens the sprinkler head the water immediately sprays over the fire and extinguishes it.

### Dry Pipe System

In unheated buildings subject to freezing temperatures, the piping is filled with compressed air. A dry pipe valve at the base of the system holds the water back. When fire opens the sprinkler head the air is released, the *dry pipe* valve trips and water sprays over the fire and extinguishes it.

### Sprinkler Head

The Star Sprinkler Head used in Blaw-Knox Automatic Sprinkler Systems has for its operating element the tried and tested fusible metal. The design of the strut projecting out over the base permits the ascending heat currents to start softening the metal without waiting for the heat to bank down from the ceiling. This assures quick and dependable operation of the sprinkler head. The design of the deflector makes it possible to install the sprinkler in either upright or pendant position.

Blaw-Knox Sprinkler Systems use exclusively the nationally known and universally accepted devices manufactured by the Star Sprinkler Corporation—such as automatic sprinkler heads, alarm valves, dry pipe valves and other equipment.

Among the representative firms using Star devices are the following:

Cutler-Hammer Company
Tubize Artificial Silk Co.
Warner Bros. Picture Co.
American Car & Foundry Company
Hershey Chocolate Corporation
Ford Motor Company
Brooks Bros. Department Store
Bush Brothers and Company
Industrial Rayon Corporation
Norfolk & Western Railway Co.
P. Lorillard Tobacco Company
Standard Sanitary Mfg. Co.
Mergenthaler Linotype Company
Harrison Radiator Division, General Motors
Commonwealth-Edison Company
Fisher Brothers
Fowler Packing Company
Owens-Illinois Glass Corp.
Shaw-Walker Company

# ROCKWOOD SPRINKLER CO.

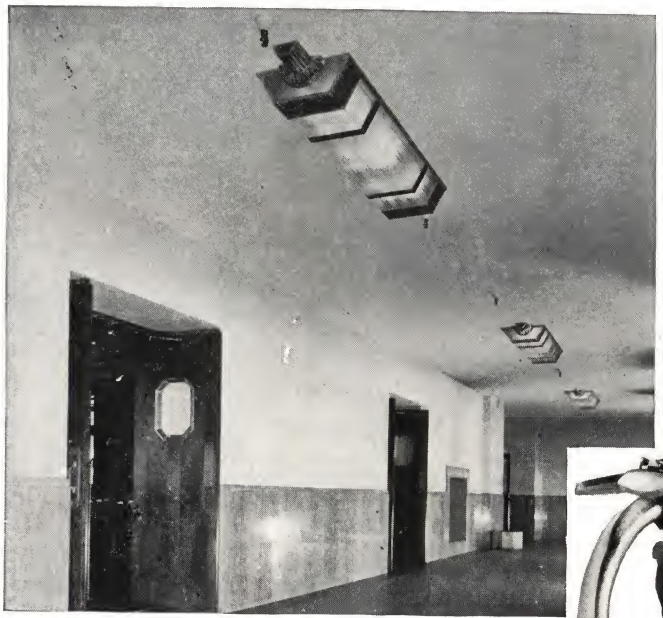
WORCESTER, MASS.

BRANCH OFFICES AND PLANTS

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Sole Agents for Canada: WORCESTER FIRE EXTINGUISHER CO., LTD., Montreal and Toronto

## AUTOMATIC SPRINKLER SYSTEMS FOR ATTRACTIVE BUILDINGS

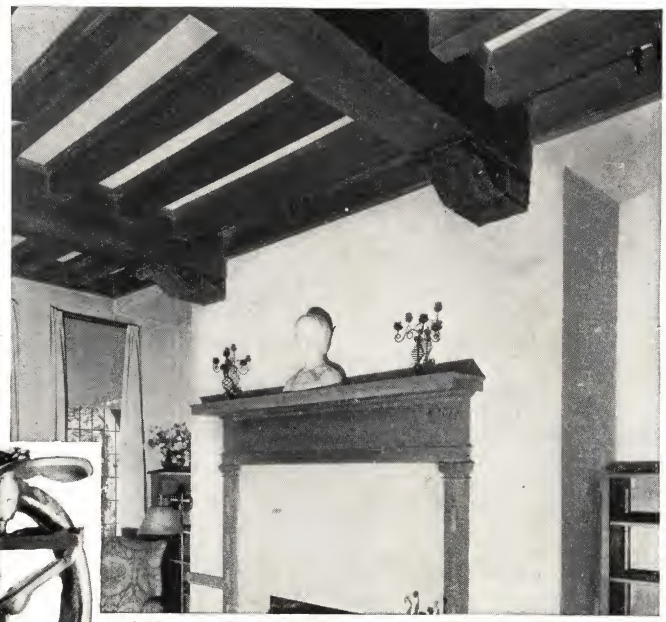


*(Above) Sprinklers in Worcester Municipal Auditorium—installed when building was being erected. Note how piping has been concealed above ceiling*

*(Below) Here too, sprinklers were installed attractively in an existing building—Hotel Balsams, Dixville Notch, N. H. New Rockwood* ***Sidewall*** *Type Sprinkler Heads keep ceilings clear and permit piping to be concealed. Nineteen different shades of paint blend exposed fittings with woodwork and walls*



*New Rockwood* ***Sidewall*** *Sprinkler Head — designed for installation along walls or beams to keep ceiling clear of piping. Heads furnished in attractive modern and antique finishes*



*(Above) Sprinklers were installed in this room in Wellesley College long after the building was built. Sprinkler heads, finished in antique bronze, have been installed inconspicuously, with piping concealed behind and painted to match beams*

*(Below) Chapel at Regis College, Weston, Mass. Another existing building skillfully protected against fire by Rockwood engineers without detracting from the character of the surroundings*





The four views above reflect Rockwood's ability to engineer and install automatic sprinkler systems in schools, colleges, churches, hospitals, auditoriums, institutions, restaurants, hotels and other such buildings having attractive interiors.

Our systems are carefully engineered first to safeguard the lives of the occupants and the permanence of the building itself against fire. Particular care is then taken to make the installation as inconspicuous as possible by concealing piping and blending fittings and sprinkler heads with the interior decorative scheme.

This requires special engineering skill entirely different from that employed in making ordinary sprinkler installations. Our trained engineers located in the branch offices listed above will be glad to assist you in laying out attractive sprinkler installations, providing specifications, estimates and insurance information. Write, wire or telephone our nearest office—no obligation.

1887

# W. D. ALLEN MANUFACTURING COMPANY

1938

## 51st Year of Progress in Manufacturing Fire Protection Equipment

GENERAL OFFICES AND WAREHOUSE
CHICAGO, ILL.
566-570 West Lake Street

OFFICE AND WAREHOUSE
NEW YORK, N. Y.
28 Warren Street

BOSTON, MASS., 502 Statler Building
DENVER, COLO., 426 U. S. National Bank Building
LOS ANGELES, CALIF., 1100 Continental Building

PORTLAND, ORE., 131 S. W. Fourth Street
SALT LAKE CITY, UTAH, 409 Dooly Building
SAN FRANCISCO, CALIF., 420 Market Street

### Allen Products

GENERAL FIRE PROTECTION and STANDPIPE EQUIPMENT for interior and exterior use, comprising: Hose Racks and Reels; Fire Hose, linen and cotton rubber lined; Brass Hose Couplings, Valves and Nozzles; Steel Hose Cabinets; Fire Extinguishers; Brass Siamese Standpipe Connections; Hose Spanners, Fire Axes and other auxiliary equipment.

### ALLEN SERVICE

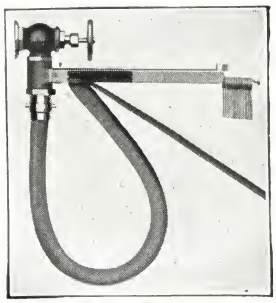
Our Data Book No. 145 (A. I. File 29e2) "Allen on Interior Fire Protection" is yours for the asking. This book contains complete data, specifications, and working drawings on interior fire protection equipment. Write also for our diagrammatic layout for a typical approved "Fire Pump and Single Standpipe System." Correspondence is invited, and our Engineering Department will co-operate in furnishing special data and information.

## ALLEN BOWES HOSE RACK FOR LINEN HOSE

**Made In Two Types**—Allen Bowes Hose Racks are made in two types—Regular and Underwriters' Labeled Semi-automatic. They are simple to install and operate, no trick parts.

**Underwriters' Labeled Type**—Equipped with a semi-automatic device in the cover construction which exerts sufficient pressure to hold the water in control at the last hose loop when the valve is turned "full on"—a slight tug on the hose when extended to its full length up to the last hose loop releases the water pressure (see illustration).

**Regular Type**—This is generally accepted—some municipalities, however, require the "Underwriters'" type—consult your local building department and underwriters' office.



Allen Bowes Underwriters Labeled Hose Racks

**Operation**—In both types the looped hose as hung in the rack is readily and quickly released, whether the water pressure is on or off. In both types the cover restricts the water pressure, when "full on," until practically the entire hose is run off the rack. To operate, first turn on water pressure—then unrack hose by carrying nozzle forward to point of conflagration—the hose is carried off the rack, loop by loop, on sliding, frictionless metal pins (one for each hose loop). The pins (see illustration) bear the weight of the folded hose equally on both arm and channel without at any time pinching or injuring the flexible linen hose. Reracking of hose is easily and quickly accomplished.

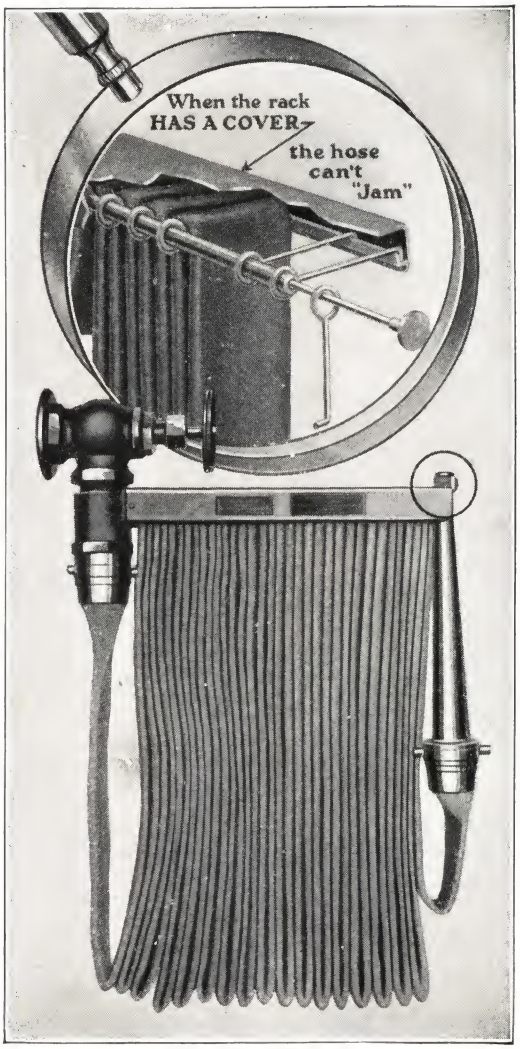



Fig. 139

**Capacities—Regular Racks**—Hold 50, 75, 100, or 150 ft. of 1¼, 1½, 2, or 2½-in. Underwriters' unlined linen hose. (Specify length and size of hose required.)

**Underwriters' Labeled Semi-automatic Racks**—(Add U to the Fig. No.). Holds 50, 75, or 100 ft. of 1¼ or 1½-in. Underwriters' unlined linen hose. (Specify length and size of hose required.)

**Finishes**—Standard finishes on the STEEL Covered Racks are aluminum or gold bronze or red enamel—special finishes are white enamel, nickel plate, and chromium plate. The Standard BRASS Rack is polished and lacquered—special finishes are nickel plate or chromium plate.

**Underwriters' Labeled Storage Rack**—For 50, 75, or 100 ft. of 2 or 2½-in. linen hose. (Specify length and size of hose required.)

### Methods of Attaching Allen Bowes Hose Racks

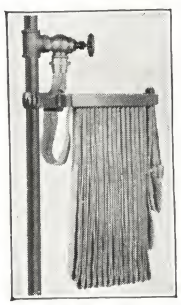


Fig. 138



Fig. 137

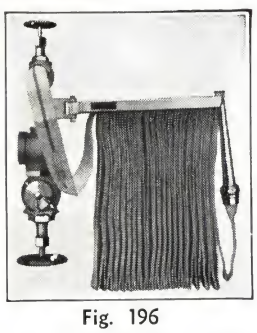


Fig. 196

**Fig. 139**—Allen Bowes Rack shown at left is the most popular style. It has a swivel back which swings on a nipple screwed into the valve. This rack can be used in a cabinet or with an exposed unit.

**Fig. 138**—Allen Bowes Rack clamped on a riser (specify size of pipe clamps) used with Allen's Fire Line Angle Hose Valve.

**Fig. 137**—Allen Bowes Rack attached to wall, used with Allen's Fire Line Angle Hose Valve.

**Fig. 196**—Compact and practical where the riser is equipped with one Allen Fire Line Angle Hose Valve for the first aid hose and one 2½-in. Allen Fire Line Angle Hose Valve for the fire department.

## Alenco Fire Line Angle Hose Valves



Fig. 170-U
Underwriters
Fig. 170 Regular
Male connection

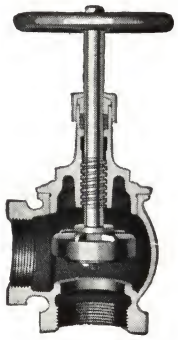


Fig. 171-U
Underwriters
Fig. 171 Regular
Female connection

Specify: Alenco *Regular* Angle Valve, 1¼, 1½, 2, 2x1½ or 2½ ins. for pressures up to 100 lbs.

Specify: Alenco *Underwriters' Approved* 175 lbs. angle valve, 1½ or 2½ ins. for pressures up to 175 lbs.

Specify: Alenco *Underwriters' Approved* 300-lb. angle valve, 1½ or 2½ ins. for pressures up to 300 lbs.

The 170-U and 171-U Underwriters' Approved 2½-in. sizes are approved by the New York City Fire Department. Pressures over 100 lbs. should have the nozzle pressure reduced by means of restricting orifices placed inside the coupling.




Fig. 3080

## Allen First Aid Fire Extinguisher

Labeled by Fire Underwriters.

2½-gal. Soda and Acid Fire Extinguisher. Hang on bracket with upper rim 5 ft. from the floor; or install in an extinguisher steel cabinet (specifications on request); or place in cabinet with the Fire Hose Unit. *(Illustrated at left).*

## Allen's Reddy Hand Extinguisher

Labeled by Fire Underwriters.

1 or 1½-qt. size. For fires in greases, paints, and electrical equipment. Pump type. Hang on a bracket; or install in cabinet with the Fire Hose Unit. *(Cut at right).*




Fig. 3767

## 'Allen Foam' 2½-gal. Fire Extinguisher—Fig. 3450

Not illustrated. Labeled by Fire Underwriters. For Class A fires (ordinary) and Class B fires (in oils, flammable liquids, etc.) See Data Book for complete information.

## Coupling With Pressure Reducing Disc




In high buildings there are naturally correspondingly larger variations in pressure on standpipe outlets, due to difference in elevation between the upper and lower floors. On all valve pressures in excess of 100 lbs. some method of reduction should be used to retard the flow of the fire stream and automatically reduce the nozzle pressure so it will not exceed 80 lbs. A pressure of 60 lbs. is even preferable. The simplest method consists of the installation of restricting discs in the hose couplings. These restricting discs consist of a heavy brass plate with an orifice inversely proportioned to the pressure on the valve's inlet, and provide an efficient and inexpensive method of restricting the pressure on the hose.

## Allen's Underwriters' Unlined Linen Hose

Made in two grades, both approved and accepted by all municipal codes. Specify Flax Line Linen Hose with Underwriters' yellow label or Flax Tow Linen Hose with Underwriters' green label, properly coupled in lengths not longer than 50 ft. with Alenco Fig. 97, 12 in. brass nozzle attached.

## Alenco Fire Extinguisher Cabinet 285

Made in Alenco Hollow Metal Construction or Nella Sheet Steel Construction.

The Alenco recessed type is illustrated; exposed type to fasten on outside of wall also made. Doors furnished with full glass panel or with duo-panel. 2½ gal. Underwriters' Approved First Aid Chemical Fire Extinguisher is protected by the cabinet, discourages tampering or discharging extinguisher and makes it readily available in case of emergency.



Made to hold one extinguisher as illustrated. Can also be made to hold two or more extinguishers

As cabinets are practically airtight, they reduce the expense of keeping the extinguisher polished and very materially add to the appearance of the building. Write for "Allen on Interior Fire Protection" for specifications.




## Allen "Tamper Proof" Institutional Fire Hose—Fig. 393

Allen's "Tamper Proof" Institutional Fire Hose Unit Cabinet *cannot be pried open* by the patients or inmates of asylums, sanitariums, prisons, and other institutions where the patients must be guarded against injury or where the fire apparatus must be protected against destruction.

The door and trim are made of 10-gauge steel. The one-piece steel door has a neat beveled panel and fits absolutely flush with the face of the cabinet.

The continuous heavy steel, semi-concealed piano type hinge is welded to the door and frame providing reinforcement. The one-piece hinge pin runs the entire length of the hinge and is centered with the face of the door. A flush fitting flat key cylinder lock is furnished. Write for further information.



**Construction Detail**

Shows heavy angle iron reinforcement around the inside of the steel door

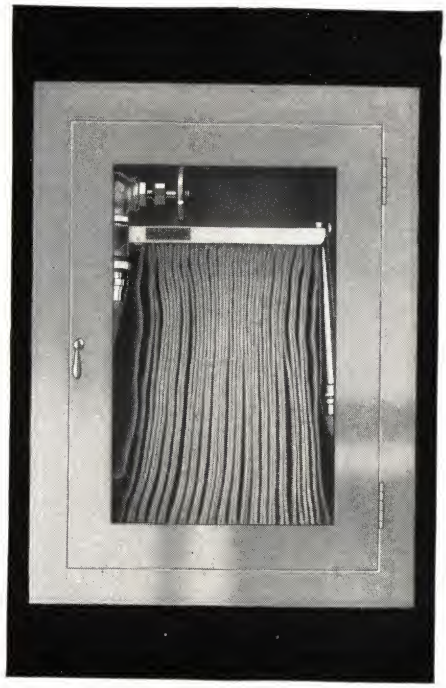
# ALENCO AND NELLA STEEL FIRE HOSE CABINETS




The Underwriters recommend a door with a glass panel so that the apparatus can be plainly seen and readily accessible.

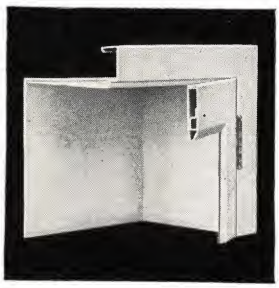
Both the "Alenco" and "Nella" Cabinets can be furnished with three types of doors: The *full glass panel* door as shown in large illustrations; the *duo-panel* door as shown below; and the *break glass panel* door as shown below.

The words "fire hose" in gilt or red letters (as illustrated on the Alenco Cabinet), can be furnished at a nominal charge. Gold leaf letters can be furnished, but cost approximately $4.00 net extra per cabinet. Sandblasted lettering on glass panel can be furnished.



## Alenco Hollow Metal Construction

**Material**—Alenco Hollow Metal Steel Trim and Door Fire Hose Unit Cabinets are made of furniture steel. The front and back of the door are each pressed from one piece of furniture steel without joints or rivets, and the door is accurately fitted to the jamb rabbet, which thoroughly excludes dust and dirt. The channel steel reinforcement on the inside of the door assures rigidity, yet it is adjustable to hold either a plate glass panel or DSA (double strength quality A) glass panel. Made in sizes to hold the fire hose units as shown on following page.



Construction Detail of Alenco Hollow Metal Trim and Door

**Trim**—The standard projection of the trim on the recess type cabinet is 1¼ in. This construction gives maximum cabinet depth with minimum wall recess. This trim may be reduced, but any variation must be compensated for by a corresponding increase in the depth of the recess in the wall.

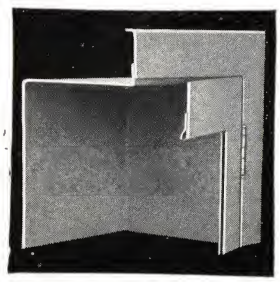
**Finish**—The standard finish is white enamel inside and white priming coat outside. The cabinets can be finished entirely in white enamel, in colors, or grained to match any particular finish.

**Bronze Cabinets**—Made of hard copper, instead of steel, then bronze plated, can be furnished at an extra charge.

**Hinges and Handles**—Standard cabinets have the hinges on the right-hand side. Hinges will be furnished on the left-hand side only when specified. The loose pin hinges and lever handle catch are brass, nickel plated. They can be chromium plated. Bullet catch and pull handle can be furnished.

## Nella Sheet Steel Construction

**Material**—Nella Sheet Steel Fire Hose Unit Cabinets in design are of a superior type and are substantial in construction. Body, door and trim is made of sheet steel. Both the door and trim are cut from solid sheets without seams or rivets. The one-piece door fits flush in the frame, leaving the face of the cabinet absolutely smooth. This method is preferable to the overlapping door as it will exclude dust from the cabinet. Made in sizes to hold the Fire Hose Units as shown on the following page.



Construction Detail of Nella Sheet Steel Door and Trim

**Trim**—Standard Nella Cabinets have the outside edge of the trim turned over ⅝ in. Straight edge trim can be furnished when specified. This must be compensated for by a corresponding increase in the depth of the recess in the wall.

**Dimensions**—Inside dimensions are the same as those shown on the following page. Outside dimensions: Add 1 inch to height and add 1 inch to width. Opening required in wall: height and width are the same. *But add 1 inch to depth in wall recess.*

**Finish**—The standard finish is a gray priming coat inside and outside. Special finishes can also be furnished.

**Hinges and Handle**—Standard cabinets have semi-concealed steel hinges on the right-hand side. Hinges will be furnished on the left-hand side only when specified. Nickel plated lever handle is standard.

**Glass**—Specify either plate glass or D.S.A. glass panels. Glass is shipped separately and is not installed.

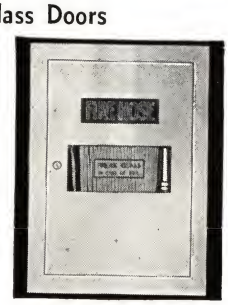
## Cabinets with Duo-Panel or Break Glass Doors



Duo-Panel Door

**Duo-Panel Door**—Fig. 220A Alenco. Fig. 220N Nella. The door has a beveled plate glass panel (shipped separately) and a sheet steel beveled panel.

**Break Glass Door**—Fig. 275 Alenco. Fig. 275N Nella. The cabinet can be kept securely locked to prevent pilfering. The hose unit is visible and in case of fire the single strength glass panel is shattered.



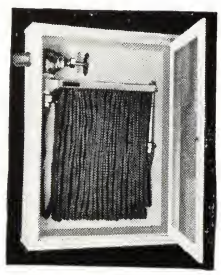

Break-Glass Door

## Outside Wall Fire Hose Cabinets

Recommended where wall depth is not available for recessed cabinets shown above.

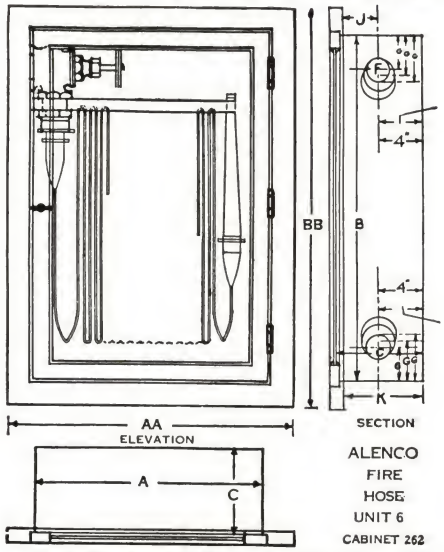
**Fig. 380**—Alenco Hollow Metal Construction. In estimating wall space required, add 3¾ ins. to inside dimensions.

**Fig. 380N** — Nella Sheet Steel Construction. In estimating wall space required add 2 ins. to inside dimensions.



Outside Wall Type

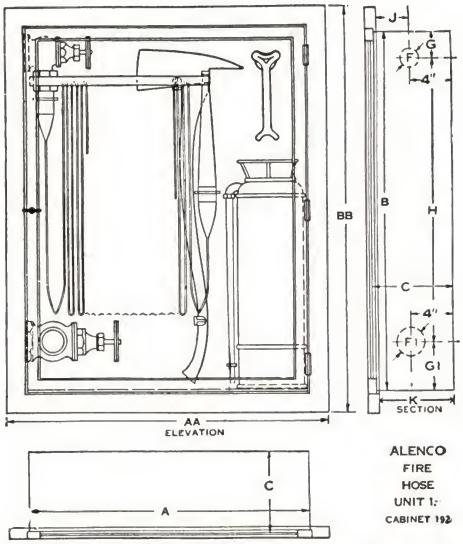
# ALLEN FIRE HOSE UNITS—USED WITH OR WITHOUT CABINETS




With the valve supply from the side. For office and other public buildings, hotels, hospitals, schools, factories, all theatres with combustible scenery, and other buildings.

The length and size of the hose and the size of the valves determines the size of the cabinet.

Large size drawings are shown in our Data Book No. 145 "Allen On Interior Fire Protection." Write for it.



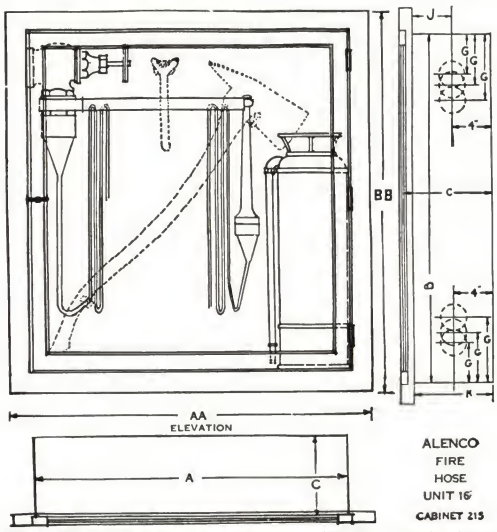

**Allen Hose Unit 6**—One angle valve with supply from the side. Furnished with or without cabinet. The unit consists of: Fig. 139 or 139U Bowes Hose Rack. Fig. 262 Alenco Hollow Metal Hose Cabinet, or other cabinet as described. Fig. 171 or 171U Allen Fire Line Angle Hose Valve. Underwriters' linen hose, specify length and size, (to be coupled in 50-ft. lengths). Brass hose couplings. Fig. 97 hose nozzle.

| Hose, ft. | Valve, in. | Cabinet 262 Inside dimen., in. | | | Extreme size outside dimen., in. | | Wall opening required, in. | | |
|---|---|---|---|---|---|---|---|---|---|
| | | A | B | C | AA | BB | Width | Height | Depth |
| 50 | 1¼–1½ | 19¾ | 28¾ | 5½ | 24½ | 33½ | 20½ | 29½ | 5 |
| 50 | 2 | 19¾ | 28¾ | 6½ | 24½ | 33½ | 20½ | 29½ | 6 |
| 50 | 2½ | 19¾ | 28¾ | 7½ | 24½ | 33½ | 20½ | 29½ | 7 |
| 75 | 1¼–1½ | 20¾ | 30¾ | 5½ | 25½ | 35½ | 21½ | 31½ | 5 |
| 75 | 2 | 22¾ | 32¾ | 6½ | 27½ | 37½ | 23½ | 33½ | 6 |
| 75 | 2½ | 22¾ | 32¾ | 7½ | 27½ | 37½ | 23½ | 33½ | 7 |
| 100 | 1¼–1½ | 22¾ | 32¾ | 5½ | 27½ | 37½ | 23½ | 33½ | 5 |
| 100 | 2 | 24¾ | 34¾ | 6½ | 29½ | 39½ | 25½ | 35½ | 6 |
| 100 | 2½ | 24¾ | 34¾ | 7½ | 29½ | 39½ | 25½ | 35½ | 7 |
| 125 | 1¼–1½ | 24¾ | 38¾ | 5½ | 29½ | 43½ | 25½ | 39½ | 5 |
| 125 | 2 | 24¾ | 38¾ | 6½ | 29½ | 43½ | 25½ | 39½ | 6 |
| 125 | 2½ | 24¾ | 38¾ | 7½ | 29½ | 43½ | 25½ | 39½ | 7 |

**Allen Hose Unit 1**—Chicago Standard. Two-valve system with supply from the side. Furnished with or without cabinet. The Unit consists of: Fig. 192 Alenco Hose Cabinet, or other cabinet as described. Fig. 139U Bowes Hose Rack. Fig. 171U 1½-in. Underwriters' Fire Line Angle Hose Valve. Underwriters' linen hose, specify length and size (to be coupled in lengths not longer than 50 ft). Brass hose couplings. Fig. 97 hose nozzle. Fig. 170U 2½-in. Underwriters' Fire Line Angle Hose Valve. Specify local fire department thread. Fig. 120 brass hose cap and chain. Fig. 3080 Allen's First Aid 2½-gal. Soda and Acid Fire Extinguisher. (Fig. 20 fire axe and brackets are optional.) Hose spanner and brackets.

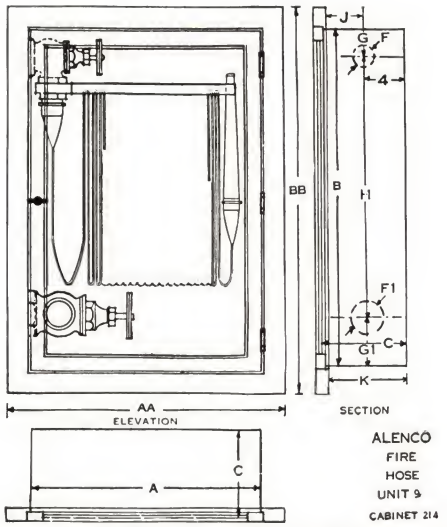
Where Underwriters' racks and valves are *not* required specify Regular types.

| Hose, ft. | Valve, in. | Cabinet 192 Inside dimen., in. | | | Extreme size outside dimen., in. | | Wall opening required, in. | | |
|---|---|---|---|---|---|---|---|---|---|
| | | A | B | C | AA | BB | Width | Height | Depth |
| 50<br>75<br>100 | 1½ and 2½ | 30¾ | 38¾ | 8½ | 35½ | 43½ | 31½ | 39½ | 8 |




**Allen Hose Unit 16**—One angle valve with the supply from the side and with fire extinguisher. Furnished with or without cabinet. The Unit consists of: Fig. 139 or 139U Allen Bowes Hose Rack. Fig. 215 Alenco Hollow Metal Hose Cabinet, or other cabinet as described. Fig. 171 or 171U Allen Fire Line Angle Hose Valve. Underwriters' Linen Hose, specify length and size, (to be coupled in lengths not longer than 50 ft). Brass hose couplings. Fig. 97 hose nozzles. Fig. 3080 Allen's First Aid 2½-gal. Soda and Acid Fire Extinguisher. Optional—Fig. 20 fire axe and brackets. Hose spanner and brackets.

| Hose, ft. | Valve, in. | Cabinet 215 Inside dimen., in. | | | Extreme size outside dimen., in. | | Wall opening required, in. | | |
|---|---|---|---|---|---|---|---|---|---|
| | | A | B | C | AA | BB | Width | Height | Depth |
| 50<br>75<br>100 | 1¼<br>1½<br>2 or 2½ | 32¾ | 34¾ | 8½ | 37½ | 39½ | 33½ | 35½ | 8 |




**Allen Hose Unit 9**—Standard where two valves are required. 1½ and 2½-in. Allen Angle Hose Valves with supply from the side. Furnished with or without cabinet. The Unit consists of: Fig. 214 Alenco Hose Cabinet, or other cabinet as described. Fig. 139 or 139U Allen Bowes Hose Rack. Fig. 171 or 171U Allen Fire Line Angle Hose Valve. Underwriters' Linen Hose, specify length and size, (to be coupled in lengths not longer than 50 ft). Brass hose couplings. Fig. 97 hose nozzle. Fig. 170 or 170U 2½-in. (Underwriters') Fire Line Angle Hose Valve, specify local fire department thread. Fig. 120 brass hose cap and chain.

| Hose, ft. | Valve, in. | Cabinet 214 Inside dimen., in. | | | Extreme size outside dimen., in. | | Wall opening required, in. | | |
|---|---|---|---|---|---|---|---|---|---|
| | | A | B | C | AA | BB | Width | Height | Depth |
| 50 | 1¼ | 20¾ | 30¾ | 8½ | 25½ | 35½ | 21½ | 31½ | 8 |
| 75 | or 1½ | 22¾ | 32¾ | 8½ | 27½ | 37½ | 23½ | 33½ | 8 |
| 100 | or 2½ | 24¾ | 38¾ | 8½ | 29½ | 43½ | 25½ | 39½ | 8 |

## Allen Concealed (or Flush) Type Siamese—Straightway or Angle Type Body




**Fig. 283 Siamese (Inlet) with Sill Cock—Patented**

Allow a minimum of 6 in. between the bottom of the sill cock and the ground for attaching hose

*Fig. 276 Siamese (Inlet) Without Sill Cock*

Can be substituted for Fig. 283—patented. Not illustrated

Finishes: Bronze, highly polished. Made of bronze, chromium plated and highly polished. Made of white metal, highly polished.

*A "Safety" Siamese*—it is *safe* for pedestrians, as it extends only 4⅜ in. from the wall and people *cannot* hurt themselves as they will not walk close enough to it. It is *safe* for the building owner as he will have *no* damage suits and has *safe* modern fire protection that is approved by the Underwriters' Laboratories, Inc.* Allen's design solves the problem presented by the restricted sidewalk space in crowded metropolitan districts. The body of the Siamese with its two independent self-closing clapper valves can be placed inside the building, or if space prevents, can be built into the wall of the building during construction. When the building is completed, the plate and the two independent swivel inlets are attached to the body of the Siamese by means of the required length pipe nipples. The Siamese is made of bronze, extra heavy throughout and will last as long as the building.

| Fig. No. | Sill cock | Inlets, in. | Outlet, in. | Height, in. | Width, in. | To wall, in. |
|---|---|---|---|---|---|---|
| 283 | With | 2½x2½ | 4 | 14¾ | 15¾ | 4¼ |
| 276 | Without | 2½x2½ | 4 | 9½ | 15¾ | 4 |
| 283 | With | 2½x2½ | 6 | 14¾ | 15¾ | 4¼ |
| 276 | Without | 2½x2½ | 6 | 9½ | 15¾ | 4 |
| 283* | With | 3 x3 | 4 | 15 | 15¾ | 4⅜ |
| 276* | Without | 3 x3 | 4 | 10½ | 15¾ | 4⅛ |
| 283* | With | 3 x3 | 5 | 15 | 15¾ | 4⅜ |
| 276* | Without | 3 x3 | 5 | 10½ | 15¾ | 4⅛ |
| 283* | With | 3 x3 | 6 | 15 | 15¾ | 4⅜ |
| 276* | Without | 3 x3 | 6 | 10½ | 15¾ | 4⅛ |

**Approved by New York City. See note at bottom of page.*

## Fire Department Control Units

Required by the city of Chicago. For making private high pressure systems available to the fire department by using the regular Siamese (inlet) and also installing a wall hydrant (outlet) and exterior valve control. Complete information and diagrams on request.

## Allen Standpipe Siamese

**Fig. 221—Straight** **Fig. 31—45-Degree** **Fig. 230—90-Degree**



Made of heavy cast bronze to Underwriters' requirements with an independent interior self-closing clapper valve in each opening. An escutcheon, Fig. 265 or plate, Fig. 264 should be specified to designate the service the Siamese is intended for. Plugs and chains or "Sensible" Caps are extra. Specify rough or polished bronze; or chromium plated polished.

**Fig. 221, Short Straightway**—For opening through wall. 2½x2½x4 in., 2½x2½x6 in., *3x3x4 in., *3x3x5 in., *3x3x6 in.

**Fig. 31, 45-Degree**—For opening through wall. 2½x2½x3 in., 2½x2½x4 in., 2½x2½x5 in., 2½x2½x6 in., 3x3x4 in.

**Fig. 230, 90-Degree**—For opening through the sidewalk. 2½x2½x3 in., 2½x2½x4 in., 2½x2½x6 in., *3x3x4 in., *3x3x5 in., *3x3x6 in., 3½x3½x6 in.

**Approved by the New York City Fire Department and bears the Calendar Number of the New York Board of Standards and Appeals.*

## Allen Wall Siamese (Inlet)



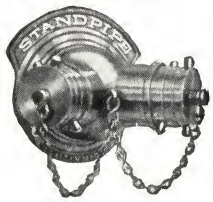

**Fig. 232—With Sillcock**

*Fig. 270—Without Sill Cock,* shown at right can be substituted for Fig. 232

Made of bronze and highly polished. The Siamese is handsome and well proportioned. The wording on the escutcheon should indicate to the fire department what part of the fire protection system is to be served. Complete with plate, solid brass plugs and chains. Polished brass or polished brass chromium plated.

Allow at least 6 in. from bottom of sill cock to bottom of hose for connecting sill cock.

To make a Fire Department Control Unit, Fig. 274 hydrant control valve and Fig. 27 wall hydrant (outlet) can be used.




| Fig. No. | Sill cock | Inlets, in. | Outlet, in. | Height, in. | Width, in. | Depth, in. |
|---|---|---|---|---|---|---|
| 232 | With | 2½x2½ | 4 | 18⅝ | 10½ | 9⅜ |
| 270 | Without | 2½x2½ | 4 | 10 | 10½ | 9⅜ |
| 232 | With | 2½x2½ | 6 | 21¾ | 11¼ | 10 |
| 270 | Without | 2½x2½ | 6 | 12 | 11¼ | 10 |
| 232* | With | 3 x3 | 4 | 18⅝ | 10½ | 10½ |
| 270* | Without | 3 x3 | 4 | 10 | 10½ | 10½ |
| 232* | With | 3 x3 | 5 | 21⅜ | 11¼ | 11½ |
| 270* | Without | 3 x3 | 5 | 12 | 11¼ | 11½ |
| 232* | With | 3 x3 | 6 | 21⅜ | 11¼ | 11½ |
| 270* | Without | 3 x3 | 6 | 12 | 11¼ | 11½ |

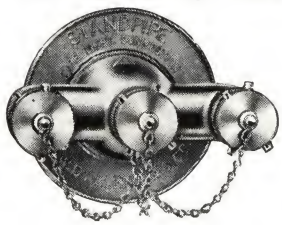
**Approved by New York City. See note at bottom of first column.*

## Allen Sidewalk Siamese

For use where the inlet pipe comes through the pavement. It consists of a heavy brass escutcheon to protect and cover the opening in the sidewalk, a polished brass sleeve to cover the iron pipe, and a polished brass Siamese head. Complete with solid brass plugs and chains. Polished brass or chromium plated finish. A bronze name plate, Fig. 264, should be placed on the building to indicate the service of the Siamese. 2½x2½x4 in., 2½x2½x6 in., *3x3x4 in., *3x3x5 in., *3x3x6 in.

**For New York City. See note in first column.*



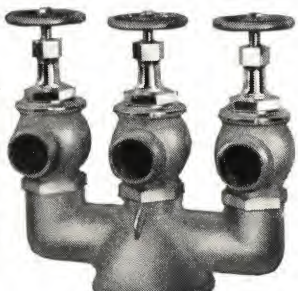


## Allen Wall Siamese

**2 Way and 3 Way**—*Fig. 440*—Straight pattern. Boston type. Each inlet has an interior self-closing clapper valve. 2½x2½x4 in., 9 in. to wall; 2½x2½x2½x6 in., 9 in. to wall; 3x3x3x6 in., 11¼ in. to wall.

## Allen Roof Manifold and Control Valves

**Fig. 439**—Pressure should be controlled by a gate valve below the roof and means provided for draining the manifold and supply pipe to protect it from freezing. Cast bronze body. 2½ in. Fig. 170U—(175 or 300 lbs. pressure) Allen's Underwriters' Fire Line Angle Valves, specify fire department thread. 2½x2½x4 in., 2½x2½x2½x6 in., 2½x2½x2½x2½x8 in.



## Allen Automatic Ball Drips





*At Left:*

Fig. 2112—½ in. only. Threaded one end. One end open.

*At Right:*

Fig. 2112NY—¾ in. only. Threaded both ends. Required by New York City Fire Department.

An automatic ball drip should always be placed at lowest point in standpipe between inside check valve and the Siamese or valve connection. This drip will close against pressure, but, after pressure is off, will automatically drain this portion of the pipe and prevent the Siamese from freezing.

# SECTION 21

CONTINUED ⟶

# ELKHART BRASS MFG. COMPANY

ESTABLISHED 1902

## Manufacturers of Inside Fire Protection
## ELKHART, INDIANA

REPRESENTATIVES

CONNECTICUT: NEW HAVEN—C. S. Mersick Co., 278 State Street
DISTRICT OF COLUMBIA: WASHINGTON—R. H. Stacy, 1673 Columbia Road
FLORIDA: MIAMI—F. C. Jack, 210 N.E. 14th Street
GEORGIA: ATLANTA—Haley-Warren, Inc., 475 Marietta Street, N.W.
ILLINOIS: CHICAGO—T. Porter West, 629 So. Wabash Avenue
KENTUCKY: J. M. Beglen, 104 W. Pearl Street, Cincinnati, Ohio
LOUISIANA: NEW ORLEANS—Manufacturers' Sales Agency, 1007 Camp Street
MARYLAND: BALTIMORE—Fred L. Eidman, 12 W. Madison Street
MASSACHUSETTS: BOSTON—John H. Brooks, 115 Shawmut Avenue
MICHIGAN: DETROIT—Frank C. Davitt, 826 Washington Boulevard Building
MINNESOTA: MINNEAPOLIS—W. S. Nott Co., 2nd Avenue No. and Third Street
MISSOURI: ST. LOUIS—U. S. Rubber Products, 1015 Washington Street
NEW JERSEY: BLOOMFIELD—Martin Moora, 55 Laurel Avenue
NEW YORK: NEW YORK—U. S. Rubber Products, 61 Hudson Street
Fyr-Fyter Products, 220 E. 42nd Street
OHIO: CINCINNATI—J. M. Beglen, 104 W. Pearl Street
CLEVELAND—S. A. George, 1200 W. 9th Street
PENNSYLVANIA: PHILADELPHIA—Charles G. Wall, 401 No. Broad Street
PITTSBURGH—M. A. Sisk, 1212 House Building
TEXAS: SAN ANTONIO—E. H. Starr, 152 E. Rosewood Avenue
UTAH: SALT LAKE CITY—F. M. Conely, 149 W. Second South

### Products

Hose Cabinets of Bronze, Steel and White Metal.

Hose Racks of Brass and Steel.

Hose, Linen and Cotton Rubber Lined.

Valves, Couplings and Nozzles.

Extinguishers: Foam, Soda Acid and Carbon Tetrachloride.

Siamese and Hydrant Connections.

Spanners, Axes and all Complementary Equipment.

Reg. U. S. Pat. Off.

### Special Equipment to Specifications

In addition to the standard equipment described on the following pages, special equipment is quickly available.

With complete facilities under our own roof, we are prepared to deliver special items in a minimum of time and with all the advantages of our thirty years' experience.

### Information

Blueprints showing typical siamese installations and riser diagrams, together with a digest of Underwriters' regulations are available and will be furnished free of charge to architects who require them.

### Recent Installations

State Office Building, Boston, Mass.
Post Office Department Building, Washington, D. C.
Department of Interior Building, Washington, D. C.
Chicago Post Office Building, Chicago, Ill.
All Radio City Buildings (Rockefeller Center), New York City.
Pennsylvania Railroad Station (30th Street), Philadelphia, Pa.
State Hospital for Insane, Manteno, Ill.
Jackson County Court House, Kansas City, Mo.
State Hospital, Benton, Ark.
Capitol Building, Baton Rouge, La.
St. Paul Post Office, St. Paul, Minn.
Narcotic Farms, Lexington, Ky.
State Library, Indianapolis, Ind.
Georgia State Prison, Reidsville, Ga.

## ELKHART COVERED BRASS AND STEEL HOSE RACKS

### Swinging Type—With Non-detachable Pins

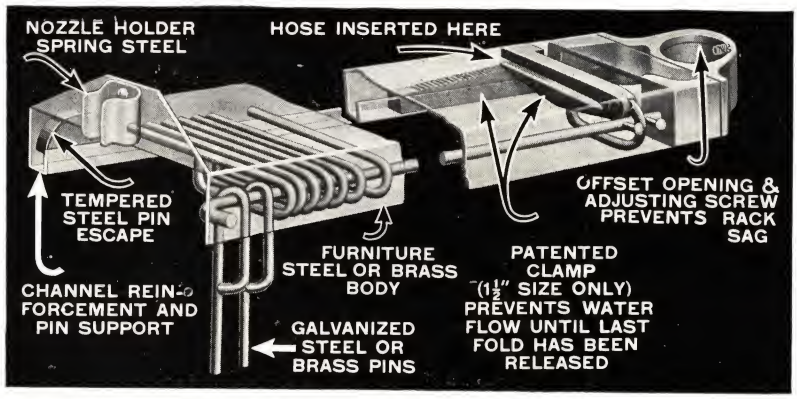



Plate 41

**Plate 41 (For 1¼ or 1½ in. Linen Hose)**
National Board of Fire Underwriters
Factory Mutual
Board of Standard and Appeals, New York, N. Y.

**Plate 42 (For 2 and 2½ in. Linen Hose)**
National Board of Fire Underwriters
Factory Mutual
Board of Standard and Appeals, New York, N. Y.

**Plate 45 (For Any Size Linen Hose)**
Board of Standard and Appeals, New York, N. Y.
Factory Mutual

### Construction

To the left is a self-explanatory phantom view of our Plate 41 Underwriter approved semi-automatic hose rack.

To assure yourself of its superiority we recommend that you compare it impartially, point for point, with any competitive hose rack.

Carefully thought out in every detail, even to the adjusting screw which prevents loaded racks from sagging, this rack instantly recommends itself to discriminating engineers.

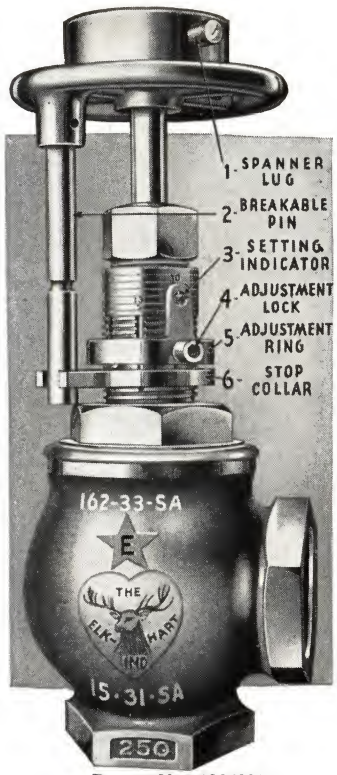
Our standard Plate 45 hose rack is identical in every respect to the illustration, except that it does not have the patented clamp, for other than Factory Mutual installations.

### Finish

Aluminum bronze, gold bronze, or red lacquer are standard finishes. Dead black or white enamel optional. Also finished in nickel, brass, chromium, and flat black plate, solid brass-polished and lacquered, and to any specifications.

### Method of Attachment

**Style (N)**—Supporting nipple, brass or iron, for angle valve.
**Style (P)**—Pipe clamp.
**Style (W)**—Wall bracket.
**Style (C)**—Combination wall bracket and escutcheon for gate valve.




Patent No. 1936301
**Plate 20UP—Female**
**Plate 25UP—Male**

# COMBINATION PRESSURE REDUCING ANGLE VALVE

## ELKHART'S NEWLY DEVELOPED VALVE FOR NEW YORK CITY

### Approved by Underwriters' Laboratories and New York City Board of Standards and Appeals

Without precedent in the field of hydraulics, Elkhart developed, patented, and had approved the first and only combination pressure reducing and angle valve in the history of fire standpipe equipment. With none of the disadvantages, our new valve obsoletes the old type two-valve installations for the following reasons:

Valve never needs to be reset after use by Fire Department

No friction loss with valve open

Operation of valve understood at sight

Simplifies installation and inspection

One valve mechanically more efficient and positive than two devices

Eliminates possibility of leakage in two-valve installation.

Pressure restriction effected at right angle to hose—no hose damage

Theftproof (separate reducing valve easily stolen)

Tamperproof (adjustments locked with hex socket screws)

Costs less than the two valves now used

All measurements, except height, the same as 250-lb. angle valve.

Economizes space and enhances appearance

For mechanical details of valve, we refer to illustration and description of our Underwriters' valve. Combination valve can be furnished in any standard valve finish. Blue print and pressure setting graph furnished gladly upon request.

### New York City Hose Rack Specification

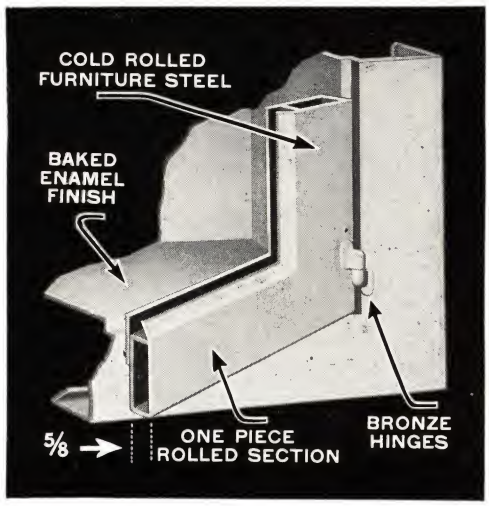
At each hose outlet, where noted on plans and where pressure on valves exceeds 50 lbs., provide and install 5 ft. 6 in. above floor Elkhart Plate 20-Up, 2½-in. approved combination pressure reducing and angle valve (separate pressure valve not required. If pressure on hose outlet does not exceed 50 lbs. specify Elkhart Plate 20-U 2½-in. fully approved valve), Elkhart Plate 42 Underwriters' and N.Y.C. approved hose rack with brass supporting nipple, ..... ft. length of 2½-in. Underwriters' approved First Quality unlined linen hose coupled with 2½-in. brass expansion ring couplings having New York City Corporation thread, 2½x15x1⅜-in. polished brass, smooth bore, nozzle with lugs and approved spanner wrench with chain (identify special finishes on exposed metal if desired).

# ELKHART CONSTRUCTION HOSE CABINETS

## Construction

Elkhart Cabinets are made of heavy rust-resisting furniture steel. Door and trim are made from special *one-piece hollow rolled tubing.* The corners being mitered and electrically butt-welded together, are as strong as a section of the frame itself, while the seams are imperceptible. Compare this one-piece door and frame with other so-called "one-piece tubings" which, in reality, are only two pieces fitted and welded together like a box. The new one-piece frame actually reinforces the glass rather than the glass stiffening the door frame.

Dust proof construction, concealed bronze hinges, ball and spring catches (or lever handles if desired), polished plate or D.S.A. glass complete this modern fire hose cabinet. Cabinets to any dimensions can be furnished on order. Standard dimensions are listed completely under each unit.




## Hardware

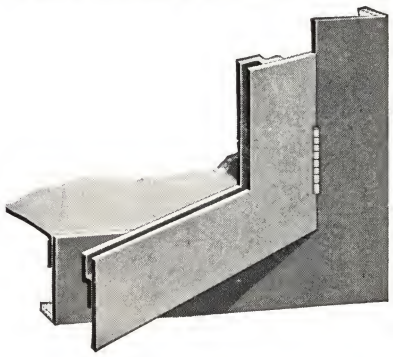
Standard Elkhart Cabinets are all equipped with special bronze hinges and ball bearing friction catch (lever handle furnished if preferred). Hinges are securely anchored, permitting 180° door opening. Friction catch, of fool proof construction, automatically takes up wear by means of spring and ball.

## Finish

Regular finish consists of baked enamel inside (any color), prime coat outside. When desired, can finish outside in baked enamel to match adjacent color scheme. We recommend finishing outside after installation, as finish is often damaged while in transit or during installation.

# HOOSIER CONSTRUCTION HOSE CABINETS

As a sturdy cabinet of simpler construction, we manufacture a hose cabinet having 16-gauge sheet steel box and 12-gauge door. One-piece door and trim. Cabinet door, by opening full 180 degrees, does not obstruct rapid removal of hose. No joints or rivets on front of cabinet, and with door fitting in rabbet flush with frame, this substantial cabinet is dustproof. Hardware of door consists of two nickel-plated five knuckle butt hinges on smaller cabinets, with three hinges on all cabinets exceeding 34¾ in. in height (inside dimension). A nickel-plated handle is standard on every cabinet of this type. This cabinet accommodates D.S.A. or plate glass panel.



Any of the styles shown on succeeding pages can be furnished in this construction. Made in same sizes as standard Elkhart Construction Cabinets, although special sizes of any dimensions can be furnished in this construction without loss of time.

The standard finish is one heavy prime coat, inside and outside.

# Types and Styles of Elkhart and Hoosier Cabinets



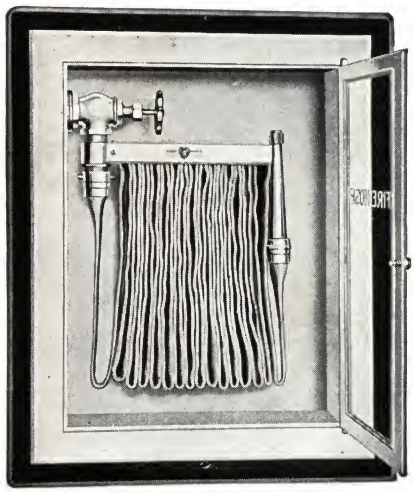

Institutional Cabinet

## Institutional Cabinet

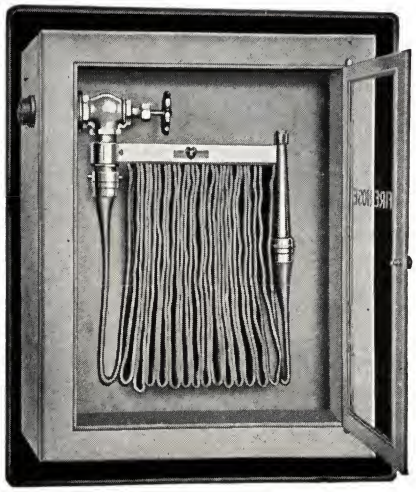
In certain institutions (insane asylums, prisons, etc.), it is necessary that hose be inaccessible, except by janitor's key. Our "Institutional" cabinet, having concealed hinges, and solid steel panel door, locked at bottom, top, and side with P. and F. Corbin Triplelox, has been found eminently satisfactory by engineers specializing in this field. This cabinet defies opening by force or tools.

## Standard Cabinet

On the right is shown our standard cabinet recessed into the wall with only 1¼ in. trim projecting from the plaster. Ninety per cent of all installations being of recessed type, all of our standard units are so illustrated.



Standard Cabinet



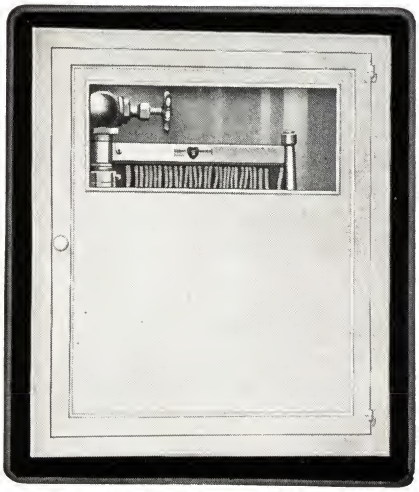
Surface Type

## Surface Type

Any Elkhart cabinet can be made up in this style which is necessary where the depth of the wall is not sufficient to recess the cabinet in the usual way. Door is furnished with D.S.A. or plate glass panel or with duo panel as desired. Trim 1½ in. wide. For outside dimensions add 3¾ in. to inside measurements.

## Duo-Panel

The duo panel door, Style "D," having steel section at the bottom and plate glass panel at top, not only affords protection against breakage of glass, but also conceals over half of the installation. Made for every size, it can be furnished on any type of cabinet at the architect's discretion.



Style "D"

# ELKHART 2½-GALLON FIRE EXTINGUISHERS AND CABINETS

## Extinguishers

Elkhart soda and acid and foam type extinguishers are labeled and listed by the Underwriters' Laboratories while the soda and acid extinguisher is also approved by the United States Department of Commerce Steamboat Inspection Service, and Factory Mutual Fire Insurance Companies.

Fire department insurance regulations require one Underwriters' approved 2½ gallon soda and acid extinguisher for every 2000 feet of floor space.

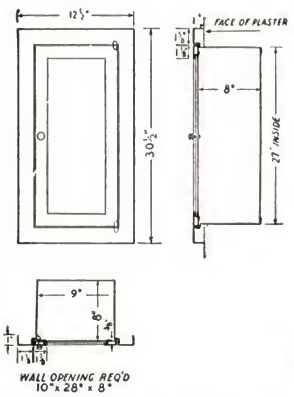
## Extinguisher Cabinets

Adding greatly to the appearance of a building, extinguishers placed in cabinets also are more likely to be properly charged and serviced.

Made in either Elkhart or Hoosier construction, these extinguisher cabinets are provided with either D.S.A. or plate glass panel, or duo panel doors as shown. Cabinet hardware is identical to that installed on larger hose cabinets. All dimensions carefully worked out on adjacent line drawings.




Plate 950
Plate glass panel

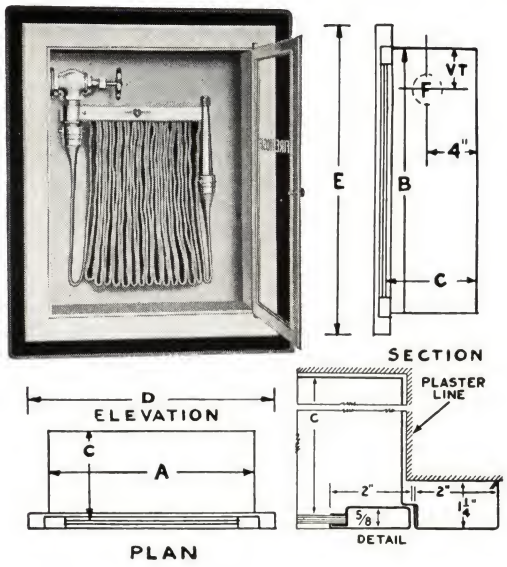



*Note: Plate A-950,* inside dimensions 12 x 36 x 8½ in., contains both extinguisher and fire axe.



Plate 950
Style "D" panel

## HOSE UNIT WITH ONE ANGLE VALVE—PLATE C-910




### For This Unit Specify

Elkhart standard cabinet, plate C-910.

Elkhart angle valve, plate No. 20 or plate 20-U.

Elkhart covered hose rack, plate No. 41 or 45, Style N with nipple.

Underwriters' first quality 1½-in. hose (length determined by floor space) coupled with Elkhart Slidewell expansion ring couplings (see last page).

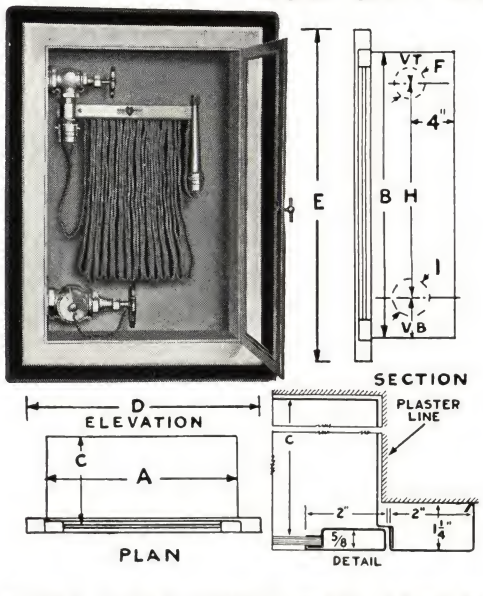
Elkhart 1½x12x½-in. polished brass, smooth bore, plain nozzle.

***Note:*** *In buildings not over four stories high 1½-in. valve and 1½-in. hose are recommended. In buildings five or more stories high, a 2½-in. valve with local fire department thread should be installed to which 1½-in. linen hose can be attached by means of 2½x1½-in. reducing coupling, plate 335.*

*Send for Specification Check List and Underwriters' Regulations.*

| Hose capacity, ft. | Hose and valve size, in. | Glass, in. | Cabinet dimensions shown in diagram, in. | | | | | | Valve opening (F), in. | Leave rough opening, in. | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | B | C | D | E | VT | | Width | Height |
| 50 | 1½, 2, 2½ | 18x28 | 20¾ | 30¾ | 7½ | 25½ | 35½ | 3½ | 2, 3, 3 | 21½ | 31½ |
| 75 | 1½, 2, 2½ | 20x30 | 22¾ | 32¾ | 7½ | 27½ | 37½ | 3½ | 2, 3, 3 | 23½ | 33½ |
| 100 | 1½, 2, 2½ | 22x32 | 24¾ | 34¾ | 7½ | 29½ | 39½ | 3½ | 2, 3, 3 | 25½ | 35½ |
| 125 | 1½, 2 | 22x36 | 24¾ | 38¾ | 7½ | 29½ | 43½ | 3½ | 2, 3 | 25½ | 39½ |

## HOSE UNIT WITH TWO ANGLE VALVES—PLATE C-920




### For This Unit Specify

Elkhart cabinet, plate C-920.

Elkhart 1½-in. Angle Valve, plate No. 20 or plate No. 20-U.

Elkhart 2½-in. Angle Valve, plate No. 25 or plate No. 25-U with cap and chain.

Elkhart plate No. 45 or plate No. 41 hose rack.

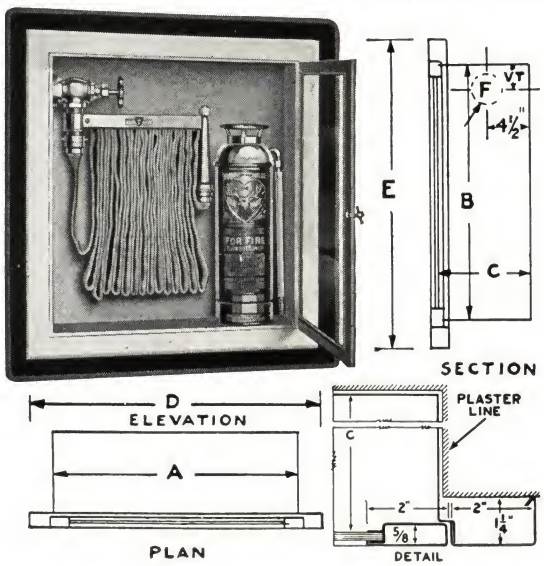
Underwriters' first quality 1½-in. hose (length determined by floor space) coupled with Elkhart Slidewell expansion ring couplings (see last page).

Elkhart 1½x12x½-in. polished brass, smooth bore, plain nozzle.

*Send for Specification Check List and Underwriters' Regulations.*

| Hose capacity, ft. | Hose and valve size, in. | Glass, in. | Cabinet dimensions shown in diagram, in. | | | | | Valve center, in. | | | Valve opening, in. | | Leave rough opening, in. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | B | C | D | E | VT | H | VB | F | I | Width | Height |
| 50 | 1½, 2½ | 18x28 | 20¾ | 30¾ | 8½ | 25½ | 35½ | 3 | 22¾ | 5 | 2 | 3 | 21½ | 31½ |
| 75 | 1½, 2½ | 20x30 | 22¾ | 32¾ | 8½ | 27½ | 37½ | 3 | 24¾ | 5 | 2 | 3 | 23½ | 33½ |
| 100 | 1½, 2½ | 22x36 | 24¾ | 38¾ | 8½ | 29½ | 43½ | 3 | 30¾ | 5 | 2 | 3 | 25½ | 39½ |

## HOSE UNIT WITH ONE ANGLE VALVE AND 2½-GAL. FIRE EXTINGUISHER—PLATE C-915




### For This Unit Specify

Elkhart cabinet C-915.

Elkhart angle valve, plate No. 20 or plate 20-U of the size required.

Elkhart Style N hose rack, plate No. 45 or plate 41.

Underwriters' first quality 1½-in. hose (length determined by floor space) coupled with Elkhart Slidewell expansion ring couplings (see last page).

Elkhart 1½x12x½-in. polished brass, smooth bore, plain nozzle.

Elkhart 2½-gal. extinguisher.

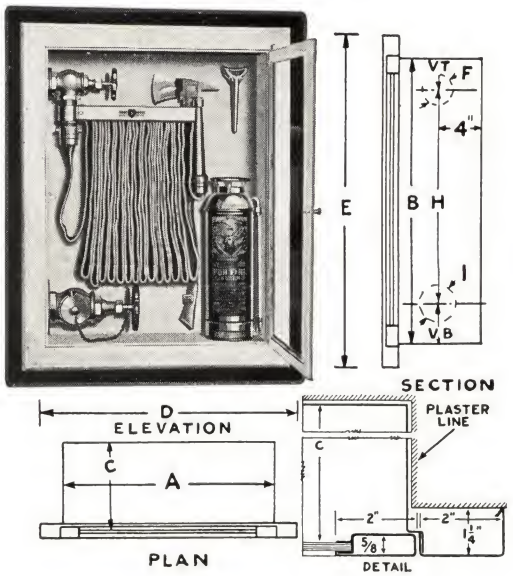
For complete description of Elkhart steel hose cabinets see preceding pages.

*Send for Specification Check List and Underwriters' Regulations.*

| Hose capacity, ft. | Hose and valve size, in. | Glass, in. | Cabinet dimensions shown in diagram, in. | | | | | | Valve opening (F), in. | Leave rough opening, in. | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | B | C | D | E | VT | | Width | Height |
| 50<br>75<br>100 | 1¼, 1½<br>2, 2½ | 30x32 | 32¾ | 34¾ | 8½ | 37½ | 39½ | 6½<br>5<br>3½ | 2<br>3 | 33½ | 35½ |

# HOSE UNIT, CHICAGO STANDARD, WITH TWO ANGLE VALVES AND EQUIPMENT

## PLATE C-901




## For This Unit Specify

Elkhart cabinet, plate C-901.

Elkhart 1½-in. approved angle valve, plate 20-U for 150 or 250 lb. pressure as required.

Elkhart 2½-in. approved angle valve, plate 25-U, for 150 or 250 lb. pressure with local fire department thread, and with bronze cap and chain.

Elkhart semi-automatic Underwriters' approved hose rack, plate 41, Style N with 1½-in. nipple.

Underwriters' first quality 1½-in. hose (length determined by floor space) coupled with Elkhart Slidewell expansion ring couplings (see last page.)

Elkhart 1½x12x½-in. polished brass, smooth bore, plain nozzle.

Elkhart 2½-gal Underwriters' approved fire extinguisher.

Fireman's pick head axe with Underwriters' bracket No. 3.

Elkhart taber spanner with Underwriters' bracket No. 4.

***(For Same Unit with One Valve C-916)***

*Send for Specification Check List and Underwriters' Regulations.*

| Hose capacity, ft. | Hose and valve size, in. | Glass, in. | Cabinet dimensions shown in diagram, in. | | | | | Valve center, in. | | | Valve opening, in. | | Leave rough opening, in. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | B | C | D | E | VT | H | VB | F | I | Width | Height |
| 50<br>75<br>100 | 1½,<br>2½ | 28x36 | 30¾ | 38¾ | 8½ | 35½ | 43½ | 3 | 30¾ | 5 | 2 | 3 | 31½ | 39½ |

# STANDPIPE AND HYDRANT UNITS

## All Types—Siamese Connections

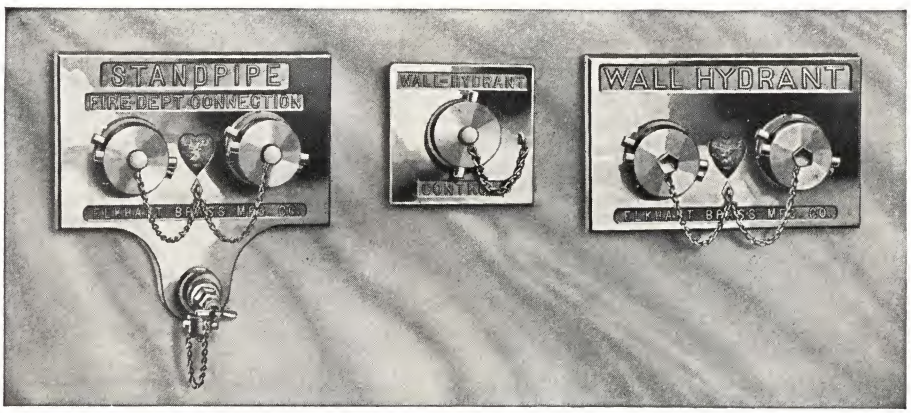



Plate 165 Plate 164 Plate 163

*Approved by Underwriters' Laboratories, Inc.*

## Plates 163, 164, 165 and 166

The three connections illustrated above comprise a complete private high pressure fire department unit. Pl. 165 siamese connection, with sill cock, is a means of getting water into a building under pressure from a fire department pumper. Pl. 163 hydrant connection, conversely, is simply a water outlet for fire department purposes, functioning exactly as does a city water curb hydrant. Pl. 164 valve control, is an elongated stem of a control gate valve inside the building which, when opened, automatically operates underwriter pumps in basement.

Flush type siamese and hydrant connections are designed to minimize projection into overly crowded city sidewalks. Siamese and hydrant bodies can be installed either in the wall, if space allows, or by means of pipe extension nipples, inside building. Bodies are furnished with pipe attachment in bottom or back, according to installation. Wall plates are secured by lock nuts on bronze inlet nipples.

Send for our blueprint illustrating a typical siamese and hydrant installation. Will also **gladly furnish drawings of any of our connections, any size.**

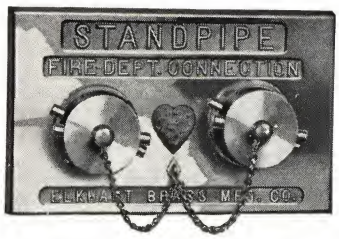
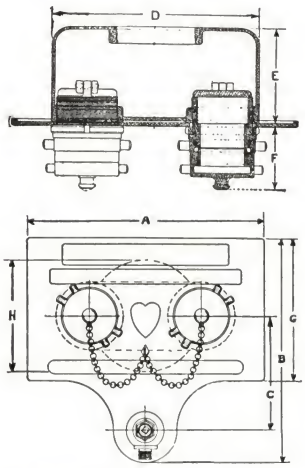



**Plate 166**

Same design as Plate 165 but without sill cock




**DIMENSIONS, PLATES 163, 165 AND 166**

**4x2½x2½ In. Size**

| A | B | C | D | E | F | G | *H |
|---|---|---|---|---|---|---|---|
| 16 | 15 | 7⅝ | 12 | 6¼ | 4¼ | 9½ | 5½ |

**6x2½x2½ In. Size**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 16 | 15 | 7⅝ | 12 | 6½ | 4¼ | 9½ | 7½ |

*Height of body in wall.

*Both can be furnished with pipe coming in from bottom, instead of back of body. Blue prints on request.*

### Combination Wall Plate Siamese with Sill Cock—Plate 155




**Plate 155** Siamese Outlet — **Plate 154** Valve Control — **Plate 153** Wall Hydrant

Made of highly polished bronze. Fitted with two 2½-in. fire department inlets and 4 or 6-in. outlet. Has double clapper valves, plugs and chains, also one ¾ or 1-in. outlet at bottom of sprinkling hose. Complete with hose cap, chain and key.

**DIMENSIONS**

Greatest length, 19 in.; greatest width.....12½ in.
Stands out from wall.....10½ in.
Center of pipe opening to center of sill cock—
With 4-in. pipe..... 9⅝ in.
With 6-in. pipe.....10 in.

### Wall Plate Siamese



**Plate 156**

Same siamese as plate 155 without the sill cock.

**DIMENSIONS**

Greatest height ..11⅛ in.
Greatest width ..12½ in.
Stands out from wall .....10½ in.

### Boston and Philadelphia Siamese



**Plate 167**

Plate 167 siamese meets all requirements and has been fully approved by city authorities of Boston. Made of bronze, straight pattern, compact requiring minimum of space. Has two or three 2½-in. inlets as required, each with automatic clapper valve.

Also acceptable to Philadelphia city authorities, and is largely used there, with 3-in. screw thread on center inlet and 2½-in. Jones connections on the two outside inlets.

Standard sizes are: 2½x2½x4 in., 2½x2½x2½x6 in.




**Plate 9**

### New York City Siamese

Bearing the calendar number of the New York Board of Standards and Appeals, and approval of Underwriters' Laboratories, Inc., this siamese with independent gravity clapper valves, is of a very rugged construction throughout. Furnished with either galvanized iron plugs and chains or easy off swivel caps. Round or rectangular escutcheon according to architect's option.

Standard sizes are: 3x3x4 in., 3x3x5 in., 3x3x6 in.

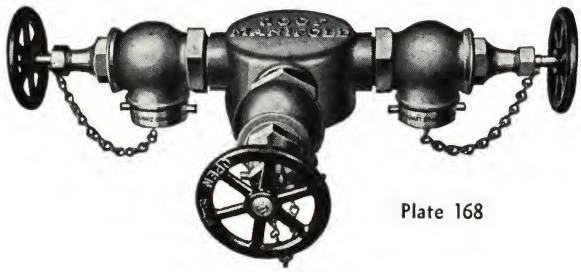



**Plate 168**

### Roof Manifolds

Completing the fire line standpipe, this roof manifold equipped with Elkhart Underwriters' approved, Plate 25U 2½-in. bronze angle valve affords fire department access to water on roof. Valves are threaded to local fire department threads, while working pressure of valves is determined by amount to which they are subjected. Siamese body is made of cast bronze. Valves equipped with brass or iron caps and chains.

Standard sizes are: 2½x2½x4 in., 2½x2½x6 in., 2½x2½x8 in.

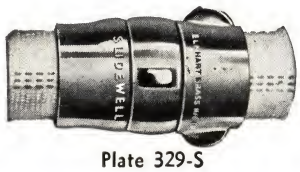



**Plate 329-S**

### Elkhart Slidewell Coupling

Slidewell lug linen hose couplings will slide freely around corners, door jams, stair steps, etc., there being no sharp projections to prevent rapid transportation of nozzle to fire

### Sidewalk Siamese



**Plate 15**

Standpipe connection with 90 degree siamese used where inlet pipe comes through the sidewalk. Complete connection consists of polished brass sleeve to cover the pipe, heavy brass escutcheon and polished brass siamese No. 10 with caps and chains to fit 3, 4 or 6-in. standpipe with 2½-in. inlets.

# ELKHART VALVES FOR FIRE PROTECTION EQUIPMENT

## Underwriter and New York Angle Valves

*Approved by:*

*Underwriters' Laboratories, Inc.* — *Board of Standards and Appeals, New York, N.Y.*

**Body**—Of special Underwriter alloy body considerably heavier than competitive valves.

**Stuffing Box**—Ample space provided for adequate packing.

**Stem**—With heavy thread, stem is made of a wear resisting alloy, analyzing 90% copper, 6.5% tin, 1.5% lead, 2% zinc.

**Gland Follower**—Beveled construction which insures firm pressure on packing.

**Disc**—Heavy Jenkin's type rubber discs used in all valves.

**Joints**—Accurately machined to allow repacking of valve when open and under pressure.

**Wheel Handle**—Arrow instantaneously indicates which way to turn wheel.



**Plate 20U** Female
**Plate 25U** Male



**Plate 20** Female
**Plate 25** Male

## Elkhart Pattern Angle Valves

Made of high grade brass, specially designed for inside fire protection installations. All have full waterways and are furnished with renewable leather or rubber discs.

This valve is handsome in design and very durable. While always tight under pressure, it opens easily.

Standard weight valves are tested to 300 pounds. Extra heavy to 500 pounds pressure.

Standard finish is rough brass body, finished trimmings, iron wheel handle. Also furnished with body finished all over, and with nickel, chromium, or dead black plating, and with milled edge brass wheel.

**DIMENSIONS OF ELKHART AND UNDERWRITER PATTERN ANGLE VALVES**

| Type of Valve | Elkhart Plate 20, 25 Valves | | | | | | Underwriters' Approved | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Weight | Regular Weight | | | | Extra Heavy | | Regular, 150 lbs | | Ex. H'y, 250 lbs | |
| Size, in. | 1¼* | 1½* | 2 | 2½ | 1½ | 2½ | 1½* | 2½ | 1½* | 2½ |
| Radius of Swing, in. | 2¼ | 2½ | 3 | 3⅝ | 2¾ | 4 | 3⅛ | 4 | 3⅛ | 4⅛ |
| Distance—Center to Face of Outlet, in. | 2 | 2¼ | 2½ | 3¼ | 2½ | 3¾ | 2¾ | 3½ | 2¾ | 3¾ |
| Same—With Cap and Chain, in. | 3 | 3¼ | 3½ | 4¼ | 3½ | 4¾ | 3¾ | 4½ | 3¾ | 4¾ |
| Diameter Hand Wheel, in. | 3¾ | 3¾ | 4⅝ | 5¾ | 3¾ | 5¾ | 4¼ | 6¼ | 4¼ | 6¼ |
| Height, Overall, in. | 7¼ | 7½ | 9¼ | 11 | 8 | 13¼ | 10⅛ | 12¼ | 10⅛ | 13½ |

*Note: 1x1¼ and 1x1½-in. Reducing Valves approximately same dimensions.

MEMORANDA

# THE CONSOLIDATED EXPANDED METAL COMPANIES

## Steelcrete Concrete Reinforcing Mesh and Steelcrete Welded Wire Fabric

WHEELING, W. VA.

SALES OFFICES AND WAREHOUSES

ATLANTA, GA. BOSTON, MASS. BUFFALO, N. Y. CHICAGO, ILL. CINCINNATI, OHIO CLEVELAND, OHIO HOUSTON, TEX. NEW YORK, N. Y. PHILADELPHIA, PA. PITTSBURGH, PA.

For Other Steelcrete Pages, see File Index

### Steelcrete Concrete Reinforcing Mesh for Vault Protection

A diamond mesh fabric furnished in large flat sheets.

### Steelcrete 5-Point Protection

The Steelcrete System of bank vault protection consists of an orderly arrangement of thousands of strands of steel, thoroughly embedded in concrete, producing a network of entanglement that effectually resists cutting flame, drill, explosives, fire and falling loads.

In this entanglement of steel and concrete 5 points of protection are provided:

**Point 1**—Drills fail to penetrate.

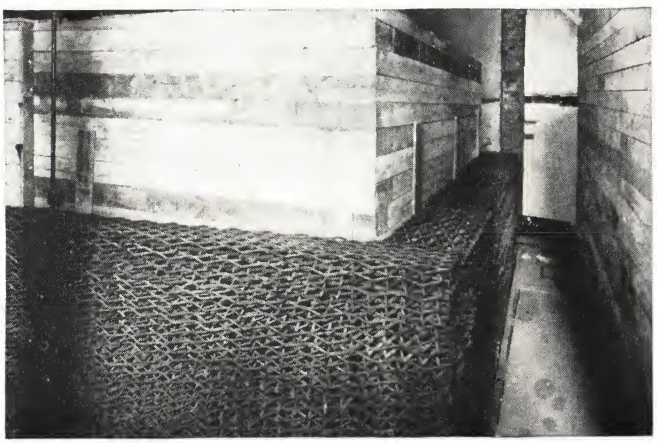
**Point 2**—The cutting flame is helpless against concrete.

**Point 3**—Explosives lose their force in absorption by the thousands of steel strands.

**Point 4**—The thickness of the wall, ceiling and floor slabs minimizes the transmission of heat from the exterior to contents of the vault.

**Point 5**—Great structural strength successfully withstands impact of falling girders, heavy safes and other loads resulting from devastating fires.

As bank vault protection, the Steelcrete System presents such an impregnable barrier against attack and destruction that it has been selected by financial institutions of every kind in America and several foreign countries.



**Section of Steelcrete Bank Vault**

Placed either horizontally or vertically, Steelcrete forms a thick entanglement of steel that is proof within all practical limits against torch, drill, shock, fire and explosives. Concrete is poured through and around the steel matrix to form a wall of great structural strength

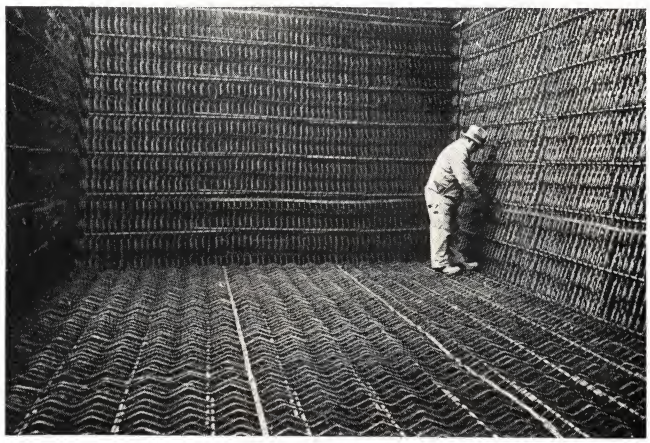
### Great Structural Strength

The tremendous structural strength of a Steelcrete Vault Roof Slab was recently brought out in a series of tests, when a slab having a total depth of 18 in. carried a load of more than 1 ton per sq. ft. on a span of 30 ft. Tests conducted under the direction of the architects of the Federal Reserve Board have shown that a steel entanglement properly embedded in concrete constitutes the strongest and the most economical protection against attack. As a result of such tests the Steelcrete System was installed in the New York Federal Reserve Bank.

**SAFE SUPERIMPOSED LOAD CARRYING CAPACITIES OF STEELCRETE VAULTS FOR VARIOUS THICKNESSES OF ROOF SLABS**

| Total thickness, inches | | Load in pounds per square foot | | | |
|---|---|---|---|---|---|
| Roof slabs | Steelcrete mats | Span 15 feet | Span 20 feet | Span 25 feet | Span 30 feet |
| 18 | 16 | 2125 | 1095 | 621 | *363 |
| 24 | 20 | 3320 | 1725 | 988 | 584 |
| 36 | 32 | 6544 | 3464 | 2034 | 1257 |

The figures above represent safe loads determined from accepted formulas used in design of reinforced concrete, providing for a factor of safety of 4, together with standard assumption of values for steel and concrete. Loads governing ultimate failure of slab would represent values four to six times the above given loads.
*Tested to 2169 lb. per sq. ft.



### Easily Erected by Any Skilled Contractor

The simplicity of the Steelcrete System makes it possible for any skilled contractor to successfully handle the erection. Working drawings making for rapid field erection are furnished by the manufacturers for each installation and the field engineers of the manufacturers keep in constant touch with the work, insuring an entirely satisfactory installation.

### Estimates

The manufacturer, on request, will submit complete estimates upon the use of the Steelcrete System in any type or size of bank vault.

*There are lighter and more economical systems of Steelcrete for every type of vault—such as Fur Storage and Record Vaults.*

21
35

# DIEBOLD SAFE & LOCK CO.

FACTORY AND GENERAL OFFICES

CANTON, OHIO

BRANCH OFFICES

BOSTON, MASS. CHICAGO, ILL. CLEVELAND, OHIO DETROIT, MICH. WASHINGTON, D. C. NEW YORK, N. Y. PHILADELPHIA, PA. PITTSBURGH, PA. ST. LOUIS, MO. ST. PAUL, MINN.

SOUTHWESTERN DISTRIBUTOR—SO. CALIFORNIA SAFE CO., Los Angeles, Calif.

DEALERS IN ALL PRINCIPAL CITIES

For Our United Metal Products Division, see File Index

LOCAL REPRESENTATIVE

## NEW FLAT SILL TRIUMPH LINE INSULATED VAULT DOORS

**Development of the Triumph Line**—Independent tests made by the Underwriters' Laboratories, Inc., published in their Report SP-1.669 on November 30, 1927, on an uninsulated steel plate door proved conclusively the need of doors affording much greater protection in this class. The door tested was typical of the old style plate door construction.

The old style plate door failed the standard test at the end of 10 minutes with the inside doors open, and at the end of 27½ minutes with the inside doors closed; both when fully grouted in the opening.

The Underwriters' Laboratories reported that the old style plate door offered uncertain protection even to this small degree because the proper grouting of the vestibule and the closing of the inside doors could not be guaranteed in actual practice.

Triumph Line Doors were developed by Diebold engineers to meet the need of doors offering known and reliable degrees of protection. All doors have been designed to overcome the weaknesses in construction displayed by the Underwriters' tests of the old style plate door.

**Construction**—Diebold Triumph Doors include doors both with and without Underwriters' Laboratories labels. The line includes doors offering a minimum of from 30 minutes to 6 hours fire resistance based upon standard tests.

### How to Build Fire-Resistive Vaults and Record Rooms—and Select the Doors

The most authentic recommendations for this purpose are those prepared by the National Fire Protection Association. We have reprinted them in condensed form with cross references for our vault and record room doors. Complete copies will be gladly furnished on request. See the table on this page for recommended vault wall thickness.

### Remodelling Opportunities

Vault modernization offers greater possibilities than new construction. Thousands of vaults now in use need remodelling to make them conform with new and improved protection standards. For example, thousands of the old style plate doors now in use afford their owners uncertain protection for vital records, and should be replaced with doors that comply with modern protection standards.

### "Protection Headquarters"

For over 79 years the DIEBOLD SAFE & LOCK CO. has been successfully engaged in the production and marketing of all types of equipment for the protection of records, money and wealth from fire, burglary and holdup.

The complete line includes the widest range of protective equipment ever offered by one manufacturer:

**Burglar-Resistive Equipment**
Bank and Safe Deposit Vault Doors.
Safe Deposit Boxes.
Vault Linings and complete Vault Equipment.

**Holdup Protection Equipment**
Delayed Control Timelocks.
Electric Silent Signal Combination Locks
Holdup Cashgards
Counter Cashgards.
Electrical Tear Gas System.
Cashgard Chests.

**Visible Equipment**
Sectional Drawer Visible Files
Swinging and Wall Reference Panels.

**Fire-Resistive Equipment**
Electric Rekordesk Safes.
Ledger Tray Safes.
Fire-Resistive Office and Home Safes.
Fire-Resistive Vault Doors.
Record Room Doors.

**Hollow Metal Equipment**
*(United Metal Products Division)*
Hollow Metal Panel Doors, Frames and Trim.
Hollow Metal Flush Doors, Frames and Trim.
Elevator Entrances.
Extensible Steel Partitions.
Cold Rolled Moldings.

**Government Vault and Closet Doors**—These doors are available built to Federal Government specifications and drawing, M-352-M. Detailed information furnished on request.

### Cooperative Service to Architects

Our engineering department together with the entire personnel of our various branch offices is at the disposal of the architect or contractor. Sketches and estimates will be gladly furnished without charge or obligation.

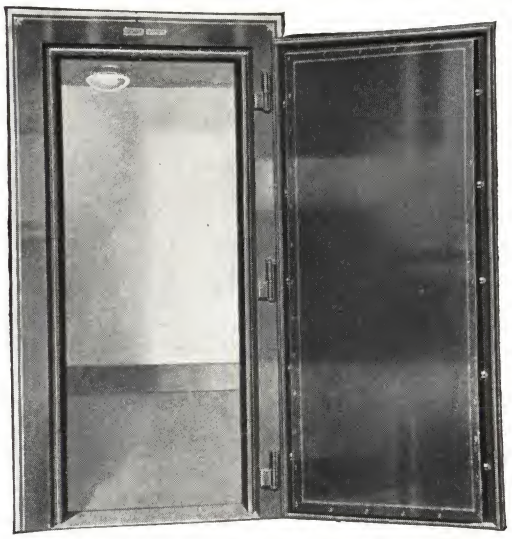
**MINIMUM WALL THICKNESS FOR GROUND SUPPORTED VAULTS RECOMMENDED BY THE NATIONAL FIRE PROTECTION ASSOCIATION, BOSTON, MASS.**

| Six-hour Vaults | | | | | Four-hour Vaults | | | | | Two-hour Vaults | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Kind of wall construction | | | | | Kind of wall construction | | | | | Kind of wall construction | | | | |
| | | | Protected steel or reinforced concrete frames | | | | | Protected steel or reinforced concrete frames | | | | | | Protected steel or reinforced concrete frames | |
| Number of stories counting from top down | Reinforced concrete, in. | Brick or plain concrete, in. | Reinforced concrete panels, in. | Brick or plain concrete panels, in. | Number of stories counting from top down | Reinforced concrete, in. | Brick or plain concrete, in. | Reinforced concrete panels, in. | Brick or plain concrete panels, in. | Number of stories counting from top down | Reinforced concrete, in. | Brick, in. | Hollow clay tile or concrete block in. | Reinforced concrete panels, in. | Brick or plain concrete panels, in. | Hollow clay tile or concrete block panels, in. |
| Top | 10 | 12 | 10 | 12 | Top | 8 | 12 | 8 | 12 | Top | 6 | 8 | 12 | 6 | 8 | 12 |
| 2nd | 10 | 12 | 10 | 12 | 2nd | 8 | 12 | 8 | 12 | 2nd | 8 | 12 | 12 | 8 | 12 | 12 |
| 3rd | 10 | 12 | 10 | 12 | 3rd | 10 | 12 | 10 | 12 | 3rd | 10 | 12 | 16 | 10 | 12 | 16 |
| 4th | 12 | 16 | 10 | 12 | 4th | 10 | 16 | 10 | 12 | 4th | 10 | 16 | 20 | 10 | 12 | 16 |
| 5th | 12 | 16 | 12 | 16 | 5th | 12 | 16 | 12 | 16 | 5th | 12 | 16 | ..... | 12 | 16 | 20 |
| 6th | 12 | 20 | 12 | 16 | 6th | 12 | 16 | 12 | 16 | 6th | 12 | 16 | ..... | 12 | 16 | 20 |
| 7th | ..... | ..... | 12 | 16 | 7th | ..... | ..... | 12 | 16 | 7th | ..... | ..... | ..... | 12 | 16 | 20 |
| 8th | ..... | ..... | 12 | 16 | 8th | ..... | ..... | 12 | 16 | 8th | ..... | ..... | ..... | 12 | 16 | 20 |
| 9th | ..... | ..... | 12 | 16 | 9th | ..... | ..... | 12 | 16 | 9th | ..... | ..... | ..... | 12 | 16 | 20 |
| 10th | ..... | ..... | 14 | 16 | 10th | ..... | ..... | 12 | 16 | 10th | ..... | ..... | ..... | 12 | 16 | 20 |

# INSULATED, FLAT SILL SIX-HOUR AND FOUR-HOUR FIRE-RESISTIVE VAULT DOORS—STYLE Nos. 2156 and 2154

UNDERWRITERS' LABORATORIES INSPECTED VAULT DOOR FIRE CLASSIFICATION 6 HR. No

SAFE MANUFACTURERS NATIONAL ASSOCIATION INDUSTRY PRODUCT INSULATED VAULT DOOR S.M.N.A. GROUP 6-HOUR CATALOG NO. 2156



Nos. 2156 and 2154 Fire-resistive Doors—Open Flat Sill—No Step—No Bridge
Equipped with Unlocking Device

Underwriters' Laboratories INSPECTED RELOCKING DEVICE GROUP 1 No

## Recommended Use

These Vault Doors are designed for severe fire risks. They should be used for ground-supported vaults on the lower stories and basements of buildings where floors may give way during a fire and subject the vault to the soaking heat of burning debris. They are recommended for the full protection of vital and irreplaceable records.

## Manufacturer's Specifications No. 2156

**(1) Protection**—Underwriters' Laboratories Classification 6-hour and the Safe Manufacturers' National Association Group 6-hour labels . . . Underwriters' Laboratories Relocking Device label that entitles users to a preferential burglary insurance discount.

**(2) Dimensions**—***Clear Opening***—78 ins. high, 32 ins. wide.
***Masonry Opening***—See detail drawings on this page.
***Front Frame Over All***—87½ ins. high, 49 ins. wide.
***Extreme Swing of Door***—39 7/16 ins.

**(3) Construction**—A flat sill provides flush entrance into the vault. On both sides and the top, the door and frame jambs are formed with deep tongues and grooves. The door is 6⅜ ins. thick on the edge; and is locked by ten ¾ ins. diameter steel bolts checked by a Diebold, 3-tumbler, combination lock. The fire-resistive insulation is 4¾ ins. thick over the face of the door, increasing to the full thickness of the door and frame jambs on both sides and the top. The doors are equipped with the Diebold Unlocking Device that enables any one locked in the vault to escape.

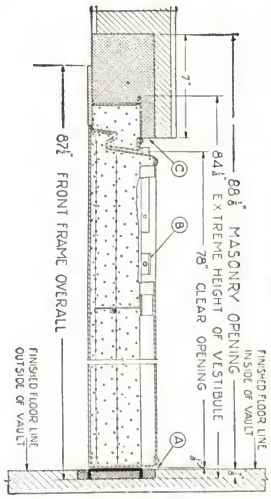
**(4) Finish**—Olive green lacquer with gold decorations. The bolt handle and combination dial knob are black bakelite. The combination dial and ring are nickel plated, with nickel numerals on a black background.

**(5) Shipping Weight**—1650 lbs.

**To Specify This Door, Write**—Diebold Standard Style No. 2156 Vault Door. (Specify swing of the door as right or left as you face it.) The door illustrated is *right swing.*

## Manufacturer's Specifications No. 2154

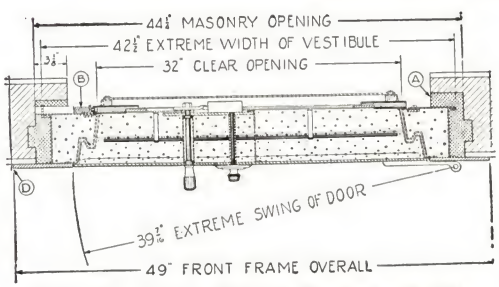
The No. 2154 (4-hour) door is, with the following exceptions, exactly like the No. 2156 (6-hour) door . . . (1) it bears the Underwriters' Laboratories and SMNA 4-hour labels . . . (2) the insulation over the face of the door is 3½ ins. thick . . . and (3) the shipping weight is 1500 pounds.




Vertical Section Showing Masonry, Clear Opening Dimensions and Floor Levels of Nos. 2156 and 2154



Nos. 2156 and 2154 Fire-resistive Doors—Closed




Horizontal Section Showing Masonry and Clear Opening Dimensions of 2156 and 2154 Vault Doors

## Instructions for Installing Nos. 2156 and 2154 Vault Doors

These doors can be installed in any wall 6 ins. thick or more. See table at bottom of page one for wall thicknesses recommended by The National Fire Protection Association. Follow these instructions for preparing the opening in the wall, installing and grouting the door in the opening:

1. Provide a wall opening of the size and shape as shown on the drawing below.

*Note: The drawing illustrates the opening for a wall 8 ins. thick or more. If the wall is less than 8 ins. thick (minimum 6 ins.) the inside wall line should be made as indicated by dotted line "E."*

2. Let vault masonry set thoroughly. Just before installing the door mix a grout of two parts sand and one part Portland cement, and fill recess "A" about three-fourths full.

3. Set the door in place so that the top of the sill is ⅛ in. above the finished floor line. The door will then swing over the finished floor line with a clearance of ¼ in.

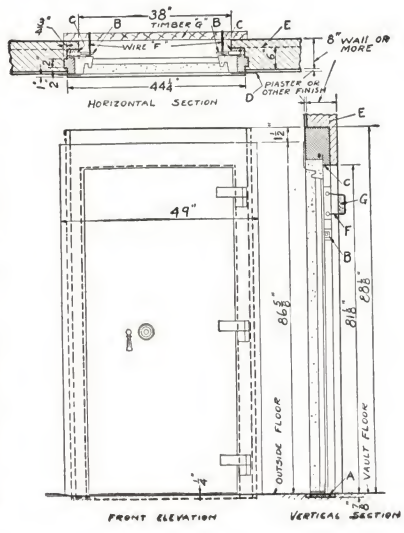
Hold the door in the wall with wire "F" and timber "G" as shown. Use adjusting screws "B," and wire and timber, at the top; and wedges at the bottom for plumbing and leveling the door frame in the opening.

Open the door to make sure it will swing easily and remain in any position. If the door tends to swing of its own accord, the frame is not level or plumb and further adjustments must be made.

4. After the frame is set correctly wooden forms must be made to close openings "C" . . . and also "D" if they are sufficiently large to allow the grout to pass.

5. Make a grout of the same proportions as recommended in paragraph (2). It must be thin enough to pour into the opening above the frame and flow readily into all crevices between the frame and wall, up to the top of the frame. Fill the remaining opening above the frame with concrete or heavy mortar.

6. After the grout is thoroughly set the wooden forms may be removed. The door is ready for use.



# INSULATED, FLAT SILL TWO-HOUR FIRE-RESISTIVE VAULT DOOR
# STYLE No. 2152

UNDERWRITERS' LABORATORIES INSPECTED VAULT DOOR FIRE CLASSIFICATION — 2 HR — No

SAFE MANUFACTURERS NATIONAL ASSOCIATION INDUSTRY PRODUCT INSULATED VAULT DOOR S.M.N.A. GROUP 2-HOUR CATALOG NO. 2152

## Recommended Use

Style No. 2152 Vault Door is designed for severe fire risks. It should be used for ground-supported vaults on the upper stories of buildings where floors may give way during the fire, or in structure-supported vaults in modern fire-resistive buildings. It is recommended as the minimum protection for vaults in any location that are used for the housing of vital and irreplaceable records, such as tracings, surveys, vital statistics, etc.

## Manufacturer's Specifications

**(1) Protection**—Underwriters' Laboratories Classification 2-hour and the Safe Manufacturers' National Association Group 2-hour labels. . . . Underwriters' Laboratories Relocking Device label that entitles users to a preferential burglary insurance discount.

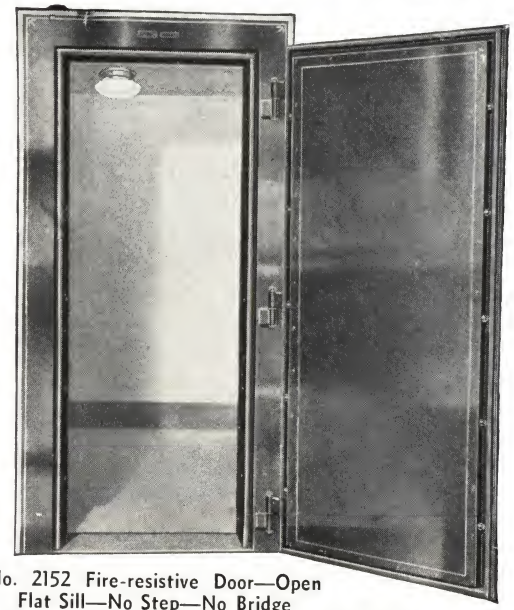
**(2) Dimensions**—*Clear Opening*—78 ins. high, 32 ins. wide.
*Masonry Opening*—See detail drawings on this page.
*Front Frame Over All*—87½ ins. high, 49 ins. wide.
*Extreme Swing of Door*—39 7/16 ins.

**(3) Construction**—A flat sill provides flush entrance into the vault. On both sides and the top, the door and frame jambs are formed with deep tongues and grooves. The door is 4⅜ ins. thick on the edge; and is locked by ten ¾-in. diameter steel bolts checked by a Diebold, 3-tumbler, combination lock. The fire-resistive insulation is 2¼ ins. thick over the face of the door, increasing to the full thickness of the door and frame jambs on both sides and the top. The door is equipped with the Diebold Unlocking Device that enables any one locked in the vault to escape.

**(4) Finish**—Olive green lacquer with gold decorations. The bolt handle and combination dial knob are black bakelite. The combination dial and ring are nickel plated, with nickel numerals on a black background.

**(5) Shipping Weight**—1200 lbs.

**To Specify This Door, Write**—Diebold Standard Style No. 2152 Vault Door. (Specify swing of the door as right or left as you face it. The door illustrated is *right swing.*)

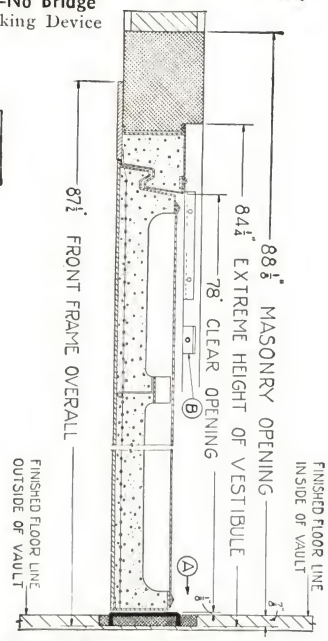


No. 2152 Fire-resistive Door—Open
Flat Sill—No Step—No Bridge
Equipped with Unlocking Device

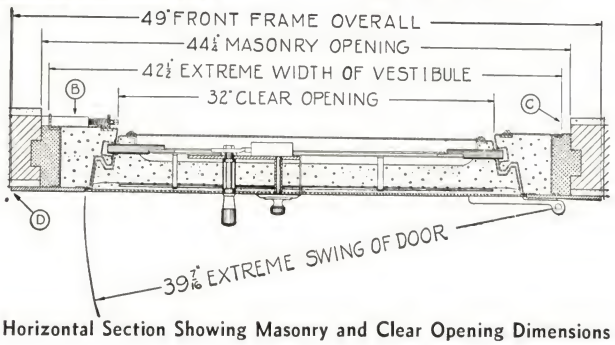
Underwriters' Laboratories INSPECTED RELOCKING DEVICE GROUP 1 No

No. 2152 Fire-resistive Door—Closed






Vertical Section Showing Masonry, Clear Opening Dimensions and Floor Levels




Horizontal Section Showing Masonry and Clear Opening Dimensions

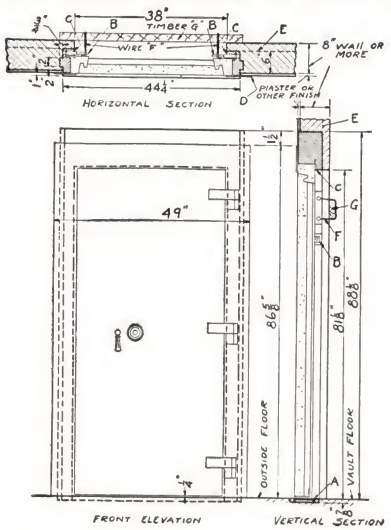
## Instructions for Installing No. 2152 Vault Door

This door can be installed in any wall 6 ins. thick or more. Follow these instructions for preparing the opening in the wall, installing and grouting the door in the opening:

1. Provide a wall opening of the size and shape as shown on the drawing below. ***Note:*** *The drawing illustrates the opening for a wall 8 ins. thick or more. If the wall is less than 8 ins. thick (minimum 6 ins.) the inside wall line should be made as indicated by dotted line "E."*

2. Let vault masonry set thoroughly. Just before installing the door mix a grout of two parts sand and one part Portland cement, and fill recess "A" about three-fourths full.

3. Set the door in place so that the top of the sill is ⅛ in. above the finished floor line. The door will then swing over the finished floor line with a clearance of ¼ in.
Hold the door in the wall with wire "F" and timber "G" as shown. Use adjusting screws "B," and wire and timber, at the top; and wedges at the bottoms for plumbing and leveling the door frame in the opening.




Open the door to make sure it will swing easily and remain in any position. If the door tends to swing of its own accord, the frame is not level or plumb and further adjustments must be made.

4. After the frame is set correctly wooden forms must be made to close openings "C" . . . and also "D" if they are sufficiently large to allow the grout to pass.

5. Make a grout of the same proportions as recommended in paragraph (2). It must be thin enough to pour into the opening above the frame and flow readily into all crevices between the frame and wall, up to the top of the frame. Fill the remaining opening above the frame with concrete or heavy mortar.

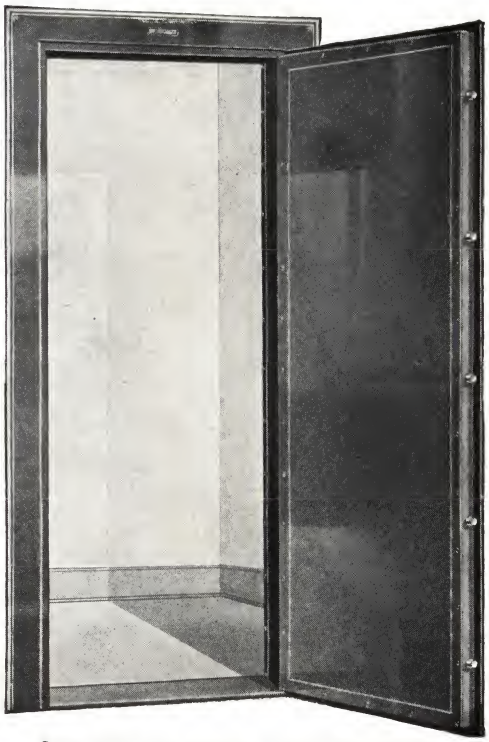
6. After the grout is thoroughly set the wooden forms may be removed. The door is ready for use.

# INSULATED, ONE-HOUR FIRE-RESISTIVE VAULT DOOR—STYLE No. 2151

UNDERWRITERS' LABORATORIES INSPECTED
RECORD ROOM DOOR
FIRE CLASSIFICATION 1-HR. No.

SAFE MANUFACTURERS NATIONAL ASSOCIATION
INDUSTRY PRODUCT
INSULATED VAULT DOOR
S.M.N.A. GROUP 1-HOUR CATALOG NO. 2151

Patents Nos. 1,842,084 and 1,715,191



Style 2151 Fire-resistive Vault Door—Open
Equipped with Unlocking Device

## Recommended Use

Style No. 2151 Vault Door is designed for moderate fire risks. It is recommended for structure-supported vaults on the upper floors of modern fire-resistive buildings.

## Manufacturer's Specifications

(1) **Protection**—Underwriters' Laboratories Classification 1-hour and the Safe Manufacturers' National Association Group 1-hour labels . . . Underwriters' Laboratories Relocking Device label that entitles users to a preferential burglarly insurance discount.

(2) **Dimensions**—***Clear Opening***—75 $\frac{9}{16}$ ins. high, 32 ins. wide.

***Masonry Opening***—79 ins. high, 36 $\frac{7}{8}$ ins. wide, 9 ins. thick including finish.

***Front Frame Over All***—80 $\frac{13}{16}$ ins. high, 42 $\frac{1}{8}$ ins. wide.

***Extreme Swing of Door***—34 $\frac{1}{8}$ ins.

(3) **Construction**—The inside faces of both the door and cover plate, and the tongue and frame of the vestibule are insulated. (See drawing below.) The door is 2 $\frac{1}{4}$ ins. thick on edge and is locked by five $\frac{3}{4}$ in. diameter steel bolts checked by a three tumbler combination lock. An interlocking channel runs the full height of the door on the hinge side. Vestibule jambs are welded into a solid piece with deep tongue striker. The door frame is formed from "Z" bars electrically welded. A flat sill provides flush entrance into the vault. The door is equipped with the Diebold Unlocking Device that enables any one locked in the vault to escape.

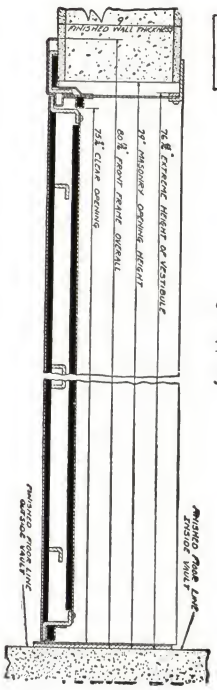
Underwriters' Laboratories INSPECTED
RELOCKING DEVICE
GROUP 1 No.

(4) **Finish**—Olive green lacquer with gold decorations. The bolt handle and combination dial knob are black bakelite. The combination dial and ring are nickel plated, with nickel numerals on a black background.

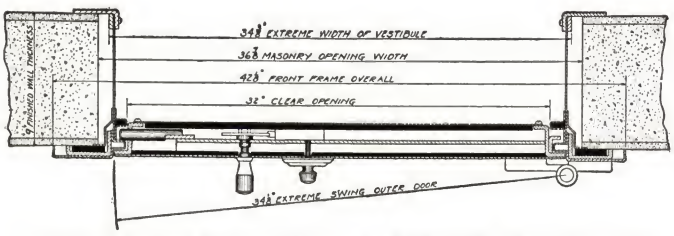
(5) **Shipping Weight**—420 lbs.

(6) **Installation**—No grouting required.

**To Specify This Door, Write**—Diebold Standard Style "2151" Vault Door. (Specify the swing of the door as right or left as you face it. The door illustrated is *right swing.*)




Vertical Section Showing Masonry, Clear Opening Dimensions and Floor Levels



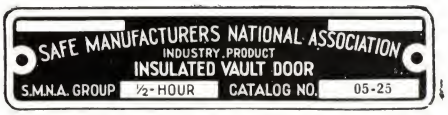

Horizontal Section Showing Masonry and Clear Opening Dimensions



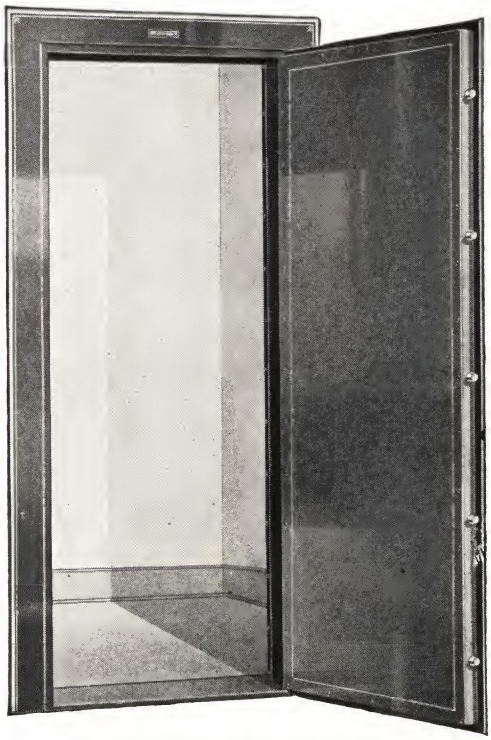
Style 2151 Fire-resistive Vault Door—Closed

# ONE-HALF HOUR RECORD ROOM DOOR—STYLE 05-25




Patents Nos. 1,842,084 and 1,715,191



Style 05-25 Record Room Door—Open
Equipped with Unlocking Device

## Recommended Use

The name "record room" identifies an enclosure of fire-resistive construction intended for use where the volume of records is too large and not of sufficient importance to justify economically the provision of vaults or safes, but where values warrant a certain amount of special protection. It should be used only in buildings of modern fire-resistive construction.

The record room is recommended for records classified as "important" by the National Fire Protection Association in its report. Included in this classification are statistical studies, derived accounting records, particularly those of informative character, whose purpose is to maintain a check upon efficiencies.

## Manufacturer's Specifications

**(1) Protection**—Underwriters' Laboratories Classification ½-hour and the Safe Manufacturers' National Association Group ½-hour labels . . . Underwriters' Laboratories Relocking Device Label that entitles users to a preferential insurance discount.

**(2) Dimensions**—*Clear Opening*—75¾ ins. high, 28½ ins. wide.

*Masonry Opening*—79 ins. high, 33 ins. wide, 9 ins. thick including finish.

*Front Frame Over All*—80⅛ ins. high, 38¼ ins. wide.

*Extreme Swing of Door*—30¼ ins.

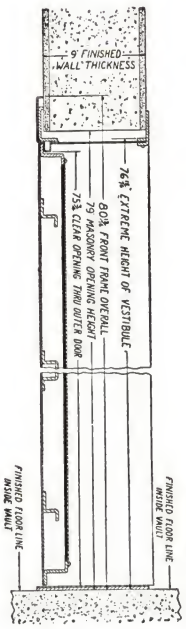
**(3) Construction**—With insulated inside cover plate the door is 2¼ ins. thick on edge; locked by five ¾-in. diameter steel bolts checked by a Diebold 3-tumbler combination lock, and an interlocking channel full height of door on hinge side. Vestibule jambs are welded into a solid piece with deep tongue striker. Door frame is formed from "Z" bars electrically welded. A flat sill provides flush entrance into the vault. The door is equipped with Diebold Unlocking Device that enables any one locked in the vault to escape.

**(4) Finish**—Olive green lacquer with gold decorations. The bolt handle and combination dial knob are black bakelite. The combination dial and ring are nickel plated, with nickel numerals on a black background.

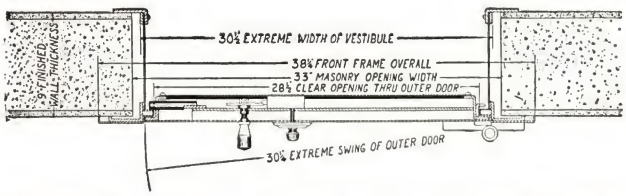
**(5) Shipping Weight**—375 lbs.

**(6) Installation**—No grouting required.

**To Specify This Door, Write**—Diebold Standard Style 05-25 Record Room Door. (Specify the swing of the door as right or left as you face it. The door illustrated is *right swing.*)

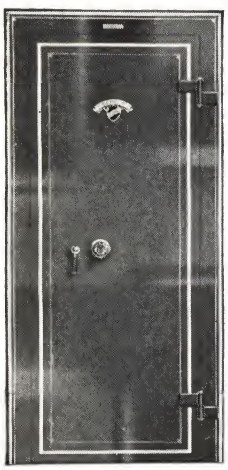



Vertical Section Showing Masonry, Clear Opening Dimensions and Floor Levels




Horizontal Section Showing Masonry and Clear Opening Dimensions



Style 05-25 Record Room Door—Closed

## RECORD ROOM DOOR—STYLE "TILE"

The Style "Tile" Door is exactly the same as the Style 05-25, except it does not have an insulated cover plate. It bears the Safe Manufacturers National Association label illustrated below.



# RECORD ROOM DOORS—STYLES "R," "S" and "T"

SAFE MANUFACTURERS NATIONAL ASSOCIATION
INDUSTRY PRODUCT
PLATE TYPE VAULT DOOR WITH INNER DOORS ½ HOUR
S.M.N.A. GROUP ½ HR. EXP. CATALOG NO.

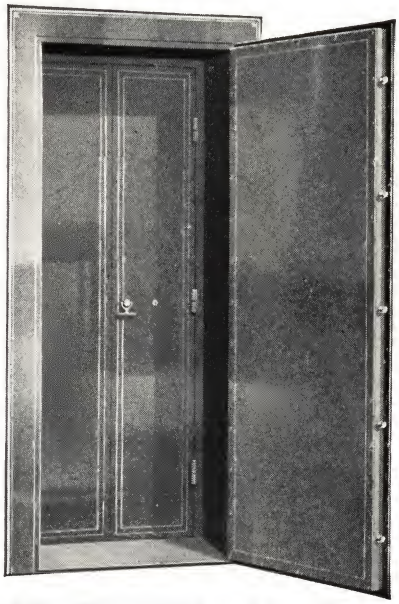
Patents Nos. 1,842,084 and 1,715,191



**Style "T" Record Room Door—Open**
Equipped with Unlocking Device

## Recommended Use

Styles "R," "S" and "T" doors are recommended wherever inside doors are required as auxiliary protection in record rooms. The styles "S" and "T" doors are built with a wide opening to permit the use of buses. Style "T" has double doors. All three doors have a flush entrance into the record room.

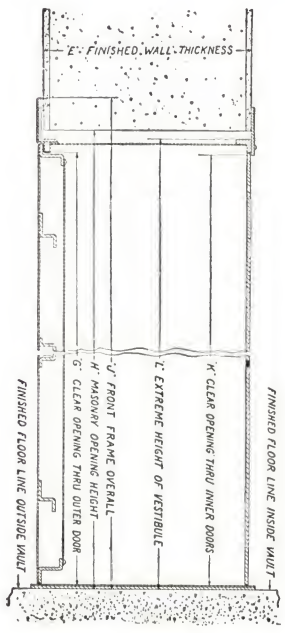


**Styles "R" and "S" Record Room Doors—Open**
Equipped with Unlocking Device

## Manufacturer's Specifications—Styles "R," "S" and "T" Record Room Doors

**(1) Protection**—Safe Manufacturers' National Association Group, ½-hour label.

**(2) Construction**—Outside doors are 2¼ ins. thick on edge. Styles "R" and "S" doors are locked by five ¾-in. diameter steel bolts. Style "T" right hand door is locked by seven ¾ in. diameter steel bolts; five at front, one at top and one at bottom; left hand door is locked by three ¾-in. diameter steel bolts, one at front, one at top and one at bottom. Bolt work of outside doors is checked by a Diebold 3-tumbler combination lock, and an interlocking channel full height of the door on hinge side. Vestibule jambs are welded into a solid piece with deep tongue striker for styles "R" and "S." Style "T" has a striker extending the full height of the door at front. Door frames are formed from "Z" bars electrically welded. A flat sill provides flush entrance into vault. The doors are equipped with the Diebold Unlocking Device that enables any one locked in the vault to escape.




**Vertical Section Showing Masonry Clear Opening Dimensions and Floor Levels**

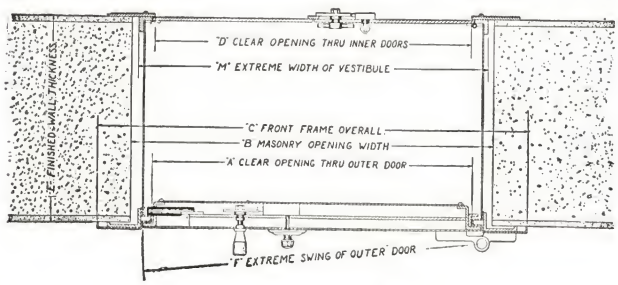
Inside doors are ⅛ in. thick and locked at top, bottom and front with strap boltwork, checked with a flat key lock.

**(3) Finish**—Olive green lacquer with gold decorations. The bolt handles and combination dial knobs are black bakelite. The combination dials and rings are nickel plated, with nickel numerals on a black background. The bolt handles of inside doors are nickel plated.

**(4) Shipping Weights**—"R" 500 lbs.; "S" 650 lbs.; "T" 690 lbs.

**DIMENSION SCHEDULE, INCHES**

| | "R" | "S" | "T" |
|---|---|---|---|
| A | 28½ | 35½ | 35½ |
| B | 33 | 40 | 40 |
| C | 38¼ | 45¼ | 45¼ |
| D | 27 | 34 | 35 |
| E | 18 | 20 | 20 |
| F | 30¼ | 37¼ | 18 13/16 R.<br>19 9/16 L. |
| G | 75¾ | 75¾ | 75¾ |
| H | 79 | 79 | 79 |
| J | 80 13/16 | 80 13/16 | 80 13/16 |
| K | 75⅜ | 75⅜ | 75⅜ |
| L | 77 | 77 | 77 |
| M | 30⅝ | 37⅝ | 37⅝ |




**Horizontal Section Showing Masonry and Clear Opening Dimensions**

**To Specify These Doors Write**—Diebold Standard (Style "R") (Style "S") (Style "T") Record Room Door. (Specify the swing of the doors as right or left as you face them except the Style "T.") The door illustrated is right swing.

# HERRING-HALL-MARVIN SAFE COMPANY

EXECUTIVE OFFICES
HAMILTON, OHIO

BRANCHES
NEW YORK, N. Y. CHICAGO, ILL. SAN FRANCISCO, CALIF. BIRMINGHAM, ALA.

DISTRIBUTORS
BOSTON, MASS., The Morris-Ireland Safe Co. LOS ANGELES, CALIF., The Shealy Safe Co. HOUSTON, TEXAS, Acme Safe & Lock Co.
REPRESENTATIVES IN ALL PRINCIPAL CITIES



## H-H-M PRODUCTS

Vault Doors, Safety Deposit Boxes, Tellers' Lockers, Omnibus Lockers, Trust and Security Equipment, Burglar-proof Chests, Vault Filing Equipment, Delayed Action Time Locks, Banking Grilles.

We can also furnish, through our Pressed Metal Division, banking floor counters and fixtures, for which page, see File Index.

## FLAT SILL INSULATED VAULT DOORS

Have Underwriters' fire-resistive labels for 6, 4, 2, 1 and ½-hour protection.

Have Underwriters' relocking labels.

Have Safe Manufacturers National Association labels.

Equipped with inside escape devices, originated and perfected by H-H-M.

Continuous interlocking flange on hinge side.

Filled with H-H-M special insulation.

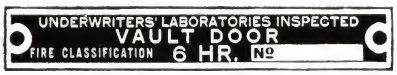
Require no inner vestibule.

Moulding bars are placed after door is grouted.

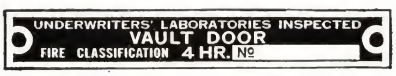
Two, four, and six-hour doors may be had in widths up-to-and including 53⅜ in.

Special finishes may be had if desired.

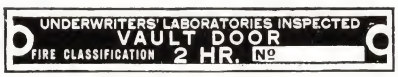
Easily installed.




Six-Hour Protection



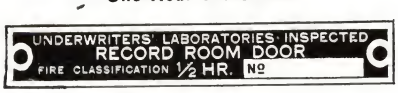

Four-Hour Protection




Two-Hour Protection




One-Hour Protection




One-half Hour Protection

## SPECIFY H-H-M VAULT DOORS

**H-H-M No. 7832-6FS**—With Underwriters' six-hour label. Standard opening 78x32 in.; all clear openings 34 in. and over equipped with double doors. Wall opening designed to interlock into grouting of door jamb. Standard single doors, right-hand swing; left-hand if specified. Standard finish green lacquer, gold striping. Minimum wall thickness 10 in. reinforced concrete.

**H-H-M No. 7832-4FS**—With Underwriters' four-hour label. Standard opening 78x32 in.; all clear openings 34 in. and over equipped with double doors. Wall opening designed to interlock into grouting of door jamb. Standard single doors, right-hand swing; left-hand if specified. Standard finish green lacquer, gold striping. Polished steel moulding bars. Minimum wall thickness 8 in. reinforced concrete.

**H-H-M No. 7832-2FS**—With Underwriters' two-hour label. Standard opening 78x32 in.; all clear openings 34 in. and over equipped with double doors. Wall opening designed to interlock into grouting of door jamb. Standard single doors, right-hand swing; left-hand if specified. Standard finish green lacquer, gold striping. Polished steel moulding bars. Minimum wall thickness 6 in. reinforced concrete.

**H-H-M No. 64**—With Underwriters' one-hour record room door label. Standard opening is 78x32 in.; may be had up to and including clear opening of 78x42 in. with single door. Standard right-hand swing; left-hand if specified. Standard finish green lacquer, gold striping. No moulding bars. *This door requires no grouting.* Minimum wall thickness 6 in. reinforced concrete. Give wall thickness when more than 6 in.

**H-H-M No. 63**—With Underwriters' one half-hour record room door label. Standard clear opening is 76⅛x32 in. Insulated with sheet asbestos. Not equipped with relocking device. Standard finish lacquer green, gold striping. This door should only be used where a minimum fire hazard exists. Door made for 6 in. wall. Minimum wall thickness 4 in. reinforced concrete. No Moulding Bars.

*Write for Details and Specifications*

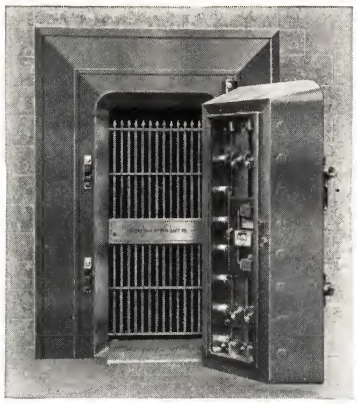
## BANK VAULT EQUIPMENT

Modern bank vault construction requires the use of bank doors 10 in. or more in thickness to obtain the highest insurance classification. The larger and thicker doors are used for greater protection.

**Rectangular Doors**—Used where economy of space is desired. Available in standard doors from 3½ to 21 in. thick with doors over 21 in. made to specifications.

**Round Doors**—Used for maximum protection and impressive appearance. Available in standard doors from 8 to 21 in. thick with doors over 21 in. made to specifications.

**Extra Thick Doors**—No matter what size door your client needs we can make it as it should be made. Early in 1937 we finished a set of six doors for the Bank of Japan which were 36 in. thick, exclusive of the boltwork. These doors are the largest built in recent years.



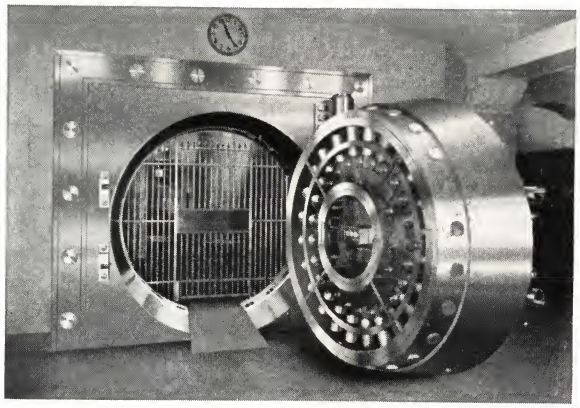
**Standard Rectangular Doors**
Available in thicknesses up to 21 in. Larger doors to specifications

### H-H-M Engineering Service

This service offers you full knowledge of insurance ratings, Underwriters' requirements, wall construction, reinforcing, lining, vault interiors and vault door design and selection.

Experience of more than one hundred years of successful manufacturing in this field equips HERRING-HALL-MARVIN SAFE COMPANY to render the service you desire.

Full details and specifications on bank vault work are available on request.



**Standard Round Doors**
Available up to 21-in. thickness. Larger doors to specifications

## BURGLAR-PROOF MERCHANDISE VAULTS

**Class "E" H-H-M No. 3M**—Carries Underwriters' Relocking Label. Doors, solid steel plate, 3 in. thick. Clear opening 78 x 30 in. Wall opening, 82½ x 36½ in. Eight 1¼-in. round steel bolts. Minimum wall, 12 in. reinforced concrete.

**Class "D" H-H-M No. 1½M**—Carries Underwriters' Relocking Label. Doors, solid steel plate, 1½ in. thick. Clear opening, 78 x 30 in. Wall opening, 82½ x 36 in. Eight 1⅛-in. bolts. Minimum wall, 9 in. reinforced concrete.

## HOME PROTECTION

### Wall Safes

**Solid Iron Castings**—Round door. Combination lock.

No. 1—7½ in. high x 11½ in. x 8 in. deep.

No. 2—10½ in. high x 15 in. x 8 in. deep.

**Openhearth Steel**—Locker type.

Body ¼ in., door ½ in. Key lock.

No. 42—14 in. high x 12 in. x 7¾ in. deep.

**Welded Steel Box**—⅛-in. body, ¼-in. cast bronze front.

Small combination lock. Door opening 5 in. diameter.

No. 43—8 in. x 8 in. x 6 in. deep.

### Burglar-Proof Chests

General practice in home constructions now favors use of cast steel money chests embedded in concrete and placed in closets about 4 ft. off the floor. Write for complete details.

### Silver and Linen Vaults

Use either of burglar-proof doors above or No. 64 or 7832-2FS fireproof vault doors depending on value of vault contents.

### Wine Vaults

Burglar-proof doors may be used, but insulated doors No. 63 or No. 64 will aid in maintaining constant temperature in wine vault, and prevent undesirable entrance to the vault.

## THE USE OF SAFES

### For the Protection of Records

The general rule favors the storage of inactive records in vaults with the active records protected by safes placed close to the person keeping the records.

HERRING-HALL-MARVIN SAFE COMPANY makes safes for ¾, 1, 2, and 4-hour protection with Underwriters' Labels on the 2 and 4-hour safes. Sizes are available with interiors from 15 x 11 in. wide to 66 x 52 in. wide. Special interior arrangements available in the larger sizes.

HERRING-HALL-MARVIN "A" & "B" SAFES also carry Underwriters' T-20 Burglary Labels and Relocking Labels.

All HERRING-HALL-MARVIN Products carry the Safe Manufacturers National Association Labels.

In planning the use of safes, H-H-M Engineers will co-operate in studying and planning the client's needs.

### For the Protection of Money

Although the ordinary safe provides considerable money protection, general practice favors the use of burglar-proof money chests made of openhearth or Harveyized cast steel.

Money chests are either anchored in a fireproof safe or a concrete block. Equipment of this type is usually used in cashier's cages, paymaster offices, and similar places.

In planning offices of this kind, it is often advisable to include the burglar and hold-up protection in the fixture plans.

*Write for Details and Specifications*

# THE MOSLER SAFE CO.

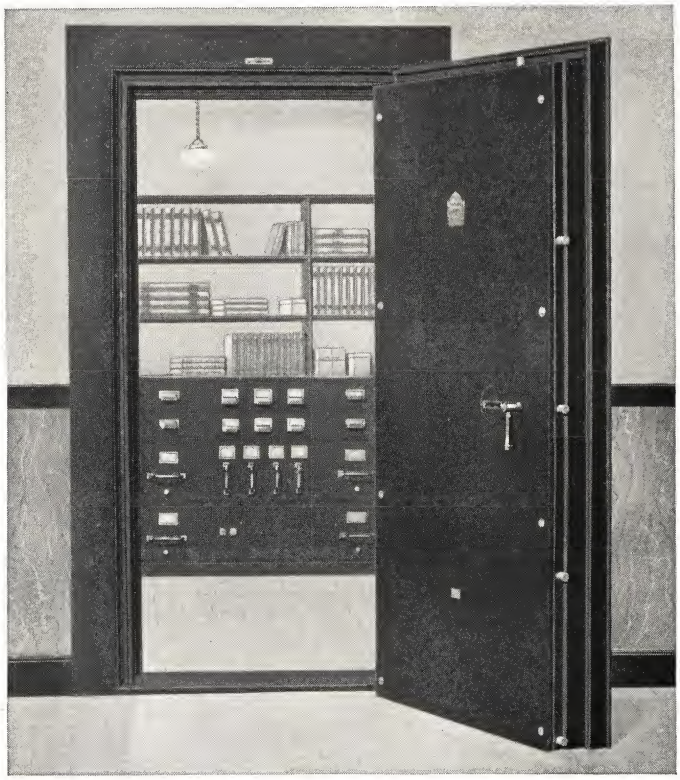
GENERAL SALES OFFICES AND FACTORIES

HAMILTON, OHIO

CABLE ADDRESS
OMOPLATE

NEW YORK CHICAGO BOSTON DETROIT DALLAS KANSAS CITY, MO.
LOS ANGELES PITTSBURGH PORTLAND, ORE. AND OTHER PRINCIPAL CITIES


## UNDERWRITERS LABELED INSULATED FLAT SILL FIRE RESISTIVE DOORS, VAULT DOORS AND RECORD ROOM DOORS. THESE DOORS CAN BE EQUIPPED WITH INSIDE DAY GATES.



Nos. FS-2R, 4R, 6R—Insulated Vault Door



Nos. FS-32R, FS-1R—Record Room Doors

Insulated Flat Sill Doors bear the Underwriters' Laboratories, Inc. relocking device label, and the Safe Manufacturers' National Association label. Doors No. FS-32, FS-1, FS-2, FS-4 and FS-6 carry the Underwriters' label indicating the classification. Doors are finished in Mosler standard green wrinkle but may be obtained in other finishes if required.

*The Mosler Emergency Escape Handle is standard on all insulated vault and record room doors as shown.* It can be omitted if desired.

## SPECIFICATIONS

### FS-32R and FS-32L One-Half Hour Record Room Doors

Clear door opening: 78 in. high, 32 in. wide. Over-all dimensions: 83¼ in. high, 42⅜ in. wide. Door projection 35¾ in. from finished wall when door is open 90°. Bolts: ¾ in. diameters; 3 operating to the front, 3 interlocking bolts at rear. Lock: Mosler three-tumbler combination. Underwriters' labels for one-half hour fire resistance and for relocking device.

### FS-1R and FS-1L One-Hour Record Room Doors

Clear door opening: 78 in. high, 32 in. wide. Over-all dimensions: 83¼ in. high, 42⅜ in. wide. Door projection: 35¾ in. from finished wall when door is open 90°. Bolts: ¾ in. diameters; 3 operating to the front, 3 interlocking bolts at rear. Lock: Mosler three-tumbler combination. Underwriters' labels for one-hour fire resistance and for relocking device.

### FS-2R and FS-2L Two-Hour Vault Doors

Clear door opening: 78 in. high, 32 in. wide. Over-all dimensions: 84½ in. high, 45 in. wide. Door projection: 37 in. from finished wall when door is open 90°. Bolts: ¾ in. diameters; 5 locking bolts, operating 4 to the front, 1 to the top, interlocking tongue and groove at rear. Lock: Mosler three-tumbler combination. Underwriters' labels for two-hour fire resistance and for relocking device.

### FS-2D Two-Hour Double Door Vault Front

Clear door opening: 78 in. high, 40 in. wide. Over-all dimensions: 84½ in. high, 53 in. wide. Door projections: right-hand door, 23 in., left-hand door 25⅜ in. from finished wall when doors are open 90°. Bolts: ¾ in. diameters; right-hand door, 5, operating 4 to the front and 1 to the top; left-hand door, 2, operating 1 to the top and 1 to the bottom. Interlocking tongue and groove at hinge side of each door. Lock: Mosler three-tumbler combination. Underwriters' labels for two-hour fire resistance and for relocking device.

### FS-4R and FS-4L Four-Hour Vault Doors

Clear door opening: 78 in. high, 32 in. wide. Over-all dimensions: 85½ in. high, 46⅛ in. wide. Door projections: 38⅛ in. from finished wall when door is open 90°. Bolts: ¾ in. diameters; 6 locking bolts, operating 5 to the front, and 1 to the top with interlocking tongue and groove at rear. Lock: Mosler three-tumbler combination. Underwriters' labels for four-hour fire resistance and for relocking device.

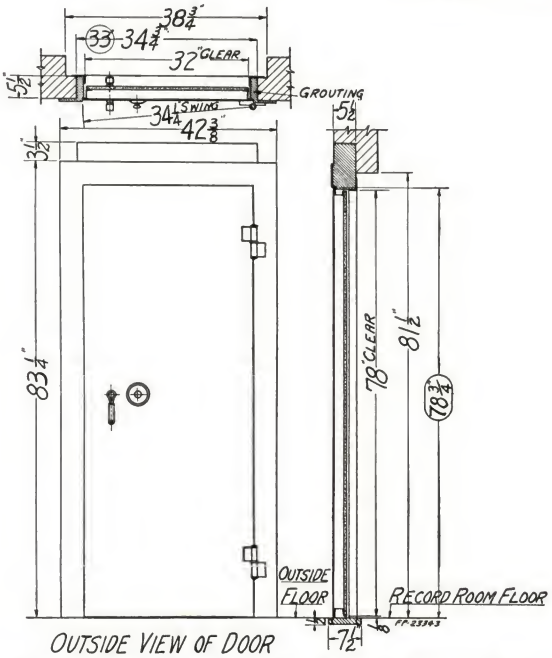
### FS-6R and FS-6L Six-Hour Vault Doors

Clear door opening: 78 in. high, 32 in. wide. Over-all dimensions: 87¼ in. high, 50 in. wide. Door projections: 39$\frac{7}{16}$ in. from finished wall when door is open 90°. Bolts: 1 in. diameters; 7 locking bolts, operating 4 to the front, 2 to the rear, 1 to the top, with interlocking tongue and groove at rear. Lock: Mosler four-tumbler combination. Underwriters' labels for six-hour fire resistance and for relocking device.

*Doors shown FS-32R, FS-1R, FS-2R, FS-4R and FS6R have hinges on right side. If doors are required with hinges on left side specify FS-32L, FS-1L, FS-2L, FS-4L or FS6L.*

# DETAIL DRAWINGS OF INSULATED VAULT AND RECORD ROOM DOORS

(See Specifications on Opposite Page)

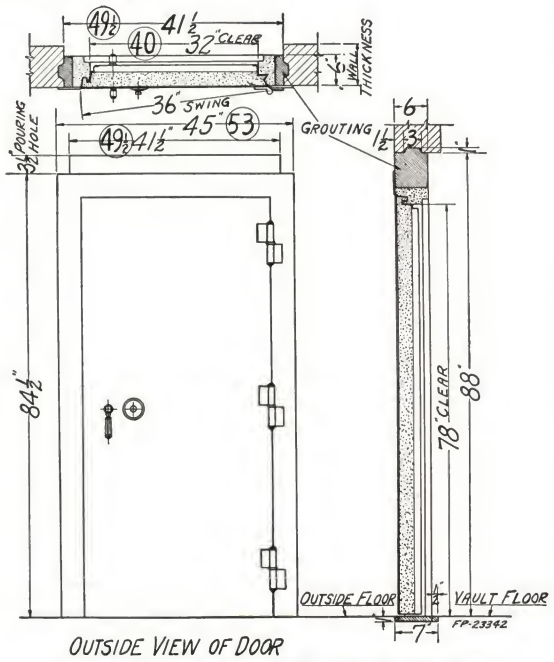



## No. FS-32 and No. FS-1 Record Room Doors

*Note:* The figures in circles indicate corresponding dimensions for the No. FS-32 Record Room Door.

The No. FS-32 bears the Underwriters' Labororatories, Inc. and the Safe Manufacturers' National Association ½-hour labels. This door does not require grouting.

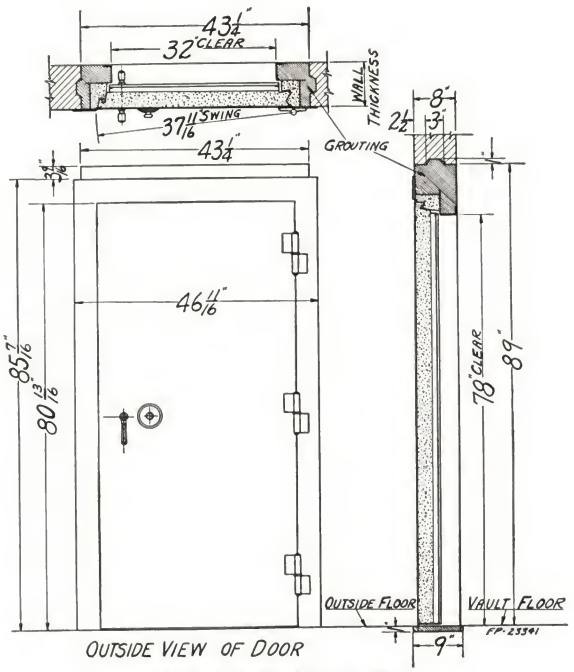
The No. FS-1 bears the Underwriters' Laboratories, Inc. and the Safe Manufacturers' National Association 1-hour labels.




## No. FS-2R and No. FS-2D Vault Doors

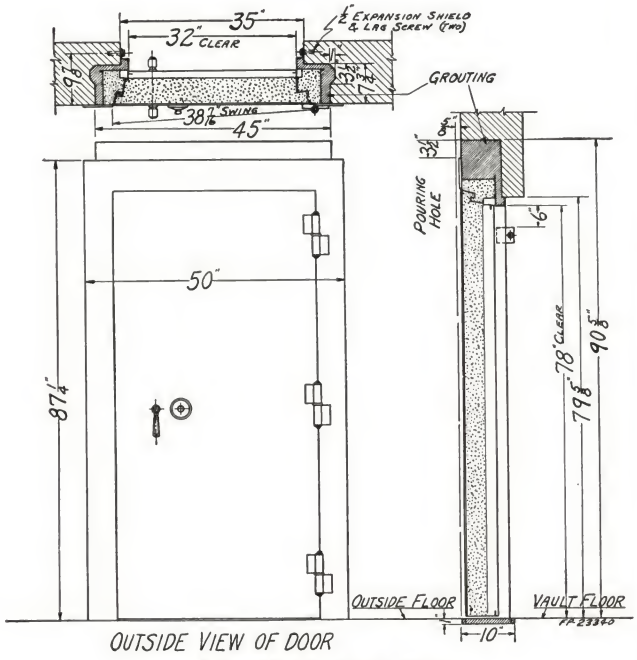
*Note:* Figures in circles indicate corresponding dimensions for the No. FS-2D Double Door, Two-Hour Vault Front.

The No. FS-2R and No. FS-2D Vault Doors bear the Underwriters' Laboratories, Inc. and the Safe Manufacturers' National Association 2-hour labels.




## No. FS-4R Vault Door

The FS-4R Vault Door bears the Underwriters' Laboratories, Inc. and Safe Manufacturers' National Association 4-hour label.




## No. FS-6R Vault Door

The FS-6R Vault Door bears the Underwriters' Laboratories, Inc. and the Safe Manufacturers' National Association 6-hour label.

*Detail installation instructions will be furnished on request.*

For Door with Hinges on Left Side Specify No. FS-32L, FS-1L, FS-2L, FS-4L or FS-6L.

# PLATE TYPE VAULT DOORS



**No. 30-R Book and Storage Vault Door**
If doors are required with hinges on left side specify No. 30-L.



**No. 36-R Book and Storage Vault Door**
If doors are required with hinges on left side specify No. 36-L.



**No. M-352-M Post Office Vault Door**
Door can be furnished with hinges on left side when specified.

## SPECIFICATIONS

### 30-R and 30-L Book and Storage Vault Door

Wall opening: 78¾ in. high, 31 in. wide. Wall thickness: 5½ in. including plaster or other finish. Clear door opening: 78 in. high, 29⅜ in. wide. Over-all dimensions: 83¼ in. high, 40¼ in. wide. Door projection: 33⅝ in. from finished wall when door is open 90° Bolts: ¾ in. diameter; 3 operating to the front, 3 interlocking bolts at rear. Lock: Mosler three-tumbler combination. Underwriters' label for relocking device. Safe Manufacturers' National Association label.

### 36-R and 36-L Book and Storage Vault Door

Wall opening: 78¾ in. high, 37 in. wide. Wall thickness: 5½ in. including plaster or other finish. Clear door opening: 78 in. high, 36 in. wide. Over-all dimensions: 83¼ in. high, 46⅜ in. wide. Door projection: 39¾ in. from finished wall when door is open 90°. Bolts: ¾ in. diameter; 3 operating to the front, 3 interlocking bolts at rear. Lock: Mosler three-tumbler combination. Underwriters' label for relocking device. Safe Manufacturers' National Association label.

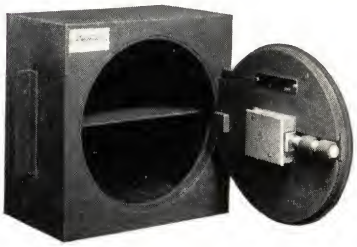
### M-352-M Post Office Vault Door

Wall opening: 88 in. high, 46 in. wide, 22 in. deep, including plaster and other finish. Clear door opening: 79¼ in. high, 36 in. wide. Over-all dimensions: 89 in. high, 52¾ in. wide. Door projection: 40 in. from finished wall when door is open 90°. Bolts: 1¼ in. diameter; 6 locking bolts, operating 4 horizontally, 1 to the top and 1 to the bottom. Lock: Mosler four-tumbler key-changing combination.

# STEEL MONEY CHESTS FOR CHAIN STORES, OIL STATIONS, THEATRES, HOTELS, HOMES AND FOR GENERAL COMMERCIAL USES

## INSULATED WALL SAFES

Suitable for installation in the wall or closets of Residences, Clubs or Offices for protection of valuables and papers against theft. Insulated for fire protection in accordance with the Safe Manufacturers' National Association label No. 6. Provided with angles for proper installation and can be concealed behind pictures, draperies, etc.



Wall Safe

Inside 11″ high, 11″ wide, 4½″ deep clear. Outside 12″ high, 12″ wide, 7″ deep body. Over all depth 8¼″. Clear door opening 9½″. Door equipped with high class combination lock with drill resistant shouldered spindle designed to prevent forcible entry by driving the spindle.

Relocking device for operation in case of mechanical or explosive attack.

Finished in Mosler Standard green wrinkle. Special finishes to harmonize with surroundings can be supplied.

Can also be obtained in 5″ body depth without insulation.

## BURGLARY-RESISTIVE CHESTS

These chests are designed for use in Banks, Stores, Gasoline and Service Stations, Theatres and Hotels and any business where money and valuables are to be protected against burglary. These can be installed in any Mosler fire-resistive safe or in the building wall, closet, or used inside of vault.



Burglar-Resistive Chest
Type E, H and X

Doors case-hardened producing exterior highly resistant to drills and mechanical tools and a soft tough core to resist explosive shocks, etc. Body of type H and X case-hardened.

Type X tested and approved by Underwriters for one-hour resistance to burglary, including high explosives commonly used by burglars.

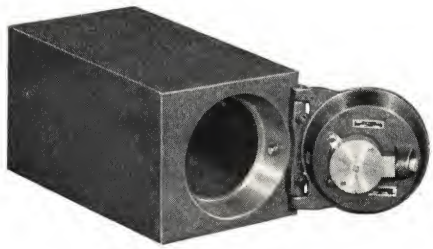
Type E and H chests take H Bank and E Mercantile burglary insurance rate with 10% discount for Underwriters' Laboratories, Inc., labeled relocking device. Type X chest takes H Rank and F Mercantile rate with 10% relocking device discount from H rate.

Finished in Mosler Standard green wrinkle.

## BURGLARY-RESISTIVE CHESTS

(National Line)

An ideal chest for small businesses or in the home where protection against burglary is wanted. Can be installed in a concrete block, fire-resistive safe, building wall or closet. Chest will be provided with angles for wall installation.



Burglary-Resistive Chest

Inside 5″ high, 5″ wide, 7⅛″ deep clear. Outside 7″ high, 7″ wide, 11⅞″ deep over all. Also, inside 6″ high, 6″ wide, 7⅛″ deep clear. Outside, 8″ high, 8″ wide, 11⅞″ deep. Door opening 4⅝″. Body 1″ thick. Door single piece forged steel 1½″ thick, case-hardened. Combination lock has Underwriters' Laboratories, Inc., labeled relocking device accomplishing 10% discount from H Bank or E Mercantile Insurance rate.

Finished in Mosler Standard green wrinkle. Special finishes to harmonize with surroundings can be supplied at slight additional cost.

## CHESTS IN CONCRETE BLOCKS

Recommended for Chain Stores, Gasoline and Service Stations and any business activities where combined holdup and burglary protection is necessary. The weight of the concrete block is sufficiently heavy to prevent the equipment being readily hauled away. This equipment has been adopted as standard protection by the leading Chain and Mercantile organizations.

Concrete block heavily reinforced and chest securely anchored therein. Blocks covered with steel cladding. Chests available with top or side openings. Inner partition with circular door and dual-control lock with relocking device provides holdup depository for accumulated reserve cash.



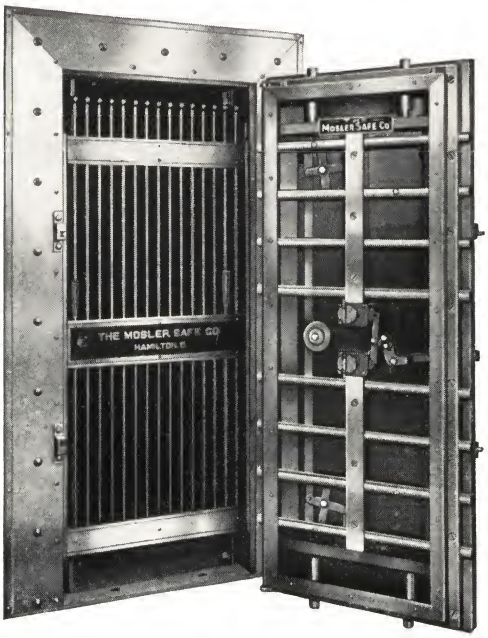
Burglary-Resistive Chest

Standard size block 32″ high, 26¼″ wide, 23½″ deep over all.

Finished in Mosler Standard green wrinkle.

*Further Information for the Above Furnished on Request*

## SOLID STEEL DOORS FOR BUILDING AND LOAN, FINANCE COMPANIES, JEWELERS, FURRIERS, SILK, STORAGE WAREROOMS AND HOTEL VAULTS




No. 64—Vault Door

The No. 64 Vault Door, which is 1½" in net solid steel thickness, is illustrative of the doors for Building and Loan, Finance companies, jewelers, furriers, silk storage warerooms, hotel and other vaults. They can be furnished in any thickness to meet requirements of the insurance manual.

Doors can be furnished in painted or polished steel finish.

Our complete line of these doors offers a wide selection to meet the requirements of any business.

Specifications will be sent on request.

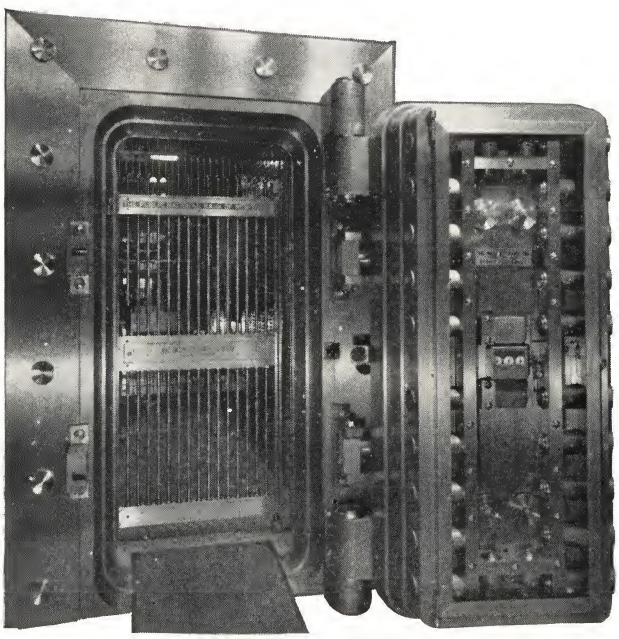
*The massive gold storage vault doors just installed for the United States Government at Fort Knox, Kentucky, were built by*

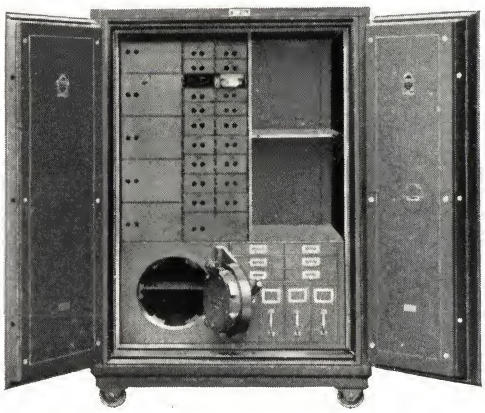
THE MOSLER SAFE CO.

*These vaults will contain more gold than any other vaults in the world.*

## BANK AND SECURITY EQUIPMENT

Mosler Bank Vaults and Security Equipment are used by the United States Government, by Foreign Governments, and by Banks and Financial Institutions, both large and small, throughout the world.





Hotel Safe with Safe Deposit Boxes and Chest

Bank Vault Doors are built in any size or thickness.

# BANK AND SECURITY EQUIPMENT

## Night Deposit Safes



Bronze Entrance Door of Night Deposit Safe

For installation in building walls to facilitate depositing after banking hours, Sundays or holidays. A metal chute is installed in building wall with receiving safe located on first floor or in basement as required. This safe takes low insurance rate.

The Underwriters' Laboratories, Inc. labeled relocking device accomplishes a 10% discount from this rate.

Outer circular entrance door is of bronze ornamented with appropriate bronze seal or with individual seal of bank.

## Tellers' Lockers Equipped With Delay Period Timelock

For protecting reserve cash against holdup, also for protection of payrolls put up in advance but held until called for. Unit remains constantly locked and can be opened only after predetermined delay period necessary before timelock reaches opening point. Timelock can be attached at factory to locker with rotary hopper top as illustrated or with a baffle-protected slot in door, also to inner doors of burglary-resistive chests, fire-resistive design chests, etc. Lockers, chests and safes furnished in a wide range of sizes.

Finished in Mosler Standard green wrinkle.



Special Tellers' Locker with Hopper Depository Top Suitable for Payrolls

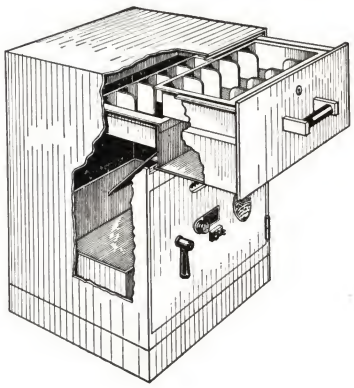
# MOSLER COUNTER-CASH PROTECTOR



The Mosler Counter-Cash Protector, offering protection against holdup, is designed especially for use of Bank Tellers, Tax and Toll Collectors or any businesses where substantial sums of cash are necessary to transact business. The main drawer does not slam but the upper current cash drawer therein, which acts as a screen for the reserve drawer, slides over the top of the reserve drawer to afford access to the reserve cash. The lower or reserve drawer, under remote control, moves back and dumps its contents by pressing any one of a series of buttons throughout the bank or store. Meanwhile the upper or screen drawer remains latched in a forward position.

Over-all dimensions 20½" wide, 19½" deep. Height to suit conditions.

Finished in Mosler Standard green wrinkle.



# MOSLER PRODUCTS

### Burglary-Resistive Equipment

Bank Vault Doors
Steel Vault Linings; Vault Ventilators
Book and Storage Vault Doors
Night Deposit Safes
Armored Steel Chests
Silver, Fur, Storage Wareroom Vault Doors
Manganese Safes

### Security Equipment

Safe Deposit Boxes
Tellers and Security Lockers

### Anti-Holdup Equipment

Counter-cash Protectors
Electrically and Manually Operated Delay Period Timelocks

### Fire-Resistive Equipment

Safes for Steel Files
Filing Units
Office Safes
Modernistic Safes for Homes
Hotel and Club Safes
Counter-height Safes
Wall Safes
Insulated Flat Sill Vault Doors

### Miscellaneous

Timelocks
Safe Deposit Box Locks
Combination Locks for vault and safe equipment

Government Vault Doors and Closet Doors built to Government Specifications and Drawings M-352-J, K, L and M.

# MOSLER SERVICE

Our protection engineers and the personnel of our branches are at the immediate disposal of banks, architects and contractors, without obligation, in preparing plans and specifications and furnishing pertinent protective and structural data.

We also maintain a complete cleaning, inspection and maintenance service for vault and safe equipment. Expert mechanics for regular or emergency service are available.

# SAFE MANUFACTURERS NATIONAL ASSOCIATION

9 East 44th Street
NEW YORK, N. Y.

## INADEQUATE VAULT DOORS ENDANGER VITAL RECORDS

**Before Designing a Vault, the Architect Should Have These Up-to-date Facts on Fire Protection**

*In the interest of: Promoting the science and improving the methods of protecting records against fire; obtaining and circulating information on the fire-service performed by heat-insulated record containers; safeguarding the public against unwarranted claims as to resistance-to-heat-transmission afforded by record containers.*

The *real* effectiveness of a vault door at time of fire is not determined by its degree of non-combustibility, but by its relative ability to prevent transmission of heat into the interior of the vault. *Uninsulated steel doors* (with or without air space) afford little resistance to heat transmission.

Fire Service conditions differ according to the relative combustibility rating of each particular building with its different fire exposure and occupancy. Accordingly, vault doors (and record-room doors, i. e. file-storage-room doors) are built for several different fire service conditions, and the correct type of door for any given situation can be readily determined.

In order to identify vault doors (and record-room doors, i. e. file-storage-room doors) as to their heat-transmission-resistance values, every door bears either an Underwriters' Laboratories label or one of the labels illustrated below. The ratings on these labels are based upon fire test data.






The label at the right is available in 5 different fire-exposure ratings—6 hours, 4 hours, 2 hours, 1 hour and ½ hour—according to the heat-transmission-resistance value of the door to which it is attached.




The label at the left is applied to plate type (uninsulated) vault doors *with* vestibule and inner doors. The rating of ½ hour is the maximum fire exposure rating assigned to doors of this type.




The label at the right is applied to plate type (uninsulated) vault doors *without* inner doors. The rating of "less than ½ hour" is the maximum fire exposure rating assigned to doors of this type.

### Are Your Records Safe?

You should have in your file, this booklet giving additional information on heat-insulating properties of vault doors—and telling how to determine your clients' fire service conditions. It also includes information on safes and other record containers.

SMNA No. P3

### Vaults and Vault Doors and Record Rooms and Record Room Doors

You should have in your file, this booklet giving specifications for construction of vaults and record rooms and installation of vault and record room doors.

SMNA No. P2

*For either booklet, write this Association at the above address. No obligation. Order by number.*

# YORK SAFE AND LOCK COMPANY

## Manufacturers and Builders of the World's Greatest Vaults

FACTORY AND HOME OFFICE

YORK, PA.

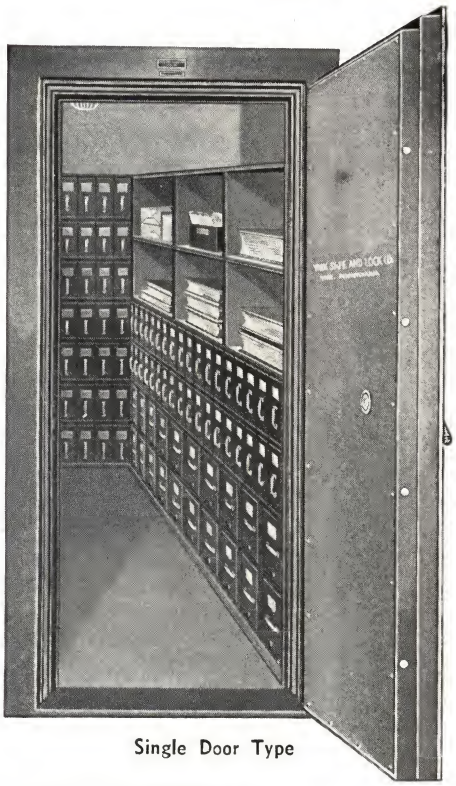
BALTIMORE, MD., 7 West Redwood Street
BOSTON, MASS., 98 Sudbury Street
CHICAGO, ILL., 217 West Monroe Street
CLEVELAND, OHIO, Hippodrome Building
DETROIT, MICH., 2359 National Bank Building
HOUSTON, TEX., 902 Louisiana Street
HONOLULU, HAWAII
LOS ANGELES, CAL., 800 East 9th Street
MIAMI, FLA., 2900 S. W. 4th Street
MONTREAL, QUE., 830 St. James Street, West
NEW HAVEN, CONN., 273 State Street
NEW YORK, N. Y., 102 Maiden Lane
Uptown Office, 101 Park Avenue
HAVANA, CUBA
PARIS, FRANCE
DEALERS IN PRINCIPAL CITIES
PHILADELPHIA, PA., 711 Chestnut Street
PITTSBURGH, PA., 319 Grace Street
ST. LOUIS, MO., 408 North 4th Street
SAN FRANCISCO, CAL., 200-218 Howard Street
SEATTLE, WASH., 112 Third Avenue, So.
WASHINGTON, D. C., 911 New York Avenue, N. W.
TOKYO, JAPAN
SHANGHAI, CHINA

## YORK PRODUCTS

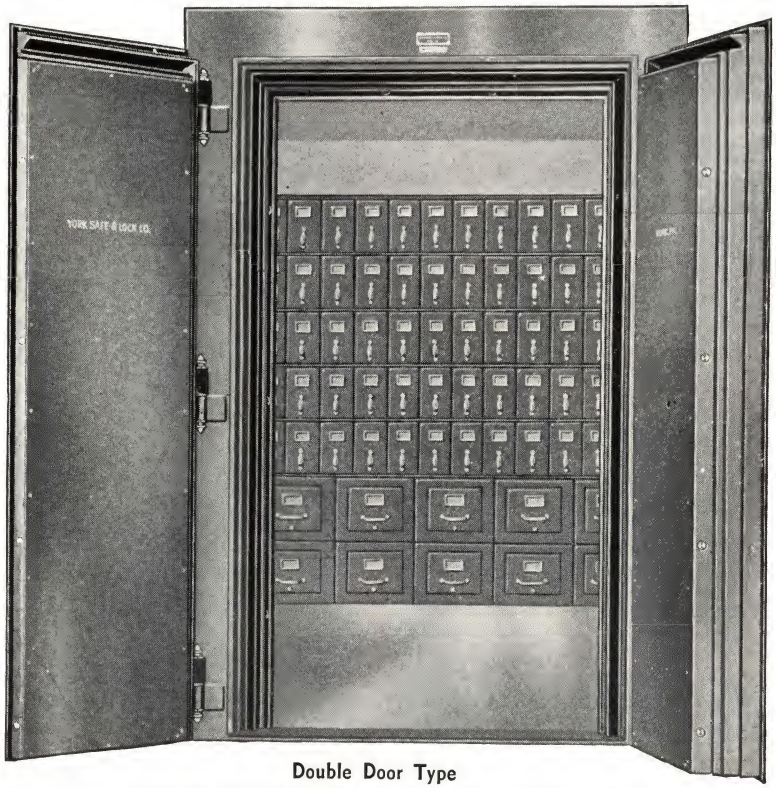
BANK VAULT EQUIPMENT; SAFE DEPOSIT BOXES; BOOK and STORAGE VAULT DOORS; SAFES bearing Underwriters' Fire Labels and T-20 Labels; CHESTS bearing Underwriters' Relocking Device Labels and X-60 Labels.

We have complete catalogues on the different products we manufacture. Write for your copy.

## YORK UNDERWRITERS' LABELED VAULT DOORS—ALL FLAT SILL



Single Door Type



Double Door Type

| No. | Class | Mason's opening, in. High | Mason's opening, in. Wide | Door opening, in. High | Door opening, in. Wide |
|---|---|---|---|---|---|
| **Single Door Type** | | | | | |
| *7632-½* | Half-hour Label | 78 9/16 | 35 1/8 | 76 | 32 |
| *7632-1* | One-hour Label | 78 9/16 | 35 1/8 | 76 | 32 |
| *7832-2* | Two-hour Label | 85 3/8 | 44 1/4 | 78 | 32 |
| *7832-4* | Four-hour Label | 86 1/16 | 46 1/8 | 78 | 32 |
| *7832-6* | Six-hour Label | 88 7/8 | 50 5/8 | 78 | 32 |
| **Double Door Type** | | | | | |
| *7840-2* | Two-hour Label | 85 5/8 | 52 1/4 | 78 | 40 |
| *7840-6* | Six-hour Label | 88 7/8 | 58 5/8 | 78 | 40 |

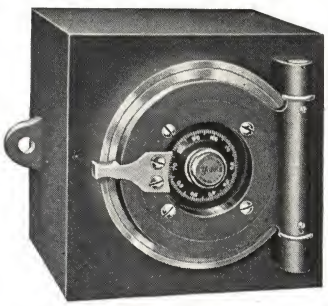
Send for detailed drawings showing size and shape of opening in wall to receive Vault Door. A saving to the Contractor is realized as the construction of the frame is self-contained. *It does not require any form work* to be built around the Door during installation, and as the grouting is done from the back, the wall around frame on the front does not need patching and refinishing later.

Stock Doors are constructed to fit minimum wall thicknesses. Vestibules can be made to fit any wall thickness.

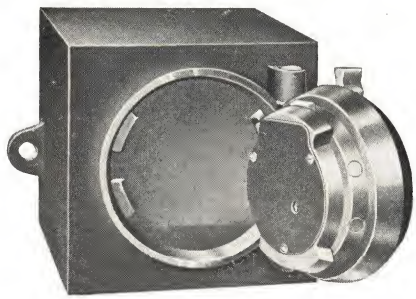
Vault Entrances are equipped with Underwriters' Approved Relocking Device and Inside Escape Device, unless otherwise ordered.

## YORK WALL CHESTS

| Chest | | Dimensions, in. Height | Width | Depth |
|---|---|---|---|---|
| *No. 475* | Outside | 10 | 10 | 15 13/32 |
| | Inside | 8 | 8 | 11 5/8 |
| *No. 540* | Outside | 9 | 9 | 8 |
| | Inside | 8 | 8 | 5 |
| *No. 530* | Outside | 8½ | 8½ | 8¾ |
| | Inside | 7½ | 7½ | 5 7/8 |
| *No. 531* | Outside | 8½ | 13 | 8¾ |
| | Inside | 7½ | 12 | 5 7/8 |



No. 530. Closed



No. 530. Open

York Standard Fire and Burglar Resisting Safes and Chests are equipped with our Underwriters' Approved Relocking Device. York Products bear the appropriate S.M.N.A. labels.

# BANKERS ELECTRIC PROTECTIVE ASSOCIATION

## Electric Protection Systems for Banks

## 60 State Street, BOSTON, MASS.

Systems Installed and Maintained Through A.D.T. Offices in All Principal Cities (See File Index)

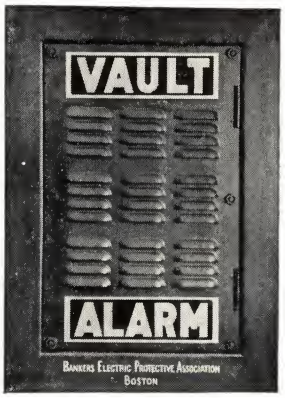
### Products

ALARM SYSTEMS for banks, designed to ring a loud-sounding alarm on exterior of building if vault is tampered with or an attempt made to hold up the bank. The system is rated Grade A by the Underwriters' Laboratories, Inc.

VENTILATORS for supplying fresh air to persons inside bank vaults.

### Organization and Service

Founded over 25 years ago, this organization's protection systems are used by thousands of banks throughout the country including the U. S. Treasury and many Federal Reserve Bank Buildings. It is now affiliated with the American District Telegraph Co., through whose offices its products are installed and serviced. *Layouts and sketches gladly furnished.*




**Flush Type Vault Alarm Housing**

### VAULT BURGLAR ALARM SYSTEM

Either through pickproof cables embedded in the vault itself, or through sound detectors placed within the vault, any attempt to gain entrance to the vault outside of banking hours immediately initiates a loud alarm on the exterior of the building.

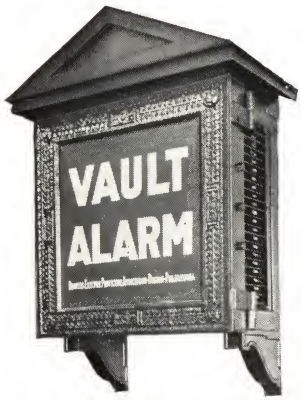
The "Bankers" Alarm is exclusive in many ways. The two-gong alarm feature and the 800-lb. steel cabinet are factors of safety which go far beyond the requirements of the Underwriters' Laboratories for Grade A approval. The alarm apparatus is protected from every possible form of tampering.

In new banks either or both systems can be installed. In old banks only the sound detection system can be installed.

With both systems special electrical lining thoroughly protects the vault door against attack by the oxy-acetylene torch.

Holdup alarm devices can be connected to the system so that, in the event of an attempted holdup, operating one of the devices sets the alarm system in operation.

It is worthy of note that in over 25 years' experience with these systems not one instance of their failure in an emergency has ever been recorded.




**Surface Type Vault Alarm Housing**

### Details of Operating Equipment

The vault protection equipment includes a control cabinet located in the vault itself.

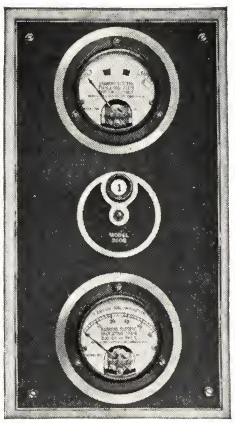
This has a time clock which is wound each night and set for the number of hours the vault is to remain closed.

An indicator panel on the outside of the vault carries two meters and push button switches for applying the protection to the system.

In the sound detection system means are provided for testing the sound detectors after the vault is closed.

Special pickproof cable used in the embedded cable system is a unique feature.

Use of this cable makes it impossible to pick out or isolate any single conductor for the purpose of defeating the system electrically, without causing an alarm.



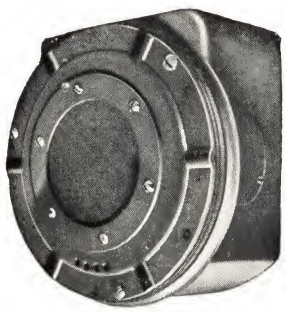
**Indicator Panel**

Mounted on outside of vault. Includes push button for applying protection at night

Sound detectors operating on the principle of microphones are designed to cause an alarm upon receipt of sound waves caused by a series of impulses or a single heavy impulse due to an attack on the vault.

They are designed to prevent unnecessary or false alarms, but are capable of initiating an alarm upon any disturbance sufficient to cause entrance to the vault.

Vault alarm housings for the exterior of the bank are supplied in either surface type (projecting from the wall), or flush type (embedded in the wall). Both are ruggedly constructed to resist tampering.



**Sound Detector**

Standard finishes: French gray and telephone black. Other finishes special

### Holdup Alarm Protection

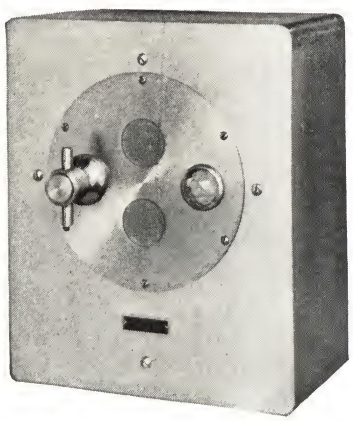
This organization supplies a varied line of daylight holdup alarm devices, including hand switches, foot push buttons, foot rails and semi-automatic devices which make it possible to give the alarm by simply obeying the commands of the bandits. These may be operated to sound alarms in nearby stores and the nearest police station, or be connected to the Vault Alarm to sound an alarm bell on the outside of the bank building.

Installation of the system and its design to suit the requirements of each individual bank are undertaken by the BANKERS ELECTRIC PROTECTIVE ASSOCIATION in collaboration with the American District Telegraph Company. Their experts may be trusted to incorporate in the protective system all the devices best adapted to the particular needs of any bank.

### Vault Ventilator

In case of attack by bandits who imprison employees in the vault, or in case of accidental closing of vault door on employees or customers, and to ventilate vault during business hours, this vault ventilator has proved indispensable. It provides fresh air and expels foul air at the same time. It has an effective burglar alarm hookup and a light.

The "Bankers" vault ventilator can be installed in any vault, old or new. Installation does not weaken structure. Device has full approval of insurance companies and does not prejudice existing rate. Three models available. Literature on request.



### Specifications

Complete specifications for the installation of all types of BANKERS ELECTRIC PROTECTIVE ASSOCIATION alarm systems will be furnished on application to the company at 60 State Street, Boston, Mass.

ESTABLISHED 1896

# F. N. McINTIRE BRASS WORKS

## Manufacturers of The McIntire Foolproof Automatic-Operating Shutter and Sliding Pole for Fire Houses and Other Buildings

(Patented)

221 High Street, BOSTON, MASS.

### ALL YOU DO IS SLIDE—THE SHUTTER OPENS AND CLOSES AUTOMATICALLY

In fire, police and rescue stations and dormitories, or other buildings where men are quartered above the ground floor, sliding poles afford the quickest means of getting to a lower floor for service, safety or business. The McIntire Automatic Shutter is the only instantaneous and effective closure of pole holes after using.

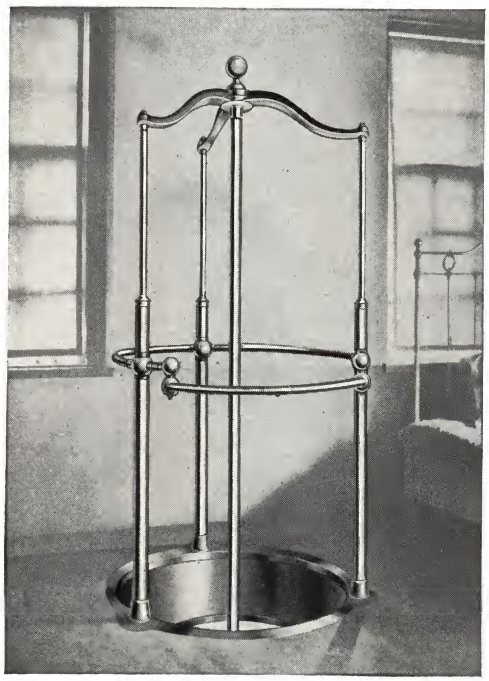
### Description

This equipment is a *complete interlinking unit consisting of cage, guard rail, quick opening gate, floor cylinder, shutters, sliding pole and landing mat.* The cage, guard rail and gate are of brass, chromium plated. The brass cylinder and aluminum shutters are satin finished. The sliding pole is of hard drawn highly polished brass with an outside diameter of 1.9 ins. with a $\frac{5}{32}$-in. wall thickness. The rubber landing mat is 2 ins. thick.

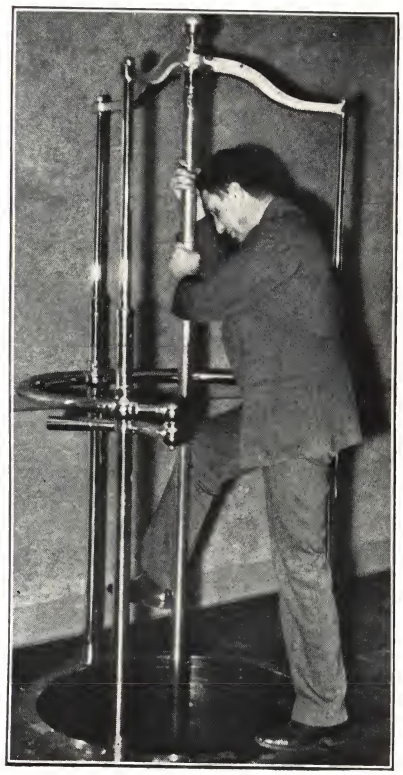
This device is designed for: Exclusion of drafts, gases and insects. Economy—elimination of heat loss. Safety—guard rail and safety gate. Speed and accessibility—no delay. Necessity—health preservation of men. Automatic closure—no care required. A decorative and useful equipment.

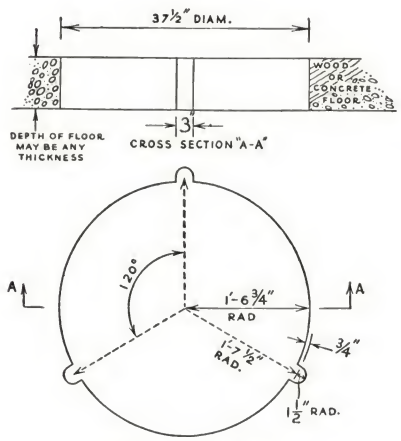
The McIntire Automatic Shutter is the only device of its kind which accomplishes these requirements without any manual operation or care on the part of the firemen or users. All you do is slide—the pole does the work.

Approved by Boston and other cities and recommended by foremost architects, fire officials, heating engineers and physicians.



**Cage and Cylinder**
(View from above)






**Plan and Cross Section**

To prepare a floor for the McIntire Automatic Shutter, cut or mold a hole in the floor 37½ in. in diameter and, at three equidistant points on a radius of 19½ in., cut or mold three more holes each 3 in. in diameter. A template will be furnished if desired.

The minimum clearance distances from the center of sliding pole to any wall or obstruction are: on the cage floor 25 in.; on the ceiling below and downward 30 in.

### Specifications

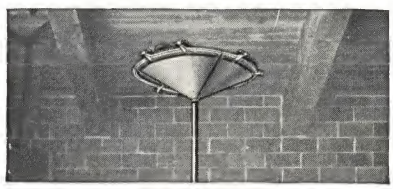
Furnish and install where shown a complete automatic-operating shutter and sliding pole constructed with hinged aluminum shutters, attached to appendages of ceiling ring of floor cylinder, said shutters opening and closing through the medium of connecting cage members which extend through the floor and form a cage with guard rail and safety gate above the floor topped by a tripod suspending the sliding pole which is free to move vertically with the cage actuating the opening and closing of the shutter by means of weight of a man sliding down the pole; as of approved type and design manufactured by the F. N. McIntire Brass Works, Boston, Mass. The hole in the floor shall be framed to suit, and otherwise the entire equipment shall be installed in strict accordance with the manufacturer's details.

### Explanation

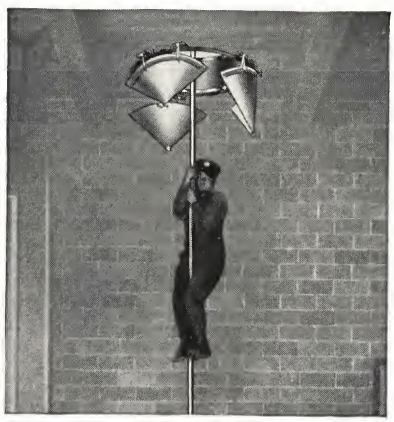
The equipment, when at rest, is held normally closed by adjustable spring tension incorporated in the guard rail stanchions. When the weight of a man contacts the pole the cage and pole descend slightly, opening the shutters downward, the weight of the man over-ruling the spring tension. When the weight is removed the pole and cage rise to normal position and the shutter closes in response to spring tension. This all happens automatically by applying or removing the sliding weight of the user. This system makes drafts and heat loss negative.

This equipment can be installed in old stations just as easily as in new buildings by simply preparing floor hole as directed below.

For dependability and economy specify the McIntire Automatic Shutter and Sliding Pole, the "fireman's friend." All you do is slide—the shutter opens and closes automatically.



**Shutter Closed**
(View from below)



**Shutter Open**
(Showing man sliding down)

# FRIES AND SON STEEL CONSTRUCTION AND ENGINEERING CO.

## Expert Jail and Prison Builders

TELEPHONE
Hemlock 1635

Second and Madison Avenues
COVINGTON, KY.

**For Corcoran Steel Bathroom Cabinets, see File Index**

### Products

Builders of CELLS for Jails, Prisons, Police Stations and Lockups, equipped with Automatic Sliding Door and Hand Pull, and Hydraulic Locking Devices; Prison Plumbing Fixtures; Round, Hexagon, Rib and Flat Interlocking Bar Grating for window guards, corridor gratings.

### Experience

FRIES AND SON STEEL CONSTRUCTION AND ENGINEERING CO., are backed by an organization made up of men whose experience ranges from twenty to fifty years, and who have built some of the largest jails and prisons in the United States.

### Tool Resisting Steel

We use twelve-ply tool resisting steel for all grated work made according to standard specification, in place of regular five-ply steel referred to in specification as tool resisting, consisting of alternate layers of low carbon and high carbon steel, all layers thoroughly welded and the high carbon steel layers hardened, to resist action of cutting tools.

Where absolute security is desired, we advise using our *"Fries Special"* Tool Resisting Steel for all exterior sides of cell blocks, also for the window gratings.

### Cell Door Locking Device

Our manually operated fully selective, keyless locking device is used in connection with sliding doors and is designed on lines of durability and simplicity as well as neatness. The device has no springs, adjusting nuts or collars that might come loose and cause trouble. Our device permits operator to open or close each door individually, or close or open all doors *collectively,* although some doors may be in open position while others are in closed position, or open or close any combination of doors desired.

Our locking device is entirely and securely encased by steel plate rendering it *tamperproof.*

### Automatic Corridor Lock

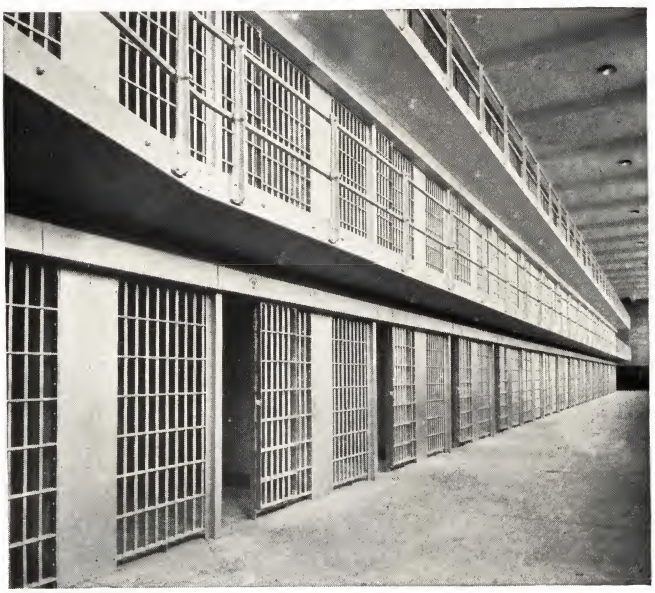
Our corridor doors are provided with a simple locking bar, operated from within the lever box. The corridor door locks automatically on lightly closing same, and is deadlocked. This lock is tamperproof.

### Special Equipment

We furnish everything necessary for the completed jail or prison installation, such as, one-piece, sanitary, combination lavatory, and toilet niche seat; electric light boxes; latest improved jail plumbing fixtures; speaking panels; plate and glass partitions; steel entrance doors; bunks; padded cells; steel stairs and window guards.

### Engineering Department

Our Engineering Department will gladly assist architects, engineers and officials who are contemplating any jail or prison construction. We will furnish up-to-date layouts, detail drawings, specifications and estimates for jail equipment, without charge.



**Cell Fronts, Cell House No. 6, State Penitentiary, Walla Walla, Wash.**



**Cell Fronts and Corridor Grating, Cell House No. 6, State Penitentiary, Walla Walla, Wash.**

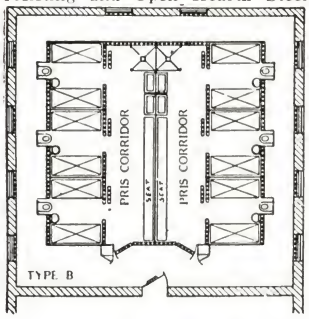
ESTABLISHED 1890

# MANLY JAIL WORKS

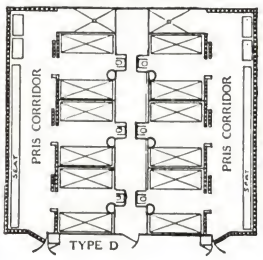
DALTON, GA.

## Products and Service

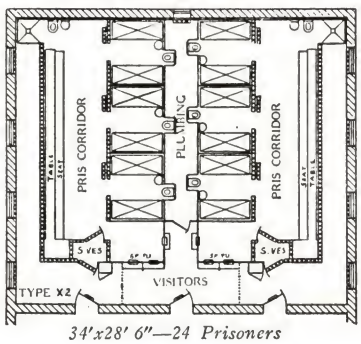
Complete Modern Cell Equipment for City and County Jails in Tool-resisting and Open Hearth Steel. Selected typical cell layouts shown below for preliminary information only. Solid lines plate work, dotted lines grating. Architect's inquiries appreciated.



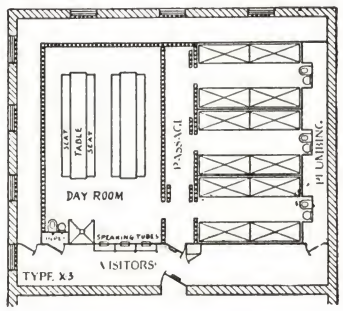

*26′x24′—24 Prisoners*




*30′x27′—24 Prisoners*




*34′x28′ 6″—24 Prisoners*




*35′x24′—24 Prisoners*

## Condensed Specifications

**Dimensions, etc.**—2-prisoner cells, 5′ or 6′ wide, 7′ deep; 4-prisoner 8′ wide, 7′ deep; 8-prisoner 8′ wide, 13′ deep, all 8′ high. Prisoners' corridors wide as possible, 5′ minimum. Safety vestibules 2′x4′. Pipe space "O" type cells 27″x24″. Prisoners' passage 3′ 6″.

**Materials**—For felony cells all exterior plates and gratings tool-resisting steel, plate work ¼″, gratings not lighter than 17 lbs. to sq. ft. Inside plate partitions $\frac{3}{16}$″ open hearth steel, inside gratings and doors open hearth steel, 10 lbs. to sq. ft.

**Tool Resisting Steel**—Bars and plates laminated 5-ply manganese chrome steel, highly tempered to resist saws, files, and drills, and roll straightened after tempering.

**Cell Door Locking Device**—Cell doors 2′x6′, on ball bearing rollers, operated from control cabinet with fully selective locking device. Main cage door hinged and locked with automatic center jump lock and two heavy slide bars, operated and locked inside control cabinet. Doors to safety vestibule hinged type, locked from control cabinet.

**Speaking Tubes**—Bulletproof glass panel 4″x9″, framed in plate wall 4′ 6″ above floor. Speaking tubes below panels for conversation with prisoners.

**Seats and Tables**—10-gauge steel. Seats 14″ wide, tables 14″ wide against wall as in "B", "D"—22″ wide as in "X-3".

**Bunks**—2′ 6″x6′ 6″. Indestructible type, 2″ angle frame, bottom 16-gauge perforated plate, riveted to cell wall. Standard folding type, slatted bottoms, hinged and supported by galvanized chains.

**Toilet Niche**—22″x16″x6′ as in "X-2" or 34″x16″x6′ as in "X-3", One-piece, rounded corners, $\frac{3}{16}$″ open hearth plate. Wall or floor outlets.

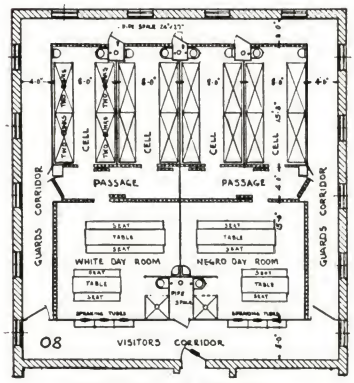
**Utility Corridor**—4′ wide as in "D", "X-2"; 3′ wide if niches one side only as "X-3."

**Floors**—Concrete. Plate work resting on 2″ cement curbs, grating supported 2″ above floor on rustproof thimbles 30″ apart.

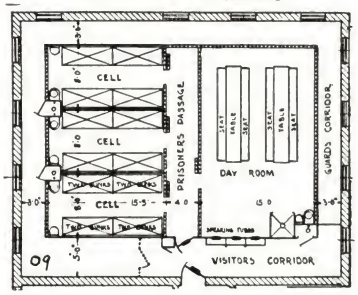
**Window Guards**—Tool-resisting steel ⅞″ or 1″ round verticals 3¾″ on center, ends shouldered and electrically welded. Horizontals 2¼″x⅜″—12″ apart, ends projecting 8″ into wall and bent back for building in.

**Doors for Masonry Walls**—$\frac{3}{16}$″ Open Hearth Plate stiffened with 2″ angles, Grated doors, ⅞″ verticals 4″ on center, horizontals 2¼″x⅜″—12″ apart, mortised and welded to frame. Heavy forged hinges, 5-tumbler flat jail deadlock, corrugated key. Channel jambs or 2½″ angle frames, connected with 11-gauge steel plate, ¼″ diamond threshold plates.

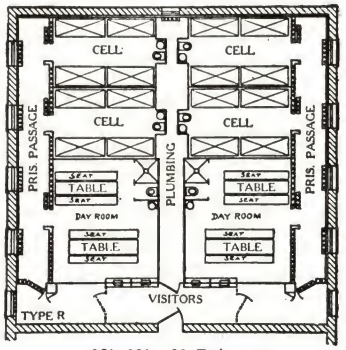
**City Police Station Cells**—Shown below "C-1" to "C-6" have hinged doors 2′x6′, grating 10 lbs. to sq. ft. $\frac{3}{16}$″ plate work on 2″ cement curbs, grating 2″ above floor. Built in both tool-resisting and open hearth steel.



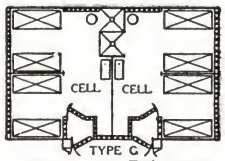

*32′x34′ 6″—32 Prisoners*



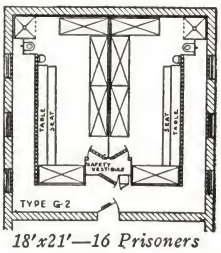

*34′ 6″x24′—24 Prisoners*




*38′x32′—32 Prisoners*



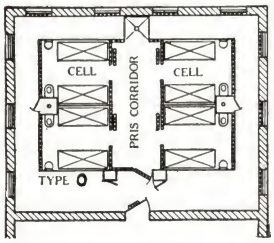

*25′x16′—16 Prisoners*



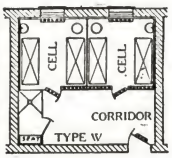

*18′x21′—16 Prisoners*



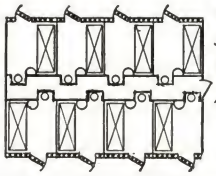
*C4—24′x7′—12 Prisoners*



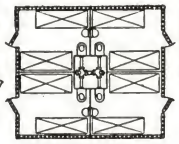

*24′x16′—16 Prisoners*



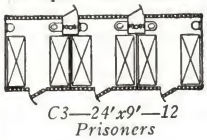

*16′x9′—8 Prisoners*



*C-1—24′x17′—16 Prisoners*

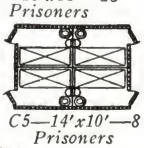


*C2—18′x16′—16 Prisoners*



*C3—24′x9′—12 Prisoners*

*Below—Perspective Cage "D," Prison Corridors. Control Cabinets, Cell Fronts, Toilet Niches, Utility Corridor*



*C5—14′x10′—8 Prisoners*



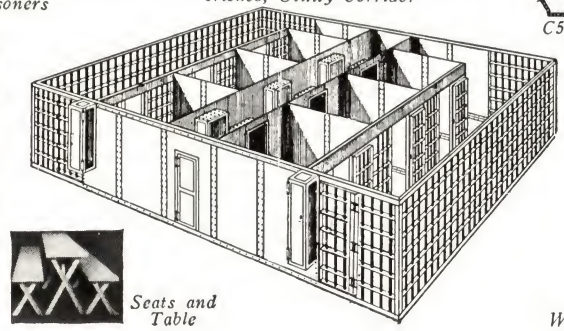

*C6—17′x9′—8 Prisoners*



*Speaking Tubes, Glass Panels*

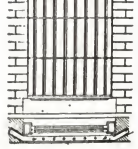


*Toilet Niche 34″x16″ Push Button Flush*



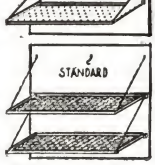


*Seats and Table*










*Window Guards, Plate and Grated Doors, Bunks*

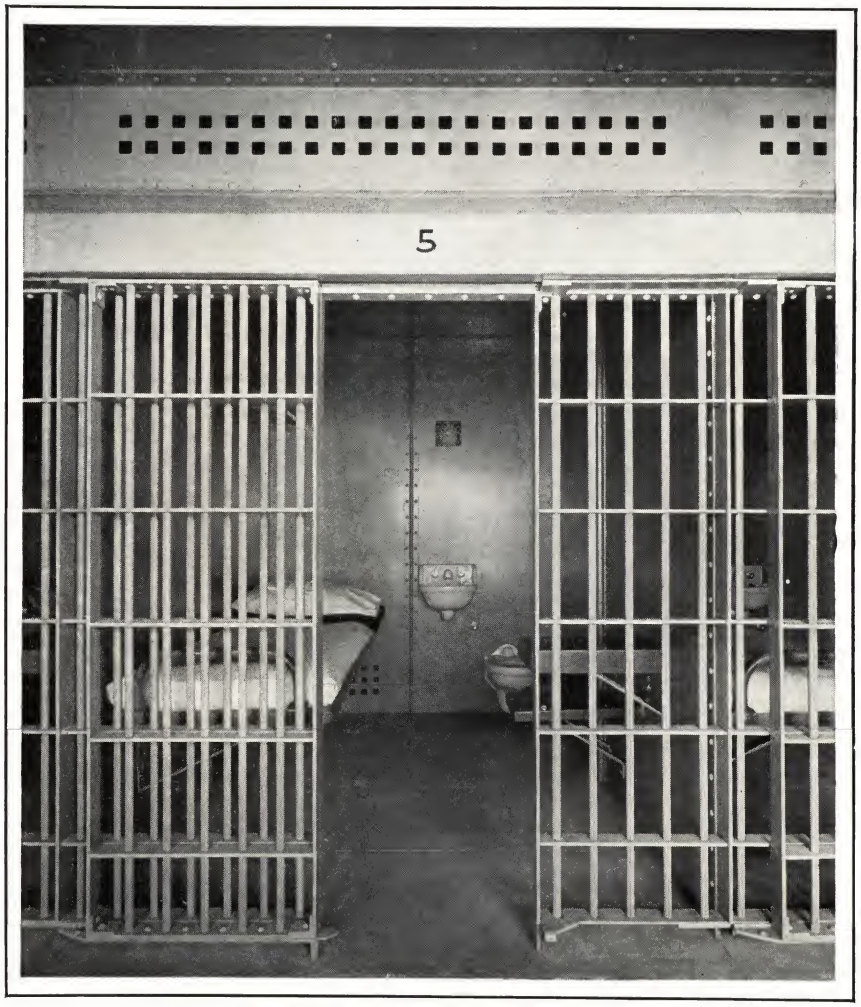
# PAULY JAIL BUILDING COMPANY

2215 De Kalb Street
ST. LOUIS, MISSOURI

EASTERN REPRESENTATIVE: R. R. Lippincott, 167 South Burnett Street, EAST ORANGE, N. J.
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## Manufacturers of Prison Equipment for Eighty-one Years

*Engineering Service—Sketches, Details, Specifications and Data on Modern Arrangements of Prison Equipment Based on Security—Safety—Sanitation, Available to Architects and Engineers*




Illustrating PAULY QUALITY Equipment

**DESIGNERS — Pioneers of the Industry — CRAFTSMEN**

### A Few of the Many Pauly Installations

Albany, N. Y., Albany County Jail
Kansas City, Mo., Jackson County Jail
Jacksonville, Fla., Duval County Jail
Santa Cruz, Calif., Santa Cruz County Jail
Dannemora, N. Y., Clinton Prison
New Hampton, N. Y., New York City Reformatory
Barnstable, Mass., Barnstable County House of Correction
New York, N. Y., U. S. House of Detention
St. Louis, Mo., First, Ninth and Tenth Precinct Police Stations
Sioux Falls, S. D., Police Station
Albany, N. Y., First Precinct Police Station
Rye, N. Y., Police Station
West Orange, N. J., Police Station

# ROANOKE IRON & BRIDGE WORKS, INC.

## Experienced Prison and Jail Builders

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### Roanoke Products

Fabricated Tol-Resisting and Open Hearth Steel Equipment for Federal, State, Municipal and County Jails, Prisons, Prison Camps and Police Stations;

Including Cells, Keyless Sliding Door Selective Locking Devices, Entrance Doors, Plate and Grating Partitions, Movable and Stationary Bunks, Window and Skylight Guards, Sanitary Plumbing.

### Experience

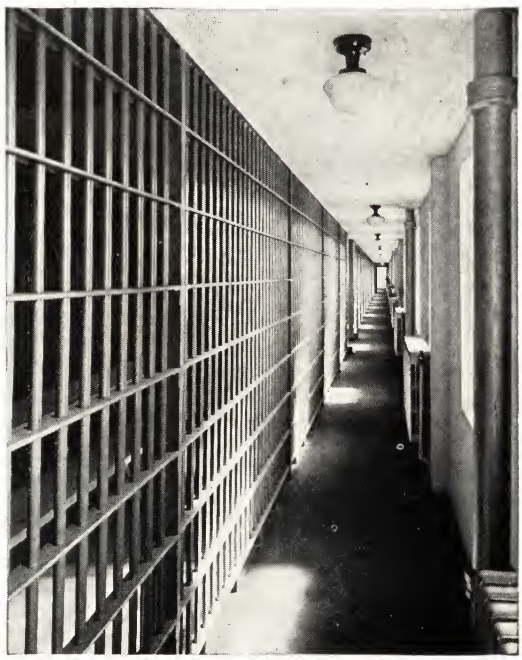
For more than thirty years we have specialized in the design and construction of prison work, and a plant, modernly equipped, supervised by specially trained Engineers, Mechanics, and Erectors, insures prompt and accurate execution of contracts.

### Service

Backed by a wide and successful experience in making layouts and designs in this special class of work, we are prepared to give overnight consulting service and furnish prompt estimates. Owners, Architects and Engineers are requested to make use of our service for preliminary designs and estimates.

### Representative Installations

Mecklenburg County Jail, Charlotte, N. C.
Vero City Jail, Vero City, Fla.
City of Petersburg Jail, Petersburg, Va.
City Police Department Building, Baltimore, Md.
District of Columbia Reformatory, Lorton, Va.
Wythe County Jail, Wytheville, Va.
McDowell County Jail, Welch, W. Va.
Floyd County Jail, Prestonburg, Ky.
Twenty-one Prison Camps, State of North Carolina.
Iredell County Jail, Statesville, N. C.
Knox County Jail, Knoxville, Tenn.
Florence County Jail, Florence, S. C.
Greene County Jail, Greeneville, Tenn.
Rockingham County Jail, Harrisonburg, Va.
State Penitentiary, Women's Building, Nashville, Tenn.
Jefferson County Jail, Charleston, W. Va.
Tulsa City Jail, Tulsa, Okla.
State Penitentiary, Shop Building, Richmond, Va.
Knoxville City Jail, Knoxville, Tenn.
Cleveland County Jail, Shelby, N. C.
Knox County Jail and Criminal Court Building, Knoxville, Tenn.
City Jail, Lynchburg, Va.
Hamblen County Jail, Morristown, Tenn.
Wise County Jail, Wise, Va.

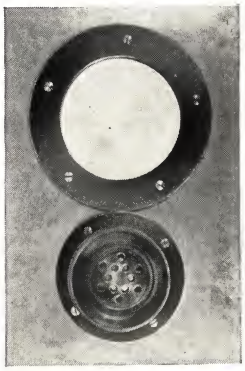


Cell Fronts and Guards Corridor

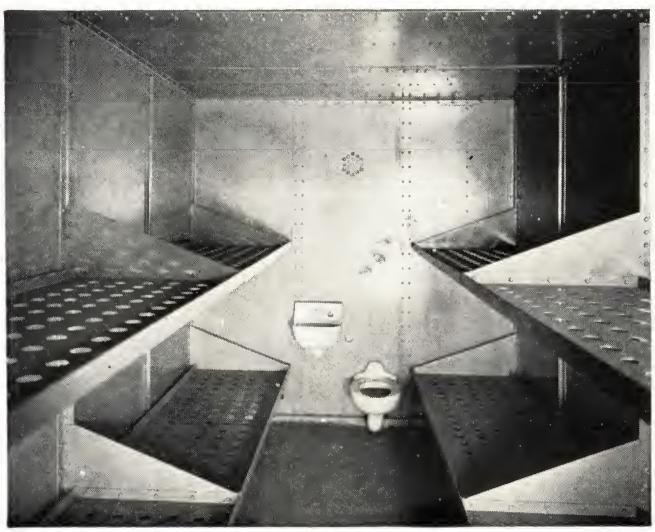




Entrance Doors



Speaking and Observation Panel



Interior of Cell



Interior of Day Room

# SOUTHERN PRISON COMPANY

MAIN OFFICE AND WORKS
SAN ANTONIO, TEXAS
P. O. Drawer 1115

## Products

PRISON EQUIPMENT comprising such parts as Cells, Locking and Operating Devices for cell doors, Locks, Windows, Window Guards, Cell Furnishings, and related specialties and parts for jails, prisons, police stations, lockups and holdovers.

Also Miscellaneous Equipment, Steel Grating, Cell Room Lining, Doors, Bunks, Hammocks, etc.

## Experience

For over forty years the management of this company has been actively engaged in preparing layouts, designing and equipping jails and prisons, giving special attention to the proper classification of prisoners, perfection of tool resisting steel cells; fully selective type sliding door locking and operating devices—the most vital features in jail and prison construction.

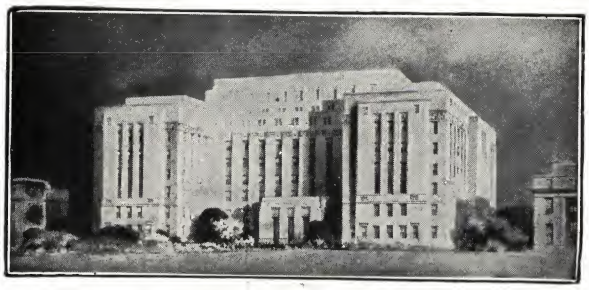


**Maricopa County Courthouse and Phoenix City Hall, Phoenix, Ariz.**
EDWARD F. NEILD, LESCHER and MAHONEY, Architects

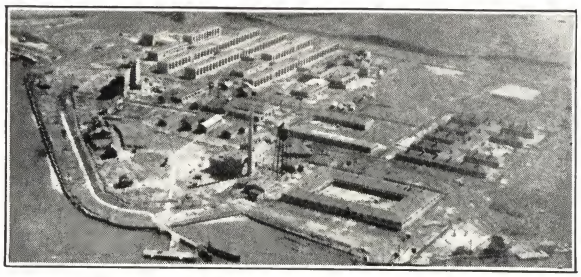
## Service

Representatives in various parts of the country experienced in this special line will call in person on architects, engineers and interested officials and submit free of charge and without obligation, designs, layouts and estimates with samples and models complete, when desired.

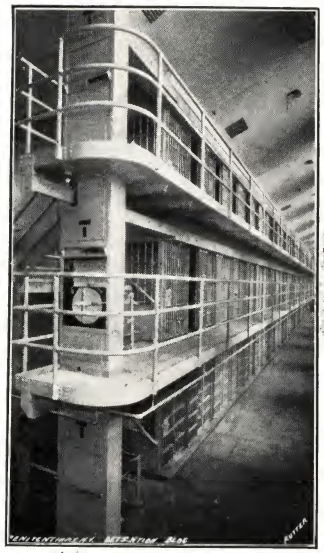
Communicate with us.



**Jefferson County Courthouse and Jail, Birmingham, Ala.**
HOLABIRD & ROOT and HARRY B. WHEELOCK, Architects



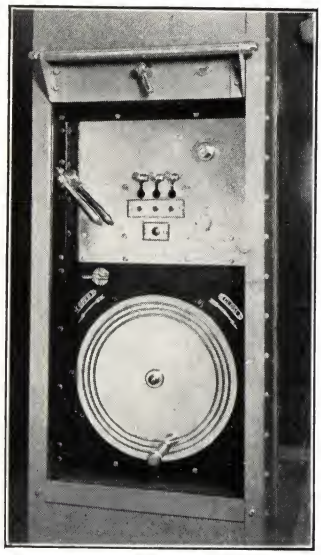
**Rikers Island Penitentiary, New York, N. Y.**
SLOAN & ROBERTSON, Architects



**View of Three-Tier Cell Block for Penitentiary**
Long lines of cell doors locked and operated from single control cabinet as illustrated



**Interior View of Receiving Building, Massachusetts State Prison Colony, Norfolk, Mass.**
MCLAUGHLIN & BURR, Architects



**Control Cabinet with Bi-parting Doors**
Simple, secure and efficient operation and locking of cell doors is accomplished by single movement of the wheel by means of our patented intermittent gear unit

## Representative Installations

Illustrations show a few of our recent representative installations. Other installations include, among many:

Anamosa, Iowa
Woodstock, Va.
Santa Barbara, Calif.
Rawlins, Wyo.
Lakeport, Calif.
Morrillton, Ark.
Lexington, Neb.
Texarkana, Ark.
Flint, Mich.
McAlester, Okla.
Raiford, Fla.
Tucson, Ariz.
Kankakee, Ill.
Harrisonburg, La.
Jefferson City, Mo.
Greenwood, Miss.
Fordson, Mich.
Roseburg, Ore.
Fort Worth, Tex.
Austin, Tex.
Lowville, N. Y.
Silver City, N. M.
Provo, Utah
Ventura, Calif.
Oklahoma City, Okla.
Quincy, Fla.
Racine, Wis.
Wichita, Kan.
Kalamazoo, Mich.
Brandon, Miss.
Detroit, Mich.
Jackson, Tenn.
Lovington, N. M.
Fort Smith, Ark.
Cortez, Colo.

# THE STEWART IRON WORKS COMPANY, INCORPORATED

Jail and Prison Builders to America Since 1886

CINCINNATI, OHIO

### Products

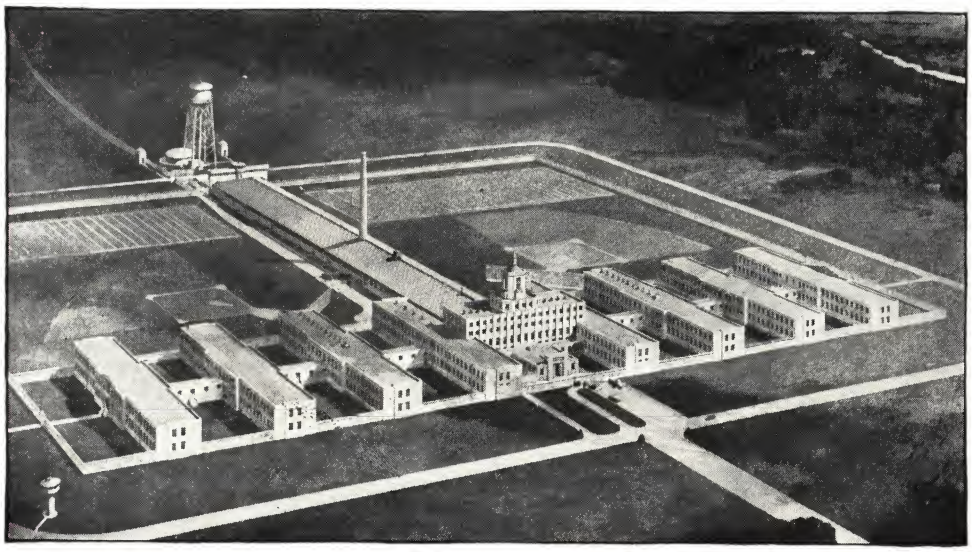
STEEL CELLS for penitentiaries, county and city jails. Hinge and Sliding Type Doors; Locking Devices; Gratings in tool-resisting and Bessemer steels; Bunks, Window Guards, Iron Stairways and all modern jail equipment.

For our pages on Fencing, see File Index.

Stewart

### Service

When requested to do so, we extend to architects the entire facilities and experience of our engineering, designing and drafting departments. Designs, estimates, specifications and layouts gladly furnished.



GEORGIA STATE PENITENTIARY, TATNALL COUNTY, REIDSVILLE, GEORGIA



AIRPLANE VIEW OF UNITED STATES PENITENTIARY, ALCATRAZ ISLAND, CALIFORNIA

## SOME PRINCIPAL INSTALLATIONS

### State and Federal

Onondaga Penitentiary, Syracuse, N. Y.
United States Penitentiary, Alcatraz Island, Calif.
United States Penitentiary, Atlanta, Ga.
Georgia State Penitentiary, Reidsville, Ga.
Nebraska State Penitentiary, Lincoln, Neb.
Kentucky State Penitentiary, Eddyville, Ky.
South Carolina State Penitentiary, Columbia, S. C.
North Carolina State Penitentiary, Raleigh, N. C.
Colorado State Penitentiary, Canon City, Colo.
Virginia State Penitentiary, Richmond, Va.

### County

Sheboygan County, Sheboygan, Wis.
Claiborn County, Tazewell, Tenn.
Coffey County, Burlington, Kan.
Morrison County, Little Falls, Minn.
Allen County, Fort Wayne, Ind.
Swain County, Bryson City, N. C.
Wicomico County, Salisbury, Md.
Kent County, Dover, Del.
Fulton County, Atlanta, Ga.
Jefferson County, Louisville, Ky.
Union County, Elizabeth, N. J.
Hamilton County, Cincinnati, Ohio.
Shelby County, Memphis, Tenn.
Dade County, Miami, Fla.
Multnomah County, Portland, Ore.
O'Brien County, Pringhar, Iowa.
Davidson County, Nashville, Tenn.
Oklahoma County, Oklahoma City, Okla.
Winnebago County, Oshkosh, Wis.

### Alcatraz

All cell and prison equipment in Uncle Sam's government penitentiary, Alcatraz, located on Alcatraz Island, California, was manufactured and installed by Stewart. It is recognized as being the world's most secure prison. The island covers an area of 12 acres.

# ART METAL CONSTRUCTION COMPANY

HOSPITAL DIVISION

JAMESTOWN, N. Y.

For Branch Offices, see Bank, Office and Library Equipment Section
For Metal Doors and Trim, Steel Partitions, Bank, Office and Library Equipment, Hospital, Museum Cases and Kitchen Cabinets, see Art Metal Construction Company in File Index

## HOSPITAL SERVICE AND STORAGE EQUIPMENT

Art Metal Hospital Equipment is available in various construction classes to suit any price requirement. Cabinets are also made in four general types: free standing, planted on wall, partly recessed and fully recessed. The latter is recommended as the most satisfactory arrangement, the most sanitary, and has the most pleasing appearance.

Art Metal
Jamestown, New York
U.S.A.
TRADE-MARK

Art Metal Hospital Equipment also embraces color as a valuable adjunct to Patient Psychology. Art Metal finishes and construction lend themselves in every way to the ready maintenance of aseptic technique.

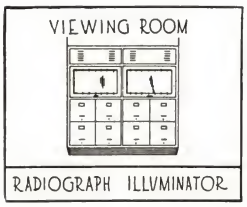
Art Metal Hospital installations are planned, sold, measured, installed and guaranteed by us. There is no divided responsibility.

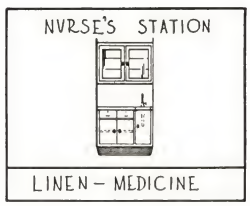
Art Metal maintains a factory trained National Service Organization and gladly extends any possible assistance without obligation to those interested. Designing and engineering is under direction of trained men who have had long experience.

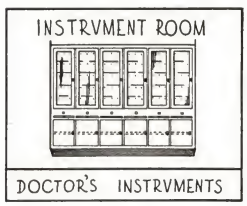
Complete list of Art Metal installations on request.

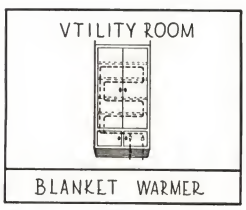
Competent sales engineers are maintained at the Home Office and at all Branch Offices. Their services are offered to architects, contractors and builders without obligation.

**Some Installations at Hillman Hospital, Birmingham, Ala.**






Blanket Warmers



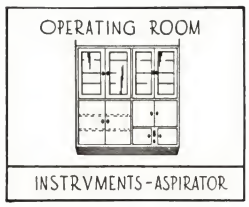
Instrument Case

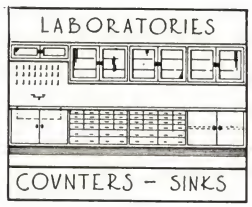


Linen Storage Cabinets



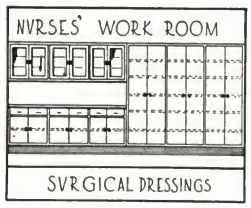
X-Ray Viewing Cabinet

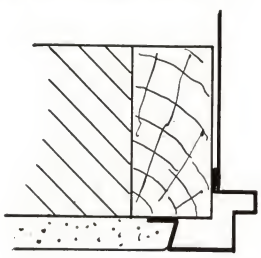




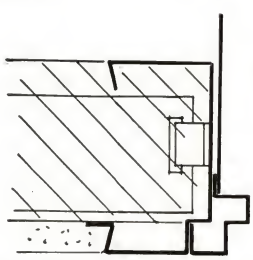




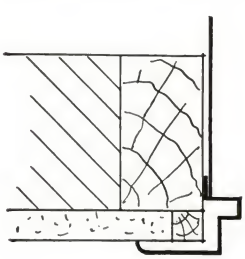



*Left:*
FLUSH CASING
WOOD BUCK

*Right:*
UNIT WITH
STEEL BUCK AND
FLUSH CASING



*Right:*
INTEGRAL UNIT
WITH WOOD
OR
METAL BUCK



*Consult Our Hospital Division for Complete Information*




# METAL FURNITURE AND EQUIPMENT

*for*

**HOSPITALS . . . . .**

**LABORATORIES . . .**

**PUBLIC BUILDINGS .**

**LIBRARIES . . . . .**

**BANKS . . . . . .**

**THE GENERAL FIREPROOFING COMPANY · YOUNGSTOWN · OHIO**

**THE FABRICATING** and installing of special metal equipment for Libraries, Laboratories, Hospitals, Banks, State, County and City Buildings is a major activity of this Company, whose history includes a background of over thirty-five years.

The special metal equipment included in this presentation is made in the same model plant and under the same strict supervision as the world-famous line of GF Metal Office Furniture. The plant contains complete facilities for the fabrication of equipment in steel, stainless steel, monel metal, bronze and aluminum.

## EXPERIENCE

The GF organization is one on which the architect may depend with utmost confidence that the work entrusted to it will never fail to measure up to the highest standards he may have set in the original plans. Careful workmanship by men long experienced in this class of work and rigid inspection at all stages of manufacture assure a finished product that always reflects credit on the designer.

## SERVICE

A competent engineering staff, thoroughly familiar with the characteristics of various metals adapted to fabricating processes, is available to architects. The years of experience possessed by this staff of engineers is most valuable and a consulting service is offered to all architects who may wish to avail themselves of it. Correspondence on any matter pertaining to metal fabrication of any special nature is invited and is conducted in a professional manner. With factory branches in twelve cities and with dealers in every city of five thousand population or over, The General Fireproofing Company supplies a national service.

# *Index* TO TYPES OF EQUIPMENT

LIBRARY EQUIPMENT ..... 3

LABORATORY EQUIPMENT ..... 5
- Biology-Botany
- Chemistry-Physics

HOSPITAL EQUIPMENT ..... 8
- Built-in Metal Case and Cabinets
- Portable Equipment

PUBLIC BUILDING EQUIPMENT ..... 10

BANK EQUIPMENT ..... 11

THE GENERAL FIREPROOFING CO.
YOUNGSTOWN, OHIO

FOR LIST OF BRANCH OFFICES SEE BACK COVER

# METAL EQUIPMENT for LIBRARIES

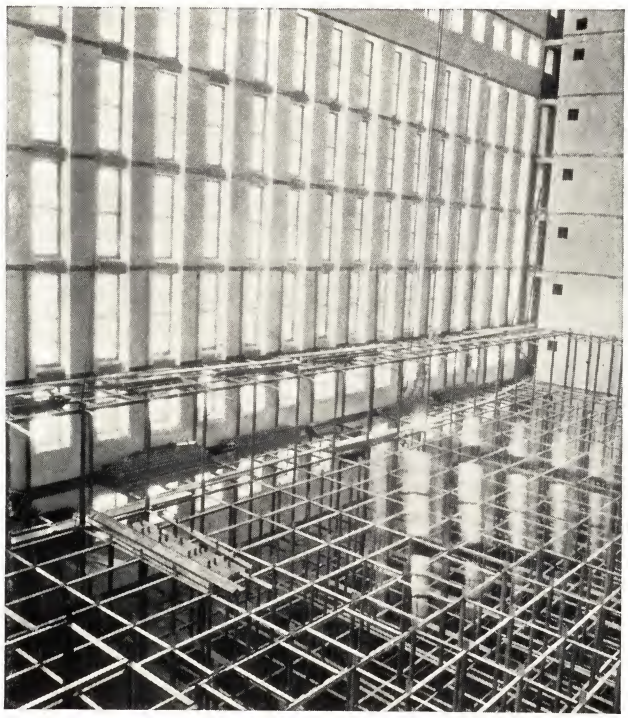
A complete engineering, consulting, fabricating and installation service for public, college, university and institutional library equipment, including Multi-Tier Book Stacks, both Bracket and Slotted types, Deck Floors, Steel, Glass and Wire Partitions, Doors, Carrels, Stairways, Railings, Book Conveyors, Lifts, installed integrally with the building.

In addition, GF supplies all accessory equipment such as—

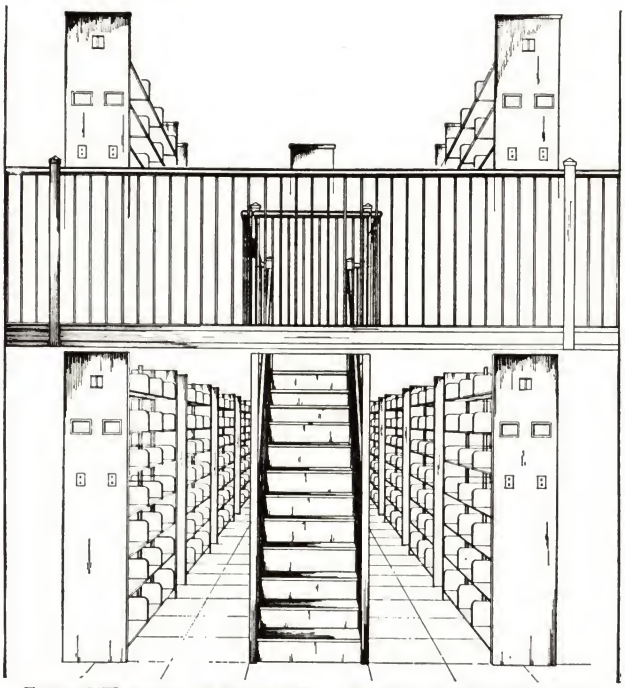
Card Index Cabinets
Reference Shelves
Book Trucks
Catalog Files
Delivery Desks
Office Desks
Charging Counters
Reading Tables
Aluminum Chairs
Wall Shelving
Exhibition Cases
Museum Cases
Magazine Racks
Newspaper Racks
Atlas and Dictionary Stands
Map Racks, Rollers and Drawers
Hat and Coat Racks
Wardrobes

## Multi-Tier Bracket-Type Shelving

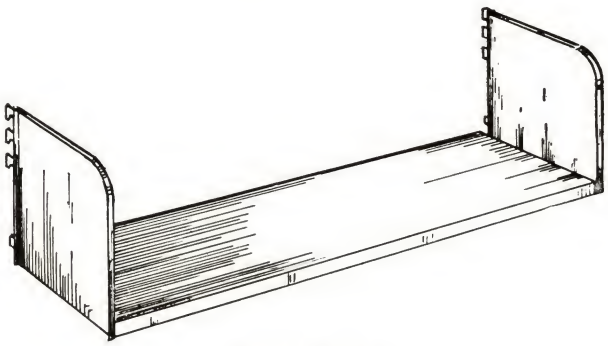
For large libraries the Multi-Tier, Bracket-Type Shelving has proved the most desirable. The deck floors are carried directly on the stack columns and the floor is tied into the building walls at intervals to provide wind bracing. The GF design affords many original and exclusive advantages having a bearing on erection costs and creates in its enclosed columns a sanitary insect proof support.



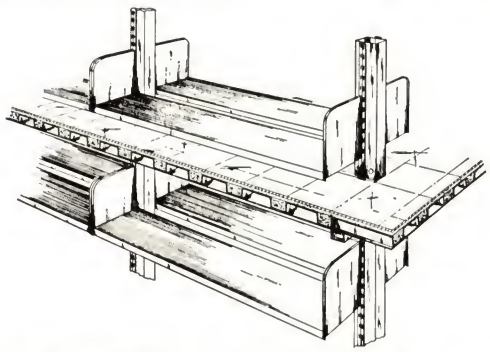
**Supporting Construction for an Eight-Tier Book Stack in process of erection**



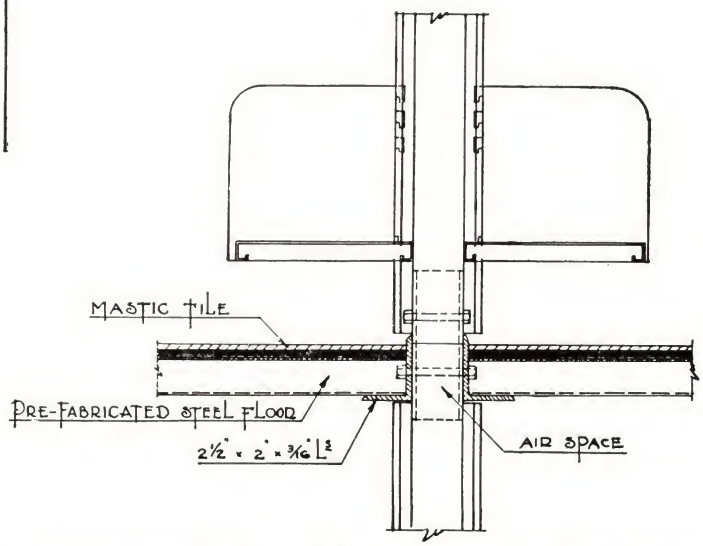
**Typical Elevation of Bracket-Type Shelving with end panels**



**Sketch of Shelf**

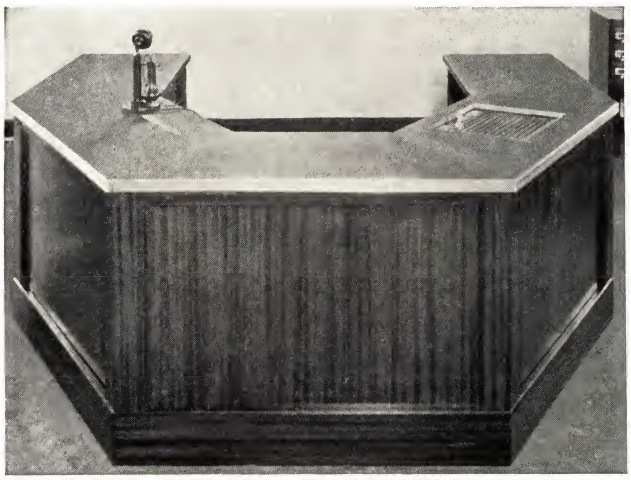


**Perspective—Showing Floor and Column Details for Bracket-Type Library Shelving with Prefabricated Steel Flooring Inverted with Concrete Fill**




**Typical Detail of Floor and Column for Bracket-Type Library Shelving with Prefabricated Flooring**

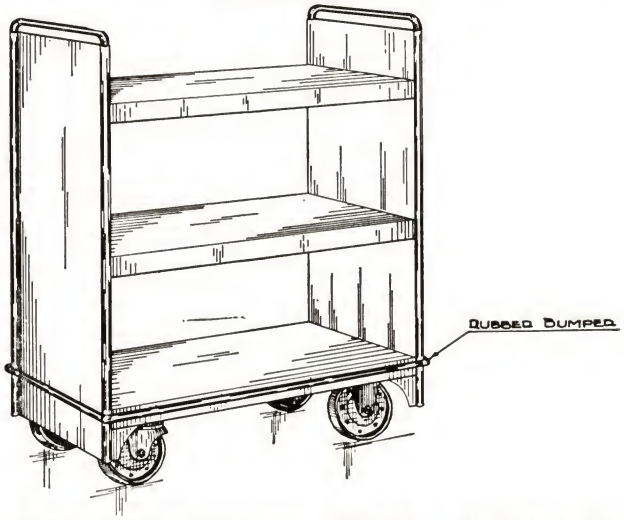
# METAL EQUIPMENT for LIBRARIES



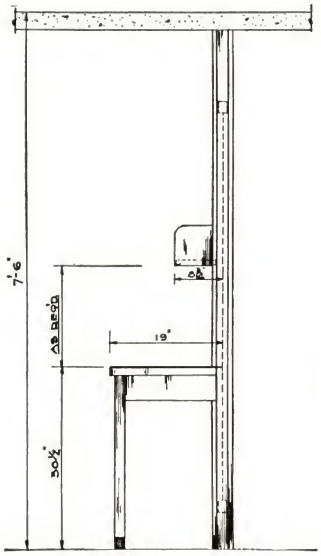
Charging Desk



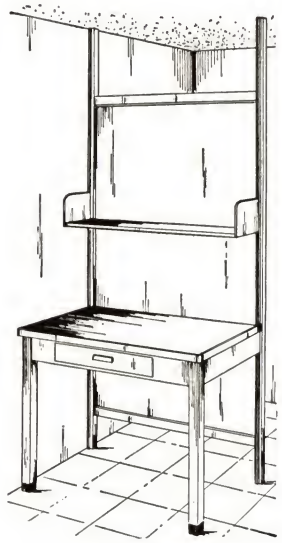
Free Standing, Solid Side or Slotted-Type Book Shelving for Small Installations




Book Truck—Overall Dimensions—30″ wide x 14⅝″ deep; Clear Height Two Bottom Openings 10⅜″; Truck Mounted on Two Rigid and Two Swivel Ball Bearing Casters having 5″ Diameter Rubber Tired Wheels

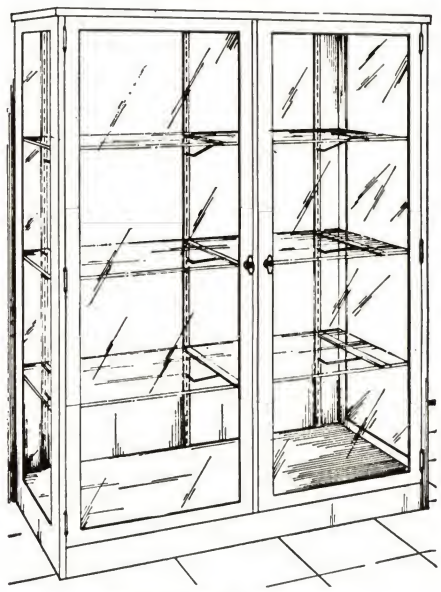



End Elevation



Perspective

Study Carrel



Museum Case—Style D

## A Few Typical Library Installations

| | |
|---|---|
| University of Minnesota | Minneapolis, Minn. |
| Washington and Jefferson College | Washington, Pa. |
| Duke University | Durham, N. C. |
| Marshall College Library | Huntington, W. Va. |
| Murray State Teachers College | Murray, Ky. |
| Cornell University | Ithaca, N. Y. |
| Reuben McMillan Public Library | Youngstown, Ohio |
| Birmingham Southern College | Birmingham, Ala. |
| House of Representatives Library | Washington, Pa. |
| Kentucky State Capitol | Frankfort, Ky. |
| Hawaiian Historical Society | Honolulu, Hawaii |
| North Carolina State Capitol | Raleigh, N. C. |
| Bar Association Library | New York City |
| Rockefeller Institute | New York City |
| Huntington Library & Art Gallery | San Marino, Cal. |
| State Supreme Court Library | Nashville, Tenn. |
| U. S. Supreme Court Bldg. | Washington, D. C. |
| S. W. Texas Teachers College | San Marcas, Tex. |
| Louisiana State Univ. Law Library | Baton Rouge, La. |
| Federal Trade Commission Library | Washington, D. C. |
| Interstate Commerce Commission | Washington, D. C. |

# METAL EQUIPMENT for LABORATORIES

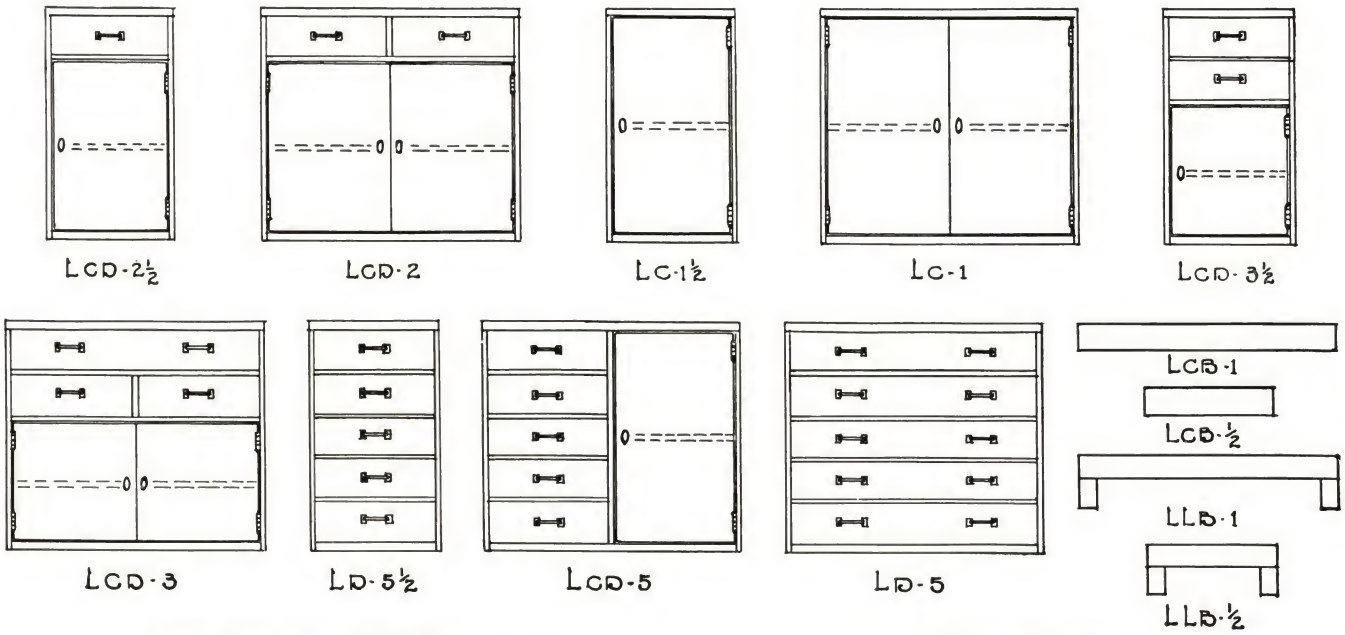


Chemical Research Laboratory

With its many years of successful application, metalization of the laboratory has now become the accepted practice exactly as metal is the standard for the construction of furnishings for hospitals, offices, public buildings, libraries and other institutions. The many qualities of metal laboratory equipment—operating efficiency, space economy, incombustibility, flexibility of application and arrangement, and durability make it outstandingly attractive for use in schools, colleges and universities where equipment must be adapted to the ever changing needs of scientific study.

In industry, too, because of industry's dependence upon the knowledge gained from scientific research and analysis, the laboratory has become second to no other department in importance. Here metal laboratory equipment has been given the position of preference solely on the basis of its proven superiority.

In general, GF supplies the ideal equipment for laboratories by providing metal tables equipped with carefully fitted warpless drawers and cupboard doors and with tops of any suitable selected material—soapstone, linoleum, impregnated acid-resisting asbestos, metal alloys or wood. Specification details on request.




Single Units 18″ and 24″ Wide
Full Width Units 35″, 40″ and 46″ Wide

All Units 22″ Deep
All Bases 19″ Deep

Typical Laboratory Table Sections and Bases for Wall and Center Installations



Analytical Laboratory

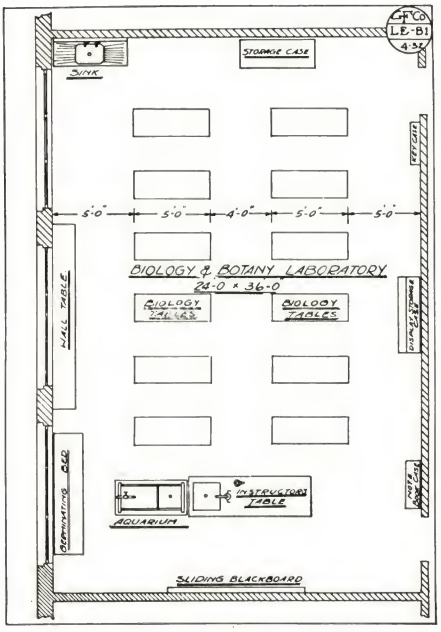
## Typical Installations of Laboratory Equipment

Princeton University—Princeton, N. J.
Aluminum Company of America—New Kensington, Pa.
Temple University—Medical School—Philadelphia, Pa.
Ursinus College Science Bldg.—Collegeville, Pa.
Allegheny County Laboratory—Pittsburgh, Pa.
Rensselaer Polytechnic Institution—Troy, N. Y.
Department of Health & Sanitation—New York, N. Y.
Notre Dame University—South Bend, Ind.
Indiana University Medical School, Bloomington, Ind.
University of Delaware—Newark, Delaware

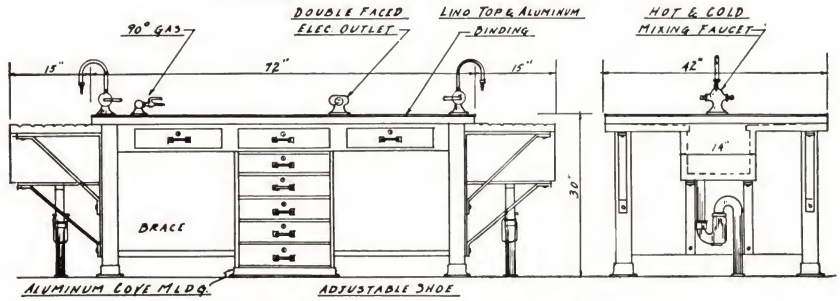
# METAL EQUIPMENT for LABORATORIES (Continued)



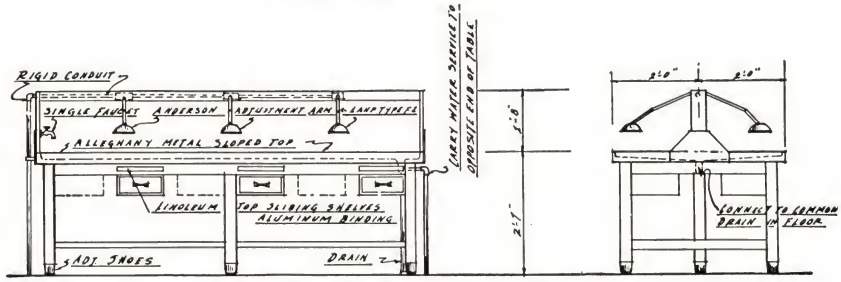
Biology and Botany Laboratory



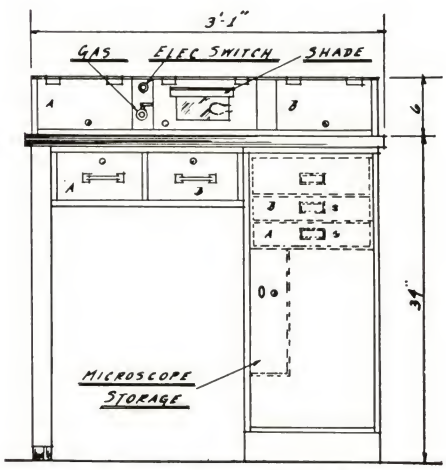

Typical Floor Plan of Biology and Botany Laboratory



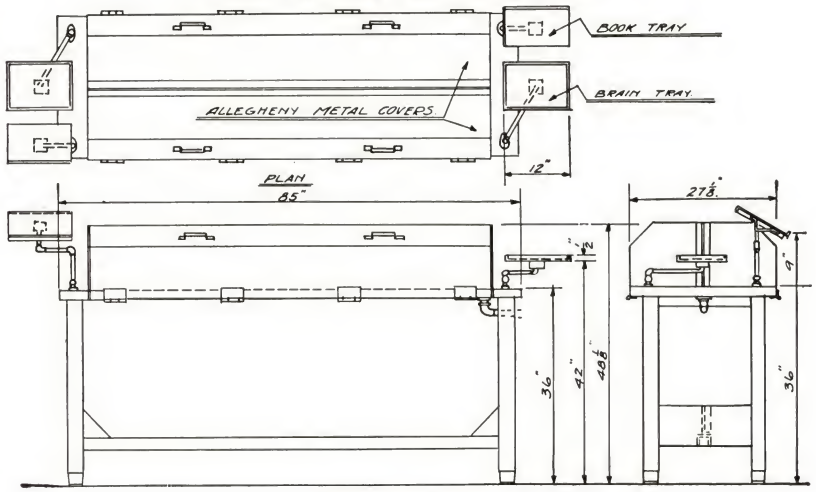

Biology Table—Double Face Type



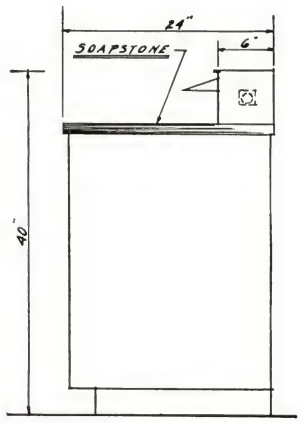

Animal Dissecting Table—Double Faced




Histology or Bacteriology Desk (Front View)

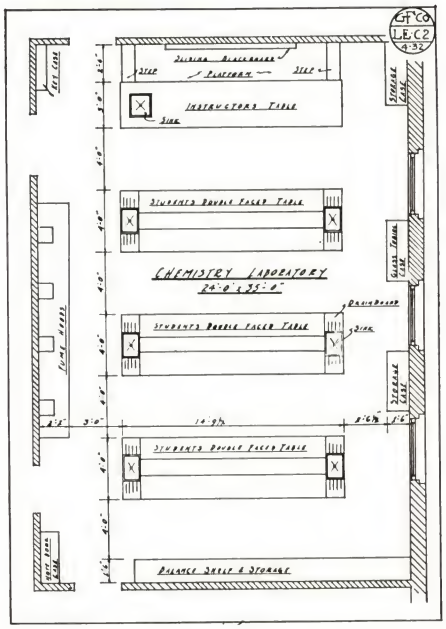



Dissecting Table

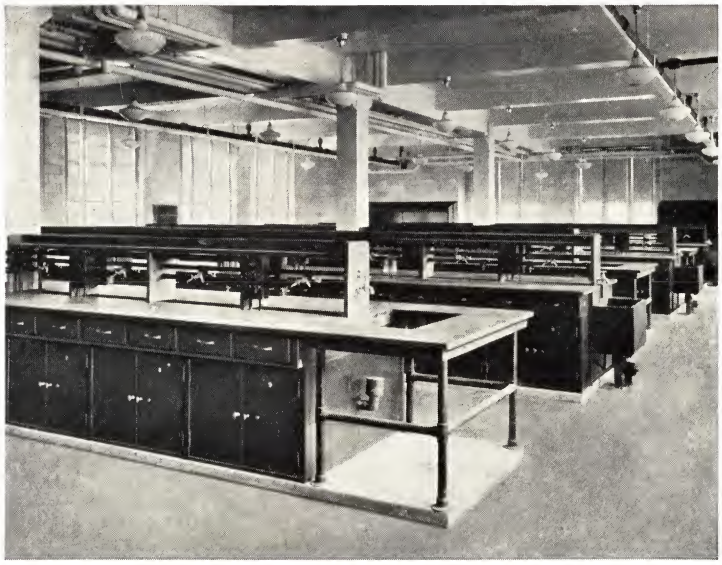



Histology or Bacteriology Desk (End View)

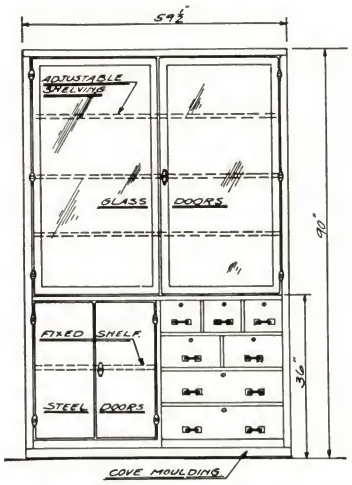
# METAL EQUIPMENT for LABORATORIES (Concluded)



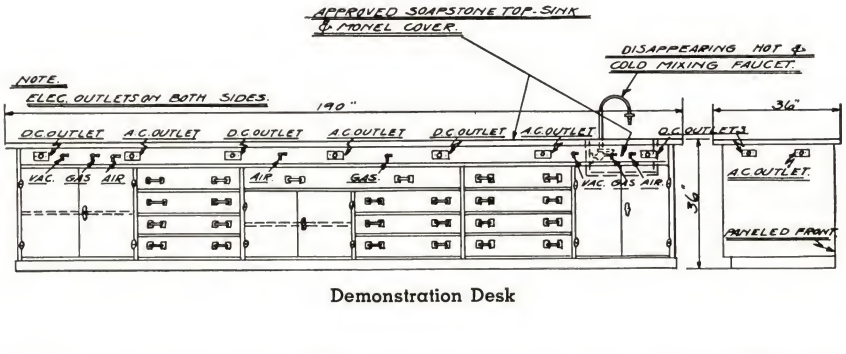

Typical Floor Plan of a Chemistry Laboratory



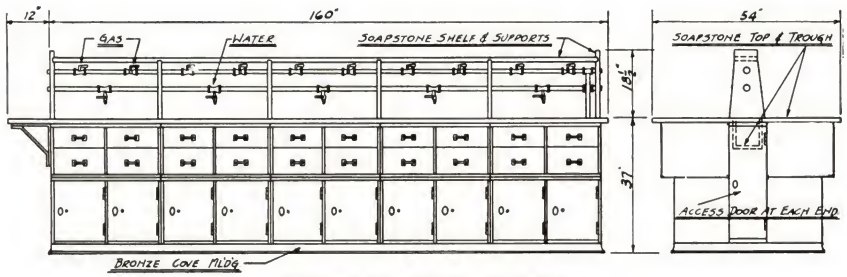
Chemistry Laboratory



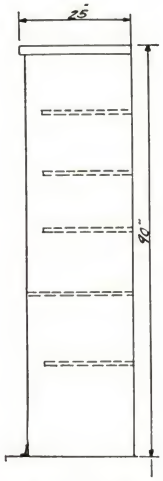

Storage and Display Case
(Front View)



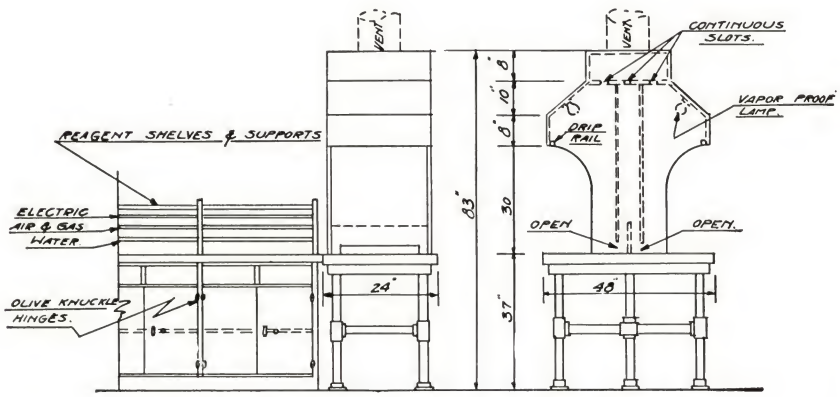

Demonstration Desk




Student's Double Faced Table




Storage and Display Case
(End View)



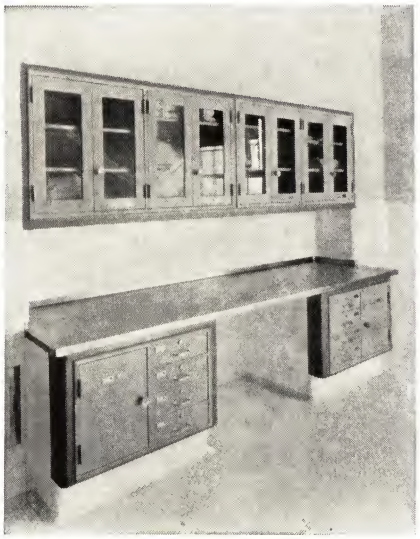

Double Faced Open Type Fume Hood for Student Table

# METAL EQUIPMENT for HOSPITALS



Instrument Case

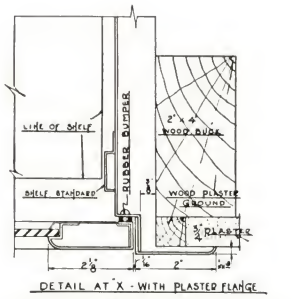
Building Committees and Architects who entrust the fabricating of metal cabinet and casework to The General Fireproofing Company are assured of a completed job superior in every respect and one that not only conforms to the ideals set up in the original plan of the building but one that will remain a monument to those entrusted with the undertaking. Complete satisfaction in this class of work can be assured only when the manufacturer is one whose record is a succession of achievements and whose operations are founded on an experience that extends back into the early history of metal furniture fabrication. For thirty-five years The General Fireproofing Company has engaged in the manufacture of fine metal furniture and special metal cabinet work while its experience in the specialized field of hospital cabinet work extends over a period of twenty years. Among its installations are hundreds of hospitals both large and small. One of its most recent is that of the famous Los Angeles County General Hospital, the largest installation of its kind yet made.

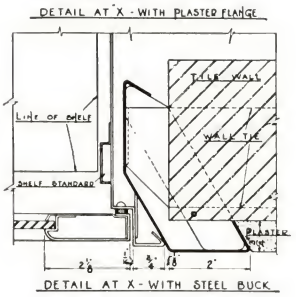


Utility Room Cabinet

## Types of Construction

GF Metal Hospital Built-in Equipment can be either of the strictly built-to-order type or of standardized or semi-standardized units which have been developed out of our long experience in serving a large number of hospitals. The use of standardized construction always results in measurable savings and should be used wherever possible. GF Metal Case Work is of two distinct types, the Overlap Plaster Flange Type and the Steel Buck Type.




**Overlap Plaster Flange Type**—Attached to wood bucks installed by the building contractor and the steel case is installed in the opening after plastering.

**Steel Buck Type**—Employs the use of a steel frame into which the finished case fits exactly. the buck is delivered to the building in advance of the finished cabinet, and is installed by the building contractor. Later the cabinet is slipped into place and permanently attached to the steel buck.

**Finish**—All equipment finished in lacquer over an oven-baked ground coat.



X-Ray Viewing Cabinet

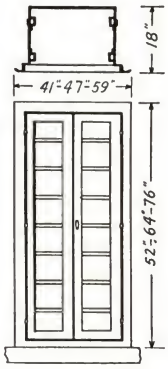


Sterile Dressing Cases

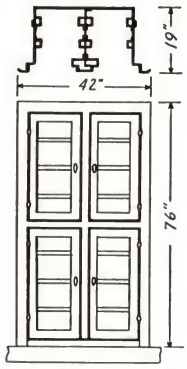


Nurse's Station

# METAL EQUIPMENT for HOSPITALS (Concluded)



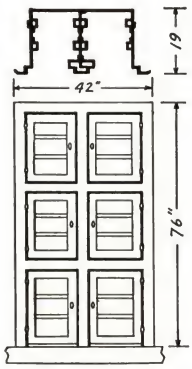

**Instrument Case Type A-A**
Glass doors, glass shelves. Lock handle and hinges chromium plated.



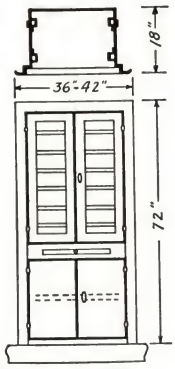

**Instrument Case Type A**
Glass door, plate glass shelves. Hinges and lock handle chromium plated.



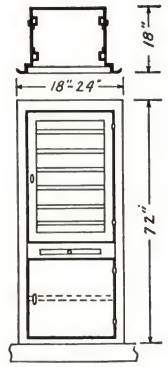

**Instrument Case Type C-C**
Silding glass doors with lock. Chromium plated, sunken handles. Plate glass shelves.



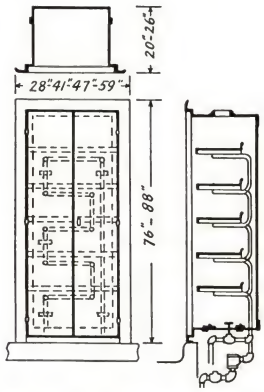

**Instrument Case Type C**
Six glass doors, plate glass shelves. Hinges and lock handles chromium plated.



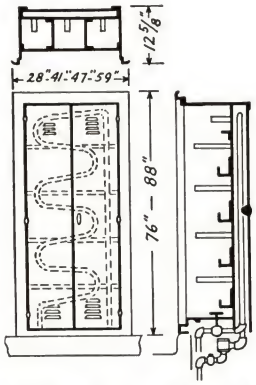

**Instrument Case Type E**
Glass doors at top, steel doors at bottom. Glass shelves in upper section. Chromium plated lock handles and hinges.



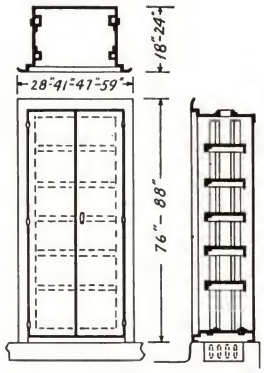

**Instrument Case Type F**
Glass door at top, steel door below. Plate glass shelves in upper section. Chromium plated hinges and lock handles.




**Blanket Warmer Type A**
Steel door with chromium plated lock handle and hinges. Perforated steel shelves. Heating coil of seamless copper pipe and fittings. Vent in top.



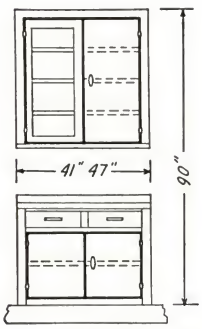

**Bed Pan Warmer Type A**
Steel doors with chromium plated lock handle and hinges. Holders for bed pans, urinals and enema irrigators. Heating coil of seamless copper pipe with fittings. Door ventilated.



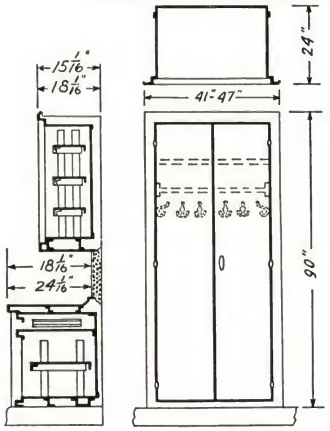

**Blanket Warmer Type C**
Steel door with chromium plated lock handles and hinges. Perforated steel shelves. Provision in base for installation of electric heating coils. Vent in top.

## Representative Installations

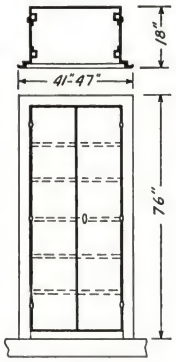
| | |
|---|---|
| Beth Israel Hospital | New York City |
| Albany City Hospital | Albany, N. Y. |
| Beth Israel Hospital | Boston, Mass. |
| French Hospital | New York City |
| Swedish Hospital | Minneapolis, Minn. |
| Montefiore Hospital | Pittsburgh, Pa. |
| Youngstown City Hospital | Youngstown, Ohio |
| Women's Hospital | Detroit, Mich. |
| Toledo Hospital | Toledo, Ohio |
| St. Luke's Hospital | Cleveland, Ohio |
| Lying-in-Hospital | Boston, Mass. |
| Mt. Sinai Hospital | New York City |
| DePaul Hospital | St. Louis, Mo. |
| Lakeside Hospital | Cleveland, Ohio |
| Lenox Hill Hospital | New York City |
| Los Angeles County General Hospital | Los Angeles, Cal. |
| Menorah Hospital | Kansas City, Mo. |
| Springfield Hospital | Springfield, Mass. |
| Huron Road Hospital | Cleveland, Ohio |
| Henrotin Polyclinic Hospital | Chicago, Ill. |



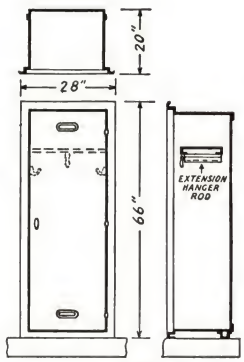

**Utility Case Type A**
Glass or steel doors in upper section with chromium plated lock handle and hinges. Steel shelves in both sections. Lower section has Monel Metal top and two storage drawers.



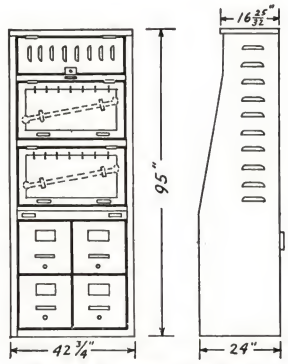

**Splint Cabinet Type A**
Steel doors with chromium plated lock handles and hinges. Monel Metal shelf and rod. Six three-prong hooks.




**Storage Cabinet Type A**
Steel door with chromium plated lock handles and hinges. Steel or Monel Metal shelves.




**Wardrobe Type A**
Steel door with chromium plated lock handle and hinges. Steel shelf at top with extension coat hanger. Two double-pronged hooks. Vents in door.




**X-Ray Viewing Cabinet**
Has four file drawers on roller suspensions and two hinged plate glass viewing panels with spring clips for films. Attachments for Cooper-Hewitt tubes. Ventilated.

**TYPICAL PRE-FABRICATED METAL HOSPITAL CABINETS FOR BUILT-IN INSTALLATION**

# METAL EQUIPMENT for STATE, COUNTY and MUNICIPAL BUILDINGS

A complete engineering, consulting and fabricating service for equipping court houses, state capitols and city halls.

Private offices are usually equipped with metal desks, aluminum chairs and filing equipment carried in stock. Record rooms and rooms for transactions with the public are equipped with both stock items and with built-to-order equipment.

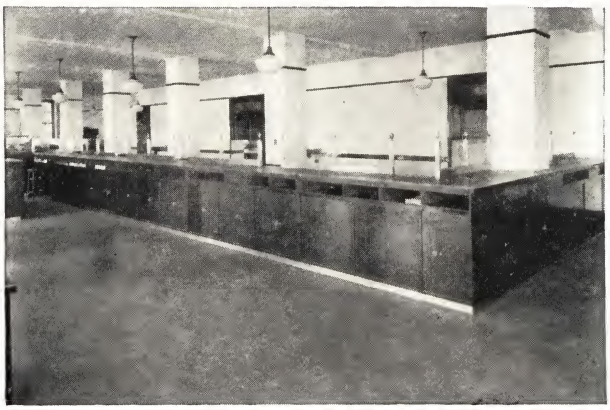
Filing cabinets for all types of records can be arranged in counters and a continuous Velvoleum-covered top and continuous paneled fronts applied. By the use of stock filing units, enclosed in counters of this type, important savings are always possible. For tax offices, grille work, or a low screen of glass or steel, may be applied to the counter top.

The following are some of the items supplied for buildings of this classification:

Roller Book Shelves
Document Files
Card Index Cabinets
Vertical Files (rigid front)
Vertical Files (Super-Filer)
Storage Units
Roller Shelf Units
Cupboard Units
Counter Files
Cash Drawer Units
Check Files
Legal Blank Files
Map and Plan Files
Visible Index Systems
Finger Print Cabinets
Criminal Identification Records
Vault Shelving
Storage Shelving
Book Shelving
Book Cases
Law Library Stacks
Busses
Grille Work
Enclosures
Transfer Files
Counters
Aluminum Chairs
Flat Top Desks
Roll Top Desks
Standing Desks
Typewriter Desks
Comptometer Desks
Dictating Desks
Typewriter-Transcriber Desks
Costumers
Wardrobes
Storage Cabinets
Safes
Waste Baskets
Telephone Stands



**Record Room**



**Tax Office**



**Registry of Deeds**



**Surrogate's Record Room**



**Bar Association Library**

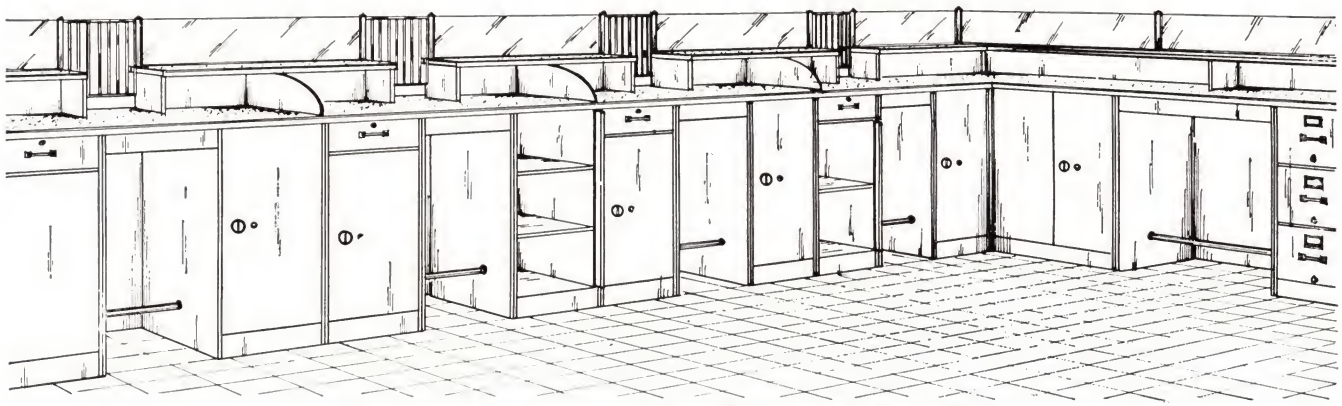
**EQUIPMENT IN CAMDEN COUNTY COURTHOUSE, CAMDEN, N. J.**

# COUNTER EQUIPMENT
# for BANKS and PUBLIC UTILITY COMPANIES

GF Counter Equipment conforms to the modern trend which is away from the forbidding and complicated cage-work of the past and toward the more cordial type of counter which interposes a low barrier between teller and customer.

GF Counters fall into two general groups depending upon the type of drawer equipment they are to enclose. One group is based on the use of stock counter filing units which are available in great variety and which, because of the application of quantity production methods, are much lower in cost than built-to-order equipment. Equipment of this type is assembled in a counter with continuous tops and paneled fronts and with a low screen of glass or metal provided with open windows or wickets.

The other type of counter is custom built to the specifications of the architect. Here variety of design and finish are almost without limit. GF offers to architects a broad experience in special fabrication of this character.



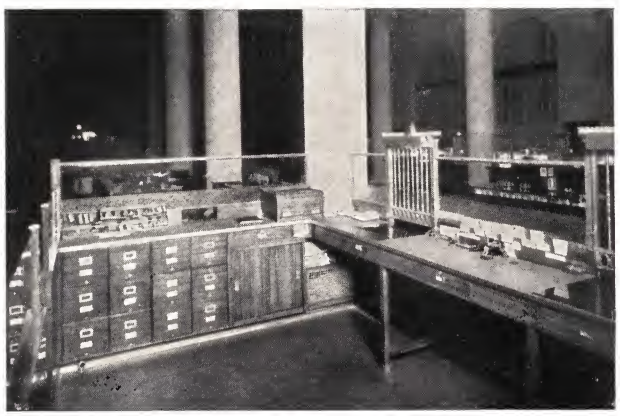
**Typical Counter Arrangement Using GF Stock Steel Counter Units**

## REPRESENTATIVE INSTALLATIONS









# BRANCH OFFICES

| | |
|---|---|
| BOSTON, MASS. | 74 Franklin St. |
| HARTFORD, CONN. | 8 Ford St. |
| NEW YORK, N. Y. | 500 Fifth Ave. |
| PHILADELPHIA, PA. | 2301 Chestnut St. |
| WASHINGTON, D. C. | 201 Mills Bldg. |
| PITTSBURGH, PA. | 642 Grant St. |
| CLEVELAND, OHIO | 1235-1237 Prospect Ave. |
| CHICAGO, ILL. | 36 South State St. |
| ST. LOUIS, MO. | 521-23 Arcade Bldg. |
| MINNEAPOLIS, MINN. | 310 North First St. |
| SAN FRANCISCO, CALIF. | 534 Fourth St. |
| LOS ANGELES, CALIF. | 1733-35 S. Los Angeles St. |

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**THE GENERAL FIREPROOFING COMPANY**

**YOUNGSTOWN · OHIO**

# KEWAUNEE MANUFACTURING CO.

## Scientific Laboratory Furniture Equipment for Medical, Industrial and Educational Institutions

METAL DIVISION
Dept. 276
ADRIAN, MICH.

WOOD DIVISION
276 Lincoln Street
KEWAUNEE, WIS.

EASTERN BRANCH: 220 E. 42nd St., NEW YORK, N. Y.
MIDWEST OFFICE: 940 Maple Ave., EVANSTON, ILL.
REPRESENTATIVES IN PRINCIPAL CITIES

### Products

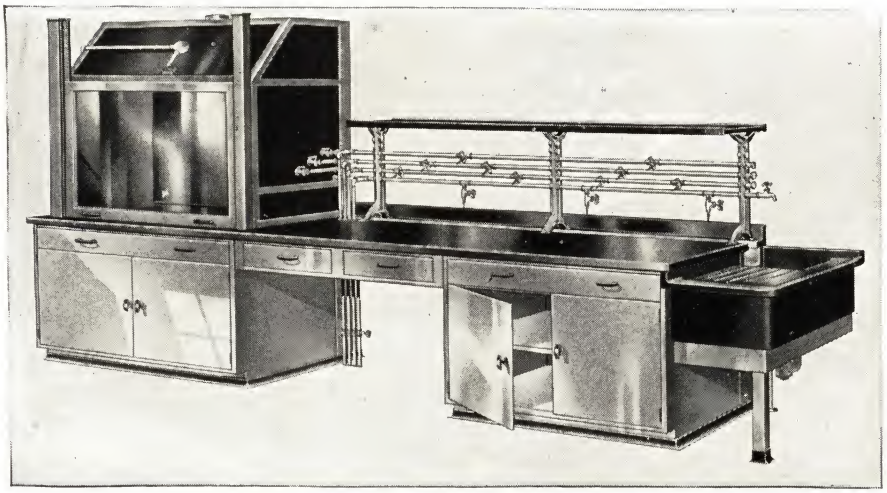
Complete installations of Laboratory Furniture Equipment, including Fume Hoods, Tables, Benches, Cabinets, Sinks, Desks, Chairs, Stools, Stone Work, Acid Resistant Wood and Asbestos, Stainless Metal, Service Fixtures, Plumbing, Steam Fitting and Electrical Devices.

Complete installations of built-in and free-standing cabinets, cases and tables for all departments of medical and surgical institutions.

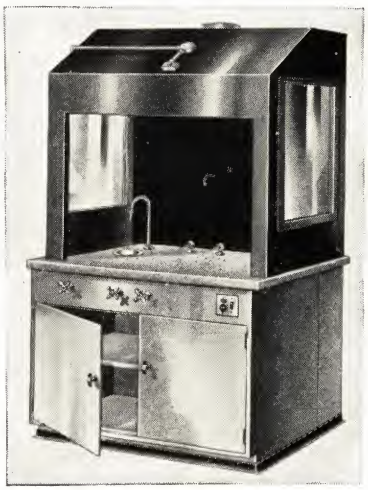
### Facilities

KEWAUNEE MANUFACTURING Co. operates two complete factories, one devoting their entire production to Metal Equipment, and the other to Wood Equipment. Each plant has a permanent, highly trained Engineering Department capable of handling accurately the vast detail necessary for the largest installation.

Long experience and competent field superintendents insure speedy and harmonious installation of the equipment in the building.



No. S-2090 Industrial Type Wall Table and Fume Hood



No. S-1930 Open Front Fume Hood

### Design and Construction

Kewaunee Equipment is designed to fulfill all of the physical requirements peculiar to each individual installation and constructed to suit existent conditions in both new and old buildings. The entire responsibility for the completeness of the installation is assumed by the KEWAUNEE MANUFACTURING COMPANY.

### Materials and Finish

A complete range of materials to satisfactorily serve atmospheric and physical requirements and finish may be selected to harmonize with general color scheme.

### Standardization

A large and diversified line of standard designs of Kewaunee Laboratory Furniture Equipment permits the complete equipping of large or small laboratories with standard equipment. The Kewaunee Blue Book of Metal Scientific Laboratory Furniture will be sent at no cost upon request.

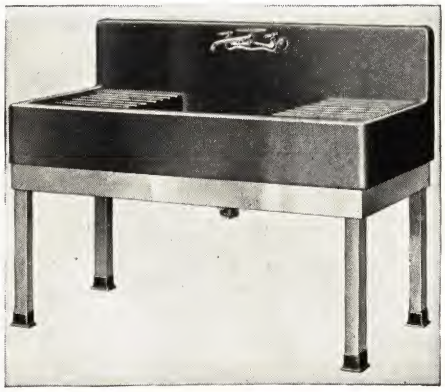


No. S-1415 Chemical and Glassware Storage and Display Case

### Planned Economy—Assured Satisfaction

An installation planned by the Kewaunee Engineering Staff results in maximum economy to the purchaser.

The accumulated knowledge of thirty-two years of experience permits the utilizing of many features and the adoption of standards gained only by such experience, that strict economy is effected in the design, selection of materials and manufacturing practice with a definite fine standard of quality set forth in the completed specification requirements. Kewaunee has planned the most outstanding installations of Scientific Institutional Equipment in the country. We will gladly prepare for the architect, engineer, hospital or laboratory official complete plans and specifications at no charge.



No. S-600 Karcite Wall Sink

# E. H. SHELDON & COMPANY

## Laboratory and Vocational Furniture in Metal and/or Wood

MUSKEGON, MICHIGAN

### Sheldon Service

*Sheldon's 250-page complete laboratory furniture catalog and engineering hand book available free on request.*

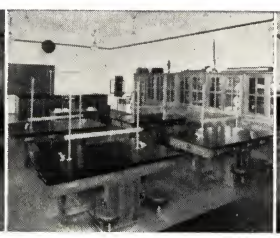
*Includes all technical data on mechanical services, laboratory ventilation and over 1,000 designs of equipment.*



U. S. Government Laboratory



College Chemistry Laboratory



High School Physics Laboratory



Industrial Laboratory



Foods Laboratory

## Data on Secondary School Equipment

"Recommended minimum" sizes of various special rooms, including usual mechanical services required. Room sizes listed are for actual class workrooms, exclusively, and are intended to provide for the established recommended accommodations for 32 students. Auxiliary rooms for each of these departments vary with size of school and curriculum. Auxiliary rooms are indicated under each heading and can be elaborated on considerably. While 22 ft. is the accepted width of a schoolroom, if possible, laboratories should be contained in special wings of the building to give a minimum width of 24 ft. to the rooms. Room sizes given below are based where necessary on this premise. Certain of the special rooms listed can logically be accommodated in the standard 22-ft. width room and are so indicated.

**Chemistry**—Where special lecture room adjoins: 24 x 38 ft.
Including lecture space within the laboratory: 24 x 49 ft. Chemistry laboratories should essentially be on top floor of the building. *Services:* Water, gas, electric A.C. and D.C. Drain lines installed in inaccessible places should be especially resistant to chemicals. Vent outlet for fume hoods and electrical connections for fan.

**Physics**—Where special lecture room adjoins: 24 x 36 ft.
Including lecture space within the laboratory: 24 x 47 ft. *Services:* Gas and electric A.C. and D.C. for student tables. Gas, electric, and water at instructor's table, and water at one other location in room.

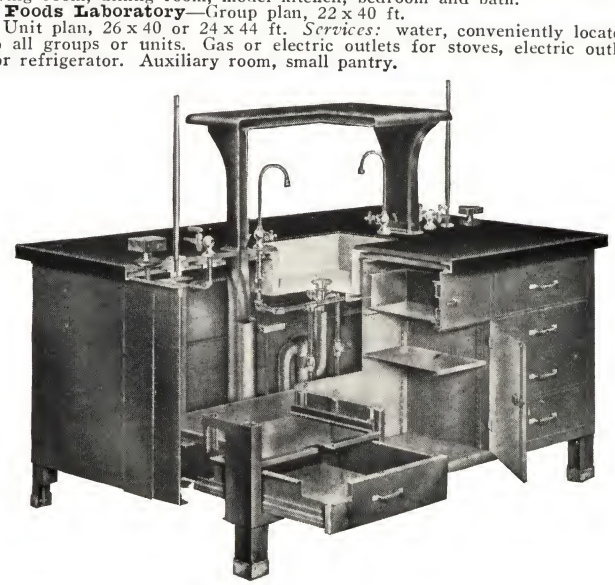
**Biology**—Special lecture room not considered necessary. Room should essentially be on ground floor where a growing room can be provided. 24 x 38 ft. *Services:* Water, gas and electric A.C. and D.C. at instructor's table and one other location in room.

**General Science**—Separate lecture room not considered necessary. 24 x 35 ft. *Services:* Water, gas and electric A.C. and D.C. at instructor's table and one other location in laboratory.

*Note:* Lecture room can be located between any two laboratories and should be large enough to take two sections of classes at one time or, 64-seat capacity—24 x 28 ft. Each laboratory should have a storeroom minimum of 200 sq. ft. that can be locked off from the laboratory. A Chemistry storeroom should be segragated from the rest but storerooms for other Sciences may be combined if necessary, providing they are adjacent to the respective laboratories and where size is correspondingly increased to provide 200 sq. ft. per department. Physics should have a dark room which may be used in conjunction with Biology if adjacent.

*Homemaking group* may be extended to include in addition to the Foods Laboratory and Clothing Laboratory a complete apartment unit, i.e., a living room, dining room, model kitchen, bedroom and bath.

**Foods Laboratory**—Group plan, 22 x 40 ft.
Unit plan, 26 x 40 or 24 x 44 ft. *Services:* water, conveniently located to all groups or units. Gas or electric outlets for stoves, electric outlet for refrigerator. Auxiliary room, small pantry.



**Clothing Laboratory**—24 x 39 ft. *Services:* Electrical outlets along window walls for sewing machines. Electric outlets on end or side walls for flat irons. Water for lavatory. Auxiliary rooms: fitting room, 8 x 10 ft. and storeroom 8 x 11 ft.

**Wood Shops**—22 x 54 ft. This provides space for minimum amount of machinery, also finishing space but no lumber storage. When space permits, a room 28 ft. or wider is desirable. *Services:* Water for wall sink, electric outlets for glue pots, power outlets for machines. Machine Shops, Sheet Metal, Home Mechanics, Forge, Pattern Making, Auto Mechanics and other technical shops can be as extensive as circumstances permit. No formula for floor space can be offered without definite information as to requirements.

**Art**—22 x 38 ft. Auxiliary room—small stockroom, corridor adjoining generally arranged for exhibit space. Provide water for wall sink.

**Mechanical Drawing**—22 x 43 ft. Auxiliary rooms—storeroom and blue print room. Water for wall sink in main room. Water and electric in blue print room.

**Commercial and/or Typewriting Rooms**—Combined or individual 22 x 42 ft.

## Suggested Specification Form for Laboratory and/or Vocational Furniture

Sections listed that are not applicable to job at hand may be dropped.

**(1) General Conditions.**

**(2) Instructions for Proposal.**

**(3) Special Note**—*When using catalogue number*—"Use of catalog numbers herein shall serve as a guide and every item specified by a number shall be governed by features of the general specifications. It shall be understood that all features and accessory items shown in the catalog referred to shall be incorporated in the item whether specifically mentioned in an itemized listing or covered in the general specification, or not."

**(4) Materials**—(a) Exterior cabinets; (b) Interiors; (c) Panels; (d) Tops; (e) Special materials; (f) Fume hoods.

**(5) Cabinet Construction**—(a) Thickness of stiles, rails; (b) Method of joining; (c) Base and crown mouldings; (d) Leg construction for open frames; (e) Attached seats or chairs; (f) Doors—hinged and sliding; (g) Drawers.

**(6) Table Tops**—(a) Laboratory—composition, wood or stone. (b) Foods Laboratory tops, composition, stainless metal or wood; (c) Drawing, Art, Sewing, Commercial table tops (generally wood); (d) Shop Bench tops (wood).

**(7) Shop Bench Construction**—(Separate construction specification because generally of heavier materials than other types of furniture.)

**(8) Hardware**—Locks, hinges, pulls, leg shoes, door latches, special hardware, sliding sash for fume hoods, balance support rods, adjusting devices, etc.

**(9) Plumbing**—(a) Water cocks, gas, air, vacuum, steam, distilled water, hydrogen sulphide, shut-off valves for supply line; (b) piping materials and sizes (exposed and concealed), finishes, etc.; (c) traps, sink fittings and drain lines; (d) special treatment of Chemistry Department exposed pipe and fixtures; (e) sinks.

**(10) Electrical Work.**

**(11) Finish**—(a) Cabinet exterior and interior; (b) special acid-resisting finishes for Chemistry cabinets; (c) top finishes; (d) parts to be rubbed.

**(12)**—Miscellaneous items applicable to special requirements such as steam baths, Kjeldahl units, special locking systems, vent and exhaust fans for laboratory hoods, drying compartments, etc.

## Industrial Laboratory Furniture

Furniture of either wood or metal. Steel furniture for chemical laboratories should be a special copper-bearing lead-coated steel in the various gauges required, with all sheared edges recoated with lead.

Proper co-ordination of all mechanical services required demands highly specialized information to properly prepare complete and thorough specifications and details.

Fume removal is one of the major problems of any industrial research or control laboratory, and one to which we have devoted years of study and experiment.

Our long experience, as indicated by our record of forty years of continuous manufacture in the laboratory and vocational furniture field, exclusively, is evidence of our ability to furnish architects and engineers with the necessary technical data on laboratory layouts. Our representatives are available in all parts of the country. *Their service is without obligation. Feel free to call on us.*

# AUTOMATIC DEVICES COMPANY

## Manufacturers of Curtain Machines, Curtain Tracks and Motor Generators

Samuels Building, ALLENTOWN, PA.

EXPORT DEPARTMENT—220 W. 42nd Street, NEW YORK, N. Y., U. S. A.

DIRECT FACTORY REPRESENTATIVES

CHICAGO, ILL., N. C. Nussbaumer, 825 S. Wabash Avenue

ST. LOUIS, MO., A. M. Pollack, 1310 Midland Drive

## "SILENT STEEL" CURTAIN TRACK

The theater or auditorium owes to the audience the full dramatic value of the entertainment. Except for the picture or performance the curtain is the one object continually in sight and can contribute much to the success of the show. "Silent Steel" Curtain Tracks provide the proper operation of any size horizontal draw curtains at the most economical cost.

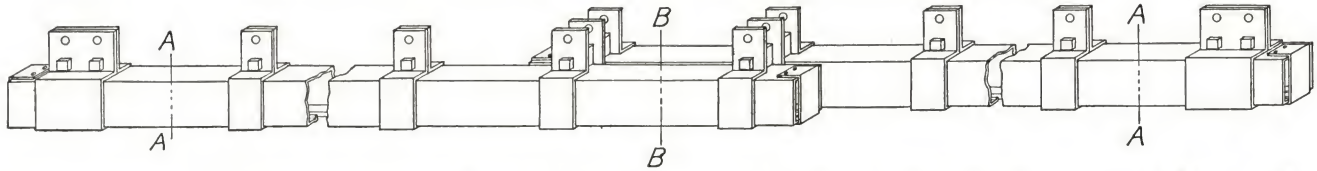
The "Silent Steel" track is formed from one piece of heavy gauge steel, fully enclosed on all four sides except for slot in bottom. Each half of track is supplied in one continuous unit without riveted or other mechanical joints.

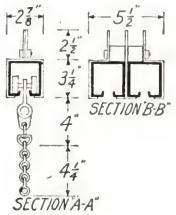
Curtain carriers are of metal body containing large ball-bearing supported shaft with special rubber composition wheel on each end. From the bottom is suspended a swivel and chain for trimming the curtain. Rubber buffers ride on operating line between each carrier. Track clamps are adjustable to any location by merely turning one nut. Pulley blocks are equipped with steel ball-bearing wheels adequately guarded. Cotton sash cord is supplied for hand operation and steel-core cable for machine operation.

Special wheels and ball-bearing construction combined with perfect alignment make operation quiet and effortless. Installation is simple and rapid.

Also obtainable in Special Model with plain bearing carriers and special accessory group.

*Turnbuckles, Pipe-Batten Hangers, Wall or Ceiling Brackets Supplied as Desired*




**Section Dimensions**

### To Determine Gross Length of Track Required

As a basis, start with the clear width of opening which curtain is to uncover; i.e., distance between inside edges of curtain halves when in open position.

Add 10% for lap at center for curtain when closed.

Add 10% for extension on each end to accommodate each half of curtain when in open position.

Total addition is 30%.

*Example:* Open curtain is to expose 30 ft. clear width. Add total of 30% or 9 ft. for center lap and both end extensions.

Specify 39 ft. gross length, in two sections each 19 ft. 6 in.

### Suggested Specifications

Curtain Tracks shall be of steel construction, fully enclosed, except for slot in bottom, and free of any riveted or other mechanical joints regardless of length, except at center lap. Each curtain carrier shall be supported on ball bearings by two special composition rubber wheels rolling on two separate parallel treads and all pulley blocks equipped with steel, ball-bearing wheels adequately guarded; all as manufactured by AUTOMATIC DEVICES COMPANY of Allentown, Pa.



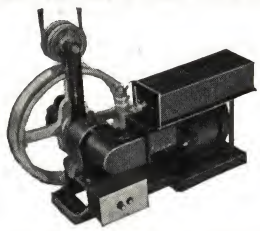
**Silent Steel Track Assembly**



**Silent Steel Balanced Ball-Bearing Curtain Carrier**

## AUTOMATIC CURTAIN MACHINES

Allentown Automatic Curtain Machines have been developed over a period of 15 years. They operate smoothly and reliably in the simplest manner by push-button control from any points desired and at the most economical cost.



**Autodrape Standard Model**

Over-all dimensions: 19½ in. long, 10 in. wide, 15½ in. high

### "Autodrape" Curtain Machines

All "Autodrape" machines are equipped with exactly the same motor, gear reduction unit, base, driving-pulley and automatic reversing switch mechanism including the following features:

**(1) Limit Switch Arrangement**—Adjustment for "open" and "close" positions reduced to simplest form.

**(2) Elevator Type Traction Drive**—Maximum delivered power without slippage.

**(3) Mounting**—Endless cable design allows installation of machine at any position in vertical plane of track.

**(4) Disconnection Clutch**—For conversion to hand operation.

**(5) Speed**—115 ft. per minute, equivalent to curtain separation of 3½ ft. per second (based on 60-cycle current).

**(6) Motor**—¼ hp., single phase.

"Autodrape" Special Models—These models have features listed above and are the lowest priced fully automatic machines on the market.

Recommended for use with "Silent Steel" Tracks up to about 30 ft. gross length.

"Autodrape" Standard Models—In addition to the above features these models include: automatic overload protective breaker, idler system, push-button control switch attached to machine and terminal panel which is completely wired ready for connection to electrical circuit.

Recommended for use with "Silent-Steel" Curtain Tracks up to about 40 ft. gross length.

### "Silver Service" Curtain Machines

The "Silver Service" Model has all the features of the "Autodrape" models plus twice the power and 30% greater speed. Recommended for use where size or speed is beyond the stated capacity of the "Autodrape" equipment.

## REPRESENTATIVE INSTALLATIONS

**Public Schools**
New York, N. Y.
Philadelphia, Pa.
Baltimore, Md.
Cleveland, Ohio
Washington, D. C.
Newark, N. J.
Buffalo, N. Y.
Seattle, Wash.
Providence, R. I.

**Theatre Circuits**
Paramount-Publix
Warner Bros.
Balaban & Katz
R-K-O
Loews
Fox
Wilmer & Vincent
Comerford

**Hotels**
Waldorf-Astoria
Miami-Biltmore
Palmer House

**Industrial Exhibits**
General Motors Co.
Sears-Roebuck
Ford Motor Co.
General Electric Co.

**U. S. Government**
Army Posts
Naval Stations
Veterans' Hospitals
Department Bldgs., Washington, D. C.
Public Health Hospitals

**Colleges**
University of Chicago
U. S. Military Academy
Swarthmore
University of Maine
University of British Columbia
New York University

**Miscellaneous**
Radio Stations
Municipal Auditoriums
Masonic Lodges
Y. M. C. A.
Churches
Clubs
Art Museums

*For Complete Information and Samples of Track write to Automatic Devices Company, Allentown, Pa.*

ESTABLISHED 1905

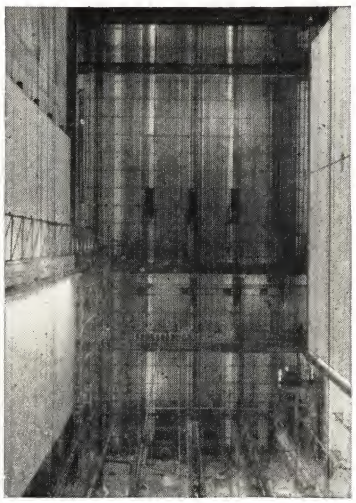
# PETER CLARK, INC.

Manufacturers, Contractors and Consulting Engineers

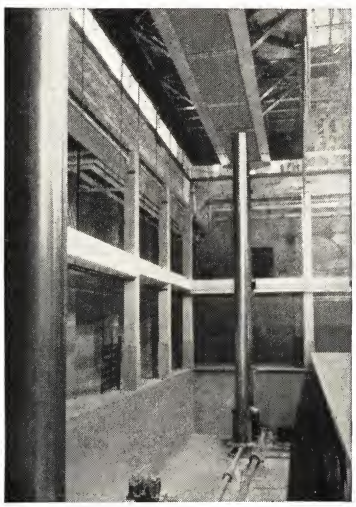
534 West 30th Street

NEW YORK, N. Y.

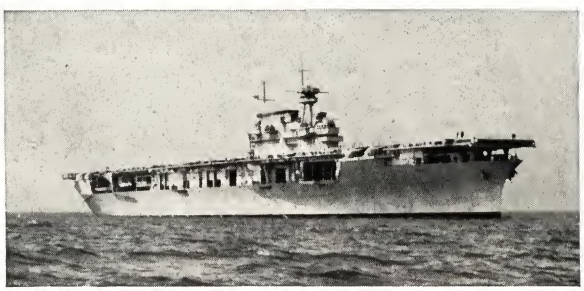
For Clark Pneumatic Tubes and Conveyors, see File Index



**Tee Bar Counterweight System, Radio City Music Hall, Rockefeller Center, New York**
REINHARD & HOFMEISTER, Architects



**Hydraulic Platform Elevator**
One of three, each 70 x 15 ft., installed in the stage of Radio City Music Hall. Orchestra elevator of the same type



**Clark Equipment Is Used on the U. S. Aircraft Carrier "Yorktown"**

## PRODUCTS

ASBESTOS CURTAINS
BUS and AUTOMOBILE TURNTABLES
COUNTERWEIGHT SYSTEMS
DRAW CURTAIN TRACKS (Hand or Electric Operated)
ELECTRIC SCREW TYPE ELEVATORS
HYDRO-ELECTRIC ELEVATORS
MECHANICAL DISPLAYS
MECHANICAL STAGE EFFECTS
METAL TICKET RACKS
MOVABLE PARTITIONS
MOVABLE STAGES and BAND CARS
MOVIE TONE HORN RIGGING
MOVING SIDEWALKS
ORGAN CONSOLE LIFTS
PORTABLE SEATING
PORTABLE and SLIDING ICE RINKS
REVOLVING DANCE FLOORS
REVOLVING and SLIDING STAGES
STAGE FLOOR TRAPS
STEEL and MAGNASCOPE PICTURE SHEET FRAMES
STEEL and SOUNDPROOF CURTAINS
STORE FRONT ELEVATORS
THEATRICAL DRAPERIES
THEATRICAL STAGE EQUIPMENT
WINDOW DISPLAY TURNTABLES

## ARCHITECTS' SERVICE

We maintain an Engineering Department organized to facilitate your planning theatre layouts by expert stage designers. Complete plans and specifications can be furnished at minimum cost.

## COUNTERWEIGHT SYSTEM

No theatre today can afford to be without this modern system of handling drops from the stage floor, eliminating as it does fly galleries and the heavy labor and large stage crew necessary with the old methods.

Each pipe batten set is supported on steel cables over loft blocks to a head block, where cables are attached by trimming chains to counterweight frame. The counterweight tracks are mounted on sidewall. Each pipe batten is equipped with quick acting clamps or chains with snap hooks for attaching scenery to batten. Each set is hand operated from stage floor by means of a manila rope hand line and secured in position by means of a quicks acting rope lock. Counterweights can be added or removed from frame readily to take care of sets of varying weight.

## HYDRAULIC AND ELECTRIC PLATFORM ELEVATORS

The Hydraulic Platform Elevator is designed for duty where the load must be handled at high and variable speeds. Our synchronizing gear automatically equalizes the plungers on a multiplunger installation. Hydraulic elevators equipped with automatic pre-set stops or manually operated push-button stations.

The Electric Platform Elevator is used where the operating speed is low and speed variation is not required. An installation consists of one or more jackscrews, raised by worm-geared operating machinery driven by an electric motor. Electric elevators may have automatic pre-set stops or may have manually operated push-button stations. All of our machinery is mounted on vibration-absorbing construction.

## TICKET RACKS AND CASES

Made of metal to special order for requirements. Practical for both advance and daily rush sales. Compartments are built on an angle so as to show the stub of first ticket in each row with the seat number. *A rack for* any number of performances and conditions of box office.

## DRAW CURTAIN TRACKS
### (Hand or Electric Operated)

Two types; wood lined steel track; lignum-vitae ball carriages for light curtains; moulded composition ball bearing wheel carriages for heavier curtains. Furnished for either manual or electric motor operation.

## ASBESTOS CURTAINS

Flexible asbestos fire curtains of plain or woven wire cloth. Asbestos cloth curtain with rigid steel frame, has a layer of cloth on both auditorium and stage side of curtain. Curtains rigged with fusible links and cut lines to descend under their own weight.

## SOUNDPROOF AND STEEL FIRE CURTAINS

Used in schools to separate gymnasiums and auditoriums. Have a sheet steel center covered on both sides with sound-resisting material and a structural iron frame covered on both sides with asbestos cloth. Fire-resisting.

## CONTOUR CURTAINS

This is a new type of automatically controlled act curtain. Curtain is operated by a number of single lines, each one motor driven and individually controlled. All lines can also be operated by a master control. Can be pre-set to give any drape or brail effect desired. These curtains can be installed in the largest stage openings, and can also be used in stores for window curtains or in specialty departments. Small curtains can be furnished either with hand or electric operation.

## MOVABLE STAGE BAND CARS

Originally designed to move entire band up and down stage; can also be designed to carry a complete setting on and off stage. Special mechanical effects, such as revolving platforms, telescoping under stages, and other effects can be provided to obtain maximum effect in limited stage space.

## MAGNASCOPE PICTURE SHEET FRAMES

Steel picture sheet frames with automatic maskings so that two or three sides of the picture can be shown on the same sheet. Also, steel frame for picture sheets. These frames carry permanent masking. Provision is made for mounting speaker horns on frame.

## STAGE RIGGING AND HARDWARE

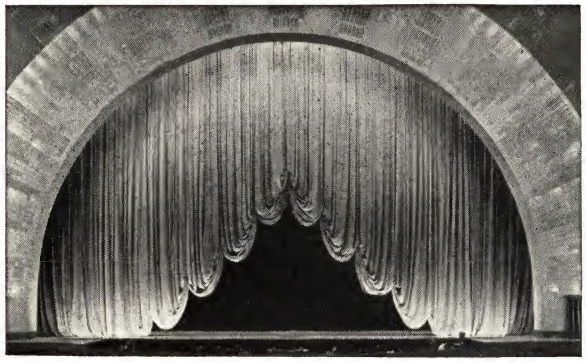
A complete line of stage accessories embracing every appliance needed for the modern stage.

## MECHANICAL STAGE EFFECTS

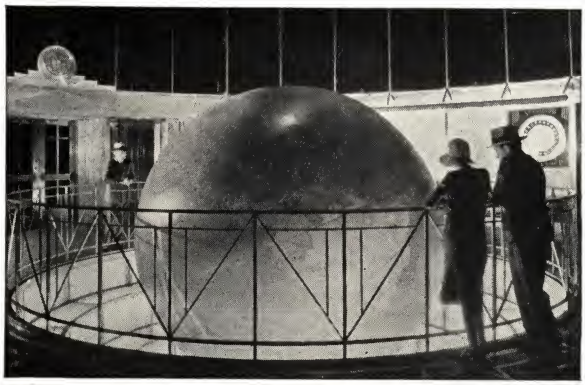
Our knowledge of this highly special line has been gained through thirty years of experience, backed by technical knowledge. We accomplish results that are practical, and mechanically correct.

## TURNTABLES

We design, fabricate and install turntables for stage effects, revolving dance floors, window turntables for displaying three sets of furniture or other merchandise, to obtain maximum display in limited window space; also, automobile and bus turntables, no limit as to size or capacity. All equipment built special to fit the requirements of the job.



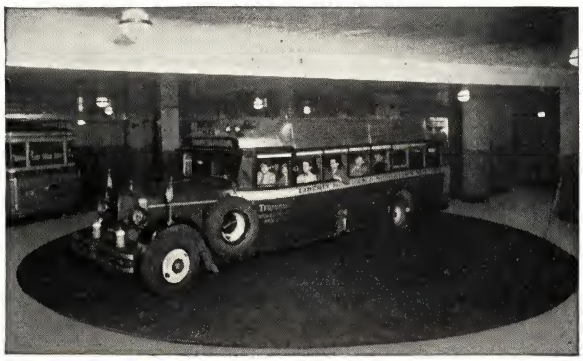
**Contour Curtain by Peter Clark for the Radio City Music Hall**
REINHARD & HOFMEISTER, Architects
Covers a proscenium opening of 100 ft. wide, 60 ft. high. It is operated by 13 electric motor drives, each individually controlled



**Revolving Globe of the World, Daily News Building, New York**
12 ft. in diameter. Designed and built by Peter Clark




**Window Turntable, C. Ludwig Baumann's Store, Brooklyn, N. Y.**
20 ft. in diameter, showing three sets of furniture. Installed by Peter Clark
ELIAS ROTHSCHILD, Architect



**Bus Turntable, Hotel Dixie Bus Terminal, New York**
Electrically driven, 35 ft. in diameter, designed and built by Peter Clark

ESTABLISHED 1885

# J. R. CLANCY, INC.

Manufacturers of Curtain Hoists, Stage Rigging and Hardware

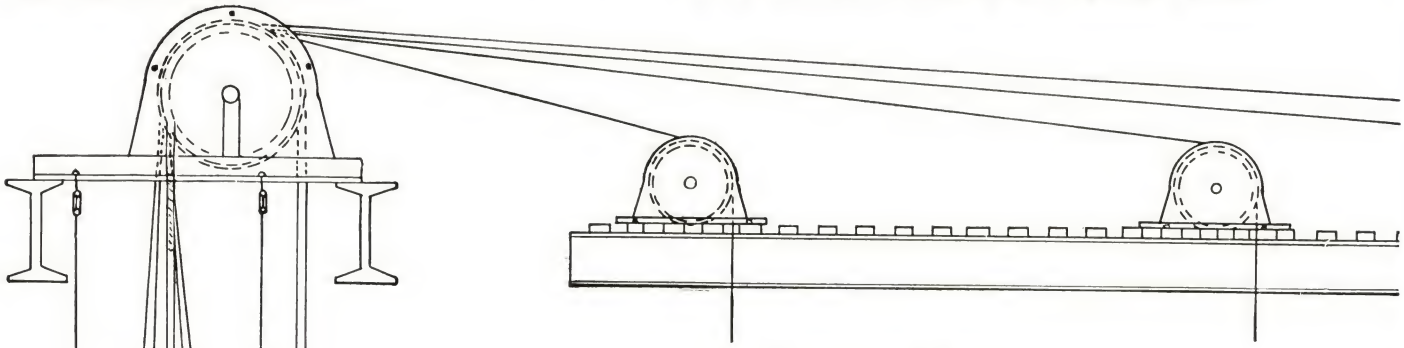
1020 West Belden Avenue

SYRACUSE, N. Y.

## SAFE AND DEPENDABLE STAGE RIGGING AND HARDWARE

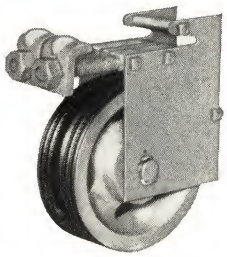
For more than 50 years, J. R. Clancy, Inc. has been equipping the world's leading theatres with curtain hoists, stage rigging of every nature and various items of stage hardware. Theatres of every size and style—here and abroad—are depending daily on Clancy equipment for safe, smooth, dependable and uninterrupted stage performances.

Regardless of what may be required to equip a stage, it can be found in the Clancy line—including blocks of every size and nature, counterbalance equipment and weights, rope, cable, etc. A full stock of completed items as well as semi-fabricated material, castings and forgings—ready for special finishing—is carried on hand at all times to assure prompt delivery.



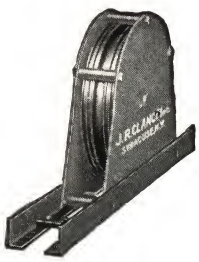
### Clancy Engineering Service

Our wide experience has given us a vast fund of information and data on the designing, planning and equipping of stages of every size. This information is available at all times to architects and theatre designers. We can advise on all safety features and give full information regarding Underwriters' Laboratories requirements and regional restrictions. This information is yours without cost—do not hesitate about using it.



*Left:*
Clancy Underhang Head Block

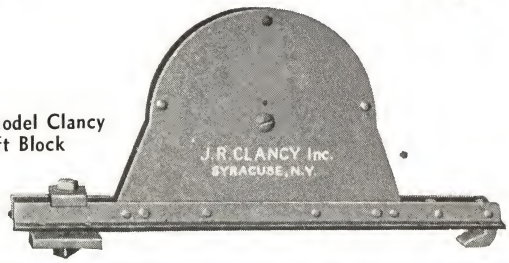
*Right:*
Clancy Head Block

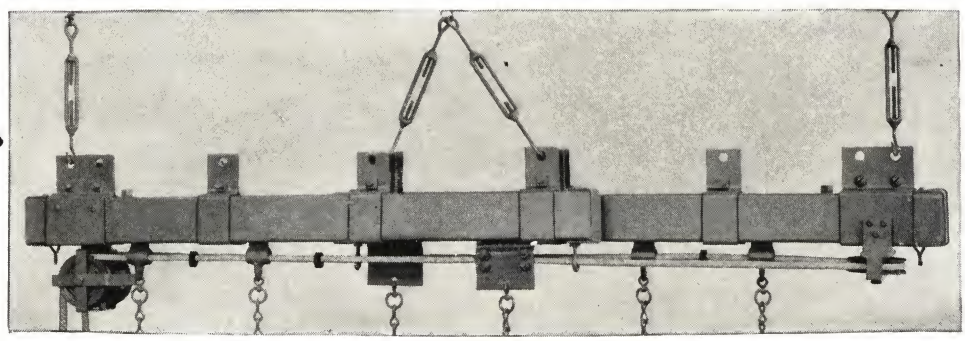



*Below:*
Clancy Combination Floor Block and Rope Lock

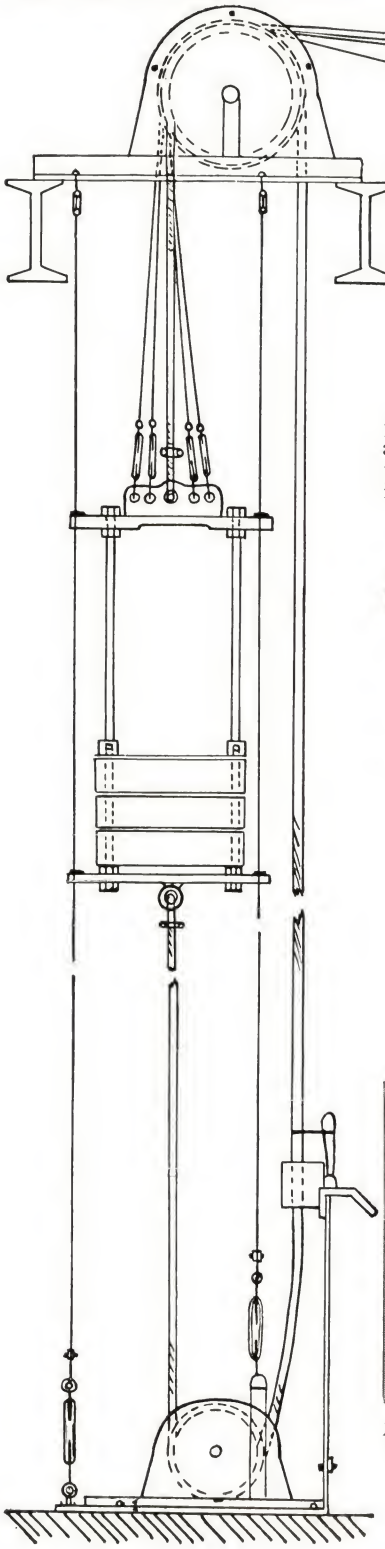


*Right:*
New Model Clancy Loft Block



*Above:*
Clancy Draw Curtain Track. Fully Insulated and Absolutely Silent



*Left:*
Typical Clancy Wire Guide Counterbalance Rigging

# H. V. BRIGHT TURN STILE COMPANY

4625 Ravenswood Avenue, CHICAGO, ILL.

EASTERN REPRESENTATIVE: J. W. Fiske Iron Works, 78 Park Place, NEW YORK, N. Y.

## TURN STILE EQUIPMENT FOR ENTRANCES AND EXITS

For over a quarter of a century we have manufactured and furnished Turn Stiles for use at many different places, including swimming pools, museums, libraries, pay-toilet rooms, stadia, baseball parks, university and high school athletic fields, amusement parks, expositions, fair grounds, self-service groceries, ferry and boat landings, race tracks, etc. Estimates furnished for subways and elevated railroad Turn Stile equipment. In addition we furnish hardware for metal or wood Exit or Baffle Gates; also ticket canceling machines.

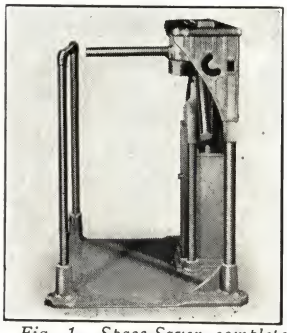


*Fig. 1. Space-Saver complete with railing and platform. Also furnished with the short base without railing and platform. (Figs. 2 and 5.)*

## "BRIGHT-JOHNSON" SPACE-SAVER TURN STILE

A four-arm registering Turn Stile that can be set up and operated in a much smaller space than the regular full size Turn Stile. Width over all from outside of aluminum top to end of arms is only 22 in. It is equipped with a patented air shock absorber that insures quiet operation. Illustrations show the idea of the space-saving feature: arms drop as they enter the housing and come into place in the entrance as each person passes through.

The Turn Stile arms are round, chrome plated, 1¾-in. diameter. Each arm revolves on its own ball bearing, which makes for ease of operation. The Space-Saver can be furnished in the Coin Controlled pattern or as a regular Registering Turn Stile more generally used with tickets. Can be furnished in different combinations, such as one-way entrance only; entrance and exit, registering only on the entrance; and almost any conceivable combination of coin or ticket operation.

*An outstanding feature of the Space-Saver is the position of the arms as the person passes through in that they rotate parallel to the floor during the effective port of their movement in the entrance.*

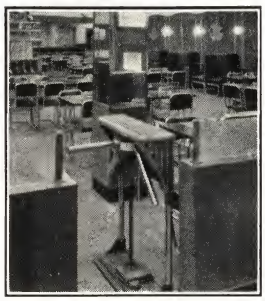


*Fig. 2. Space-Saver in McCrory Stores Restaurant, Atlanta, Ga.*



*Fig. 3. Space-Saver at "Jewel Box" Floral Observatory, St. Louis, Mo.*

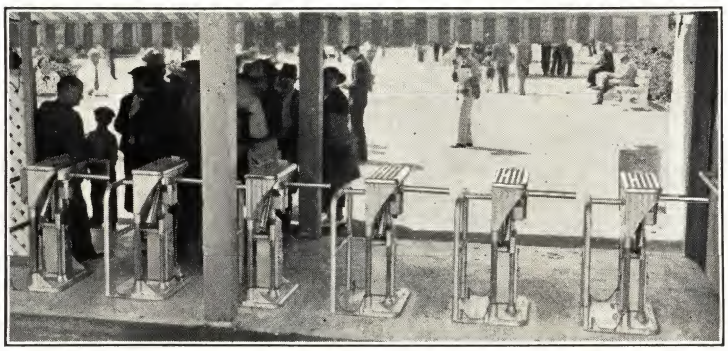


*Fig. 4. One lot of Space-Savers at Los Angeles County Fair, Pomona, Cal.*



*Fig. 5. Space-Saver at City of New York Municipal Baths, Coney Island.*

## Bright Automatic Turn Stiles

Eliminate necessity of foot lever release or other mechanical movement by attendant. Patrons operate Turn Stile. Can be furnished with foot lever control so arranged that Turn Stile cannot be operated until foot lever is held down by attendant. Air shock absorbers check arms at each quarter turn.

## Bright Turn Stile Registers

Turn Stile can be equipped with printing or plain registers which run from 1 to 100,000 and then start over again at 1, without having to be reset.

Printing register records the opening and closing numbers on a specially prepared slip which is inserted in an opening in the register case and printed by the turning of a key.

## Some Users of "Bright's" Turn Stiles

American and National Baseball Leagues, all clubs
Cleveland Hockey Arena, Cleveland, Ohio
Playground Amusement Park, Rye, N. Y.
Coney Island, Cincinnati, Ohio
Wisconsin State Fair, West Allis, Wis.
National Orange Show, San Bernardino, Cal.
A. & P. Tea Co. Super Markets
George Washington's Home, Mount Vernon, Va.
Board of Park Commissioners, Wilmington, Del.
University of Kansas, Lawrence, Kan.
Race Track, State Fair of Texas, Dallas, Tex.
Chrysler Tower, New York, N. Y.
Niagara Falls State Reservation, Niagara Falls, N. Y.
Chicago Stadium Corp., Chicago, Ill.
Miami Jockey Club, Miami, Fla.
Arlington Race Track, Arlington Heights, Ill.
Cleveland Municipal Stadium, Cleveland, Ohio
University of Illinois, Urbana, Ill.
Municipal Swimming Pool, Oakland, Cal.
Nippon Race Club, Yokohama, Japan
Saratoga Race Track, Saratoga Springs, N. Y.
Los Angeles County Fair, Pomona, Cal.
Monessen Public Schools, Monessen, Pa.
Cleveland Heights High School, Cleveland Heights, Ohio

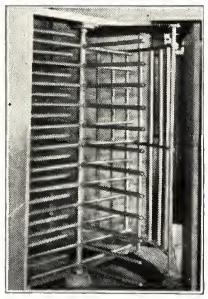


*Fig. 9. All metal Exit or Baffle Gate. Shipped complete knocked-down to be assembled on job.*

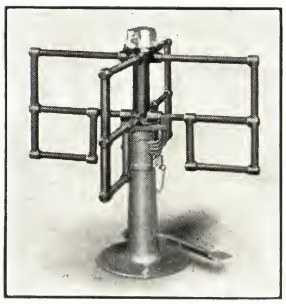


*Fig. 6. Registering Turn Stile "B" is equipped with arms that make it hard for anyone to crawl under. Also furnished in the Non-registering pattern.*

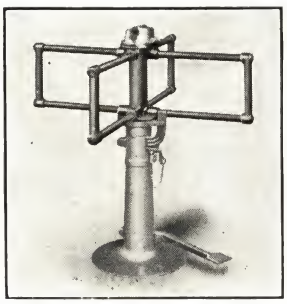


*Fig. 7. Registering Turn Stile "A" is our lowest priced Turn Stile. Also furnished in the Non-registering pattern with or without foot lever control.*

**DIMENSIONS**

| Fig. | Height, ins. To top | Top of arms | Bottom of arms | Width over all, in. |
|---|---|---|---|---|
| 1 | 38¾ | 34½ | 32¾ | 28 |
| 2 | 38¾ | 34½ | 32¾ | 22* |
| 6 | 40½ | 36 | 16½ | 39 |
| 7 | 40½ | 36 | 24½ | 39 |
| 8 | 38¼ | 34½ | 25¼ | 39 |

*Length of machine over all, 27¼ ins.

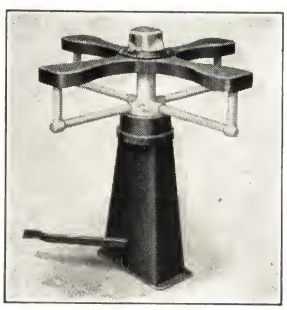


*Fig. 8. Automatic Turn Stile "D" with wood top arms. Also furnished with polished brass or aluminum top arms finished a light gray.*

# PEREY TURNSTILE COMPANY

101 Park Avenue, NEW YORK, N. Y.

SALES OFFICES: Chicago, 37 W. Van Buren Street; Los Angeles, Suite 1200, Title Guarantee Bldg.

## EQUIPMENT FOR ENTRANCE AND EXIT TRAFFIC CONTROL, REGISTRATION AND ADMISSION COLLECTION

### Leadership—Because of Performance and Achievement

Perey Turnstile Company is the largest producer of turnstiles in the world and has been building equipment for pedestrian traffic control and for registration and admission collection for the past 47 years. The first subway system in New York as well as the elevated stations were equipped with Perey Turnstiles, which are still giving satisfactory service. Every subway in the United States is using Perey Turnstiles. The Perey Company offers the widest range of types and styles for every purpose for which turnstiles are used, such as for Rapid Transit Systems, Swimming Pools, Stadiums, Race Tracks Amusement Parks, Theatres, Museums, Zoos, Cafeterias, Self-service Stores, Pay Lavatories, Hotels, etc.

### Symmetrically Designed to Harmonize with Modern Surroundings

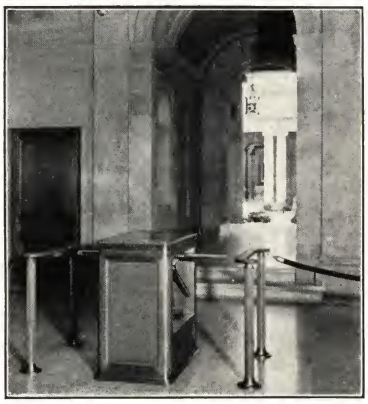
Artists and engineers have combined to give to Perey Turnstiles the beauty of line and harmony of design demanded by architects. The sturdy, dependable mechanism and its exclusive features make Perey Turnstiles first choice wherever the best is desired.

### A Complete Consulting Service for Architects

Perey offers to architects a complete, specialized service for the planning of entrance and exit control and the proper selection of turnstile equipment. This is available through the main office or through the branch offices listed above. Experience has proved that the full value of this service can be realized only if it is rendered continuously from the time the projects are in the sketch stage through to the making of working drawings.

To plan a system that is both comprehensive and practical, Perey Engineers should have a general knowledge of the function and operation of each department where entrance and exit control is desired.

The wealth of experience gained from a lifetime spent in solving problems attached to control of entrances and exits, is offered to architects without obligation whatsoever. A study of present conditions and future trends renders this experience both authoritative and dependable.



**Entrance Lobby, Frick Collection, New York**

Double Bronze Kompak Passimeters record attendance both entering and leaving. John Russell Pope, *Architect.*

### Kompak (Space Saving) Turnstiles

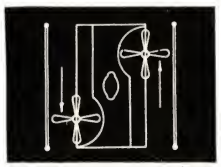
We originated and are exclusive makers of the Kompak type turnstiles.

These turnstiles save about one-third the space needed for conventional types, and are more modern and artistic in appearance.

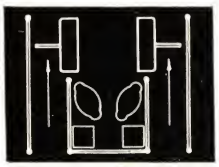
Kompak Turnstiles are available in all classifications—Traffic Controllers, Attendance Recorders, Passimeters, Coinpassors.

★World's largest Range of Turnstiles to choose from. Space permits us to show but a few of the many types we make.

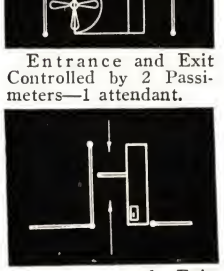
### Typical Entrance and Exit Layouts



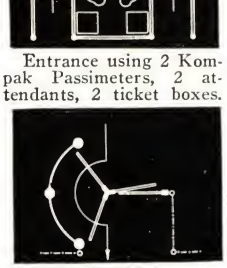
Entrance and Exit Controlled by 2 Passimeters—1 attendant.



Entrance using 2 Kompak Passimeters, 2 attendants, 2 ticket boxes.



Entrance and Exit using 2-Way Kompak Coinpassor.



Exit using Ful-Stride Roto-Gate installed in fence.

**FLOOR SPACE REQUIRED**

Approximate only. There are several types of turnstiles in each classification. Full specifications on request.

| Classification | Conventional 4-arm Types | | Space Saving Types | |
|---|---|---|---|---|
| | Lgth., in. | Wdth., in. | Lgth., in. | Wdth., in. |
| *Traffic controllers | 38 | 38 | 22 | 20¾ |
| *Attendance recorders | 38 | 38 | 27¾ | 23¼ |
| *Passimeters | 38 | 38 | 27¾ | 23¼ |
| *Coinpassors | 51½ | 42½ | 42½ | 26 |
| Roto-Gate | .... | .... | 57 | 65½ |

*Note: In planning installations of these turnstiles additional space should be allowed for guide railings. Provide for 3-in. clearance between end of passage barring arm and inside edge of railing. Provide railing for at least length of turnstile.

### A Few Notable Perey Turnstile Users

Yale University Gymnasium, John Russell Pope
New York Zoological Park
Trans-Lux Theatres, Thomas Lamb
Long Island State Park Comm.
Grand Central Theatre, New York, Sloan & Robertson
William & Mary Stadium, Norfolk, C. A. Neff
City of New Rochelle, N. Y.
Roesch Memorial Stadium, Buffalo
Museum of The City of New York, Joseph H. Freedlander
Toledo Museum of Art
Rockefeller Center, New York
Empire State Building, Shreve, Lamb & Harmon
Metropolitan Museum of Art, John Russell Pope
William Rockhill Nelson Museum, Wight & Wight
Westchester County Park Comm.
George Washington Bridge
Golden Gate Bridge, San Francisco
Waldorf-Astoria Hotel
Saratoga Springs Swimming Pool Dwight James Baum
Santa Anita Race Track
Brooklyn-Manhattan Transit Corp.
Boston Elevated Railway
City of New York Subway
City of Philadelphia Subway
New York Central Railroad
Pennsylvania Railroad
Lackawanna Railroad
Great A. & P. Tea Co. Stores

## ★Major Classifications of Perey Turnstiles

### Traffic Controllers (Non-Registering)

#### High Traffic Controllers

High, one-way revolving gates of the baffle type for controlling direction of traffic and protecting exits. Can be used either indoors or out. Can be tied in with fence. Furnished complete, knocked down. Easy to erect. Made in Impenetrable and Standard types in several designs. Mechanism is enclosed — tamper-proof, weather-proof and silent. Construction is all-metal, roomy, space-saving.

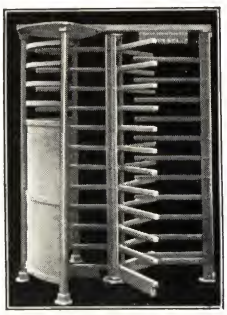


Fig. F. Ful-Stride Roto-Gate High Traffic Controller



Fig. E. Traffic Controller

#### Low Traffic Controllers

Control the direction of pedestrian traffic, prevent entrance through exits, eliminate disorder and confusion. Made in several models: all metal, wooden arm with metal pedestal, and a space-saving model, the Kompak Traffic Controller.

### Passimeters (Registering Turnstiles)

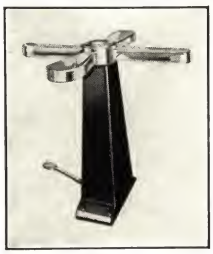


Fig. A
Empire State Passimeter

#### Manually Controlled

Record number of persons passing through. Cashier or ticket taker can control passage of persons, prevent "gate crashers," etc., with locking levers. Furnished either in "always locked" type, which attendant must unlock for each patron, or "always open" type, which passes patrons faster and is under instant control of attendant. Made in many types and finishes including Empire State and Kompak (Space Saving).

### Attendance Recorders

#### Non-Attendant

Automatically count people as they pass through, and at the same time control traffic. Made in several models—Empire State, Kompak (Space Saving) and Special museum types. All of these can be furnished in bronze, aluminum or other special metals to order.

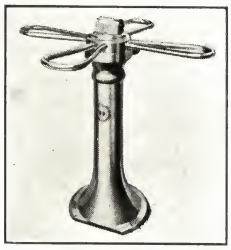


Fig. D. Solid Bronze Attendance Recorder

### Coinpassors (Coin Controlled)

Automatically collects cash fares and admissions. Coin deposited in slot unlocks the turnstile. Can be calibrated for any coin or round metal token, or for combinations of certain related sizes of coins and tokens. Furnished in several types, including Kompak (Space Saving), and several 4-arm models.




*Right:*

**Fig. B**
**Kompak Coinpassor**

# J. C. DEAGAN, INC.

## Builders of Carillons

MAIN OFFICE AND FACTORY

TELEPHONE
Lake View 4364

Deagan Building, 1770 Berteau Avenue, CHICAGO, ILL.

BRANCH OFFICES

CALIFORNIA—1306 Fuller Avenue, Los Angeles—Telephone, Gladstone, 1002
NEW YORK—21 E. 10th Street, New York, N. Y.—Telephone, Stuyvesant 9-8119

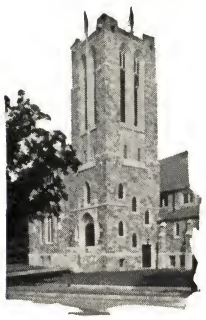
### Products

J. C. DEAGAN, INC., is the originator and the largest builder of electrically operated TUBULAR BELL CARILLONS.

ELECTRIC DOOR CHIMES.

Also manufacturers of Scientific Tuning Devices (used in the U. S. Bureau of Standards, Washington, D. C.), Percussion Musical Instruments for hand-playing and organ use, Altar Chimes, etc.

### Service to Architects



First Baptist Church, Winchester, Mass.

Architects planning churches, public buildings, office structures, college buildings, country estates or cemetery improvements are urged to consult the Service Bureau of J. C. DEAGAN, INC., for important information on the operation and installation of Carillons. Although Deagan Bells, immune to the elements, may be installed in almost any structure, it is obvious that for best results certain principles should be observed. These principles, involving the size of belfry, design of louvers, size of openings, size of scuttles, wiring information, etc., will gladly be explained in detail on request. Even if impossible to consider a Carillon as part of the original plan, it is sound economy to provide for its possible installation later.

### Round Velvety Tone, Exceptional Volume

The richness, beauty and charm of Tower Bells without raucous clang or clamor. Bell music that is pleasing to the ear, and of far-reaching volume.

### Automatically or Manually Played

From keyboard, direct from organ console, or automatically—from the Electric Player.

**DEAGAN**

ESTABLISHED 1880



First Methodist Church (Chicago Temple Bldg.), Chicago, Ill.

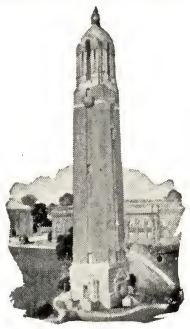
The "services" of a Master Carilloneur at command twenty-four hours a day, three hundred and sixty-five days a year.

### Deagan Time-Marking Chiming Device

Sounds Westminster Peal (or any other time-marking peal) every 15 minutes—a reliable community time-guide—automatically shuts off for any desired period at night.

### Scientifically Tuned

Tone specialists, J. C. DEAGAN, INC., whose Master Tuners are in use by U. S. Bureau of Standards at Washington, and by practically every musical instrument manufacturer and musical organization of importance in North America, tune Deagan Tower Bells to Standard Universal Pitch or to exact pitch of pipe organ.



State College, Carillon Tower Brookings, S. D.

### Patented Dampers

Silence one tone at precise instant next is sounded—tone intermingling entirely eliminated—melody stands out clear and distinct—greatest improvement in all carillon history, an exclusive Deagan feature.

### No Excessive Tonnage

Practically any belfry or roof will support a Deagan Carillon without reinforcing. Bells are suspended by flexible cables which allow every ounce of metal to vibrate—no waste weight—carrying power equal to and in many instances surpassing that of any bells on which musical selections are played.



**Master Clock**

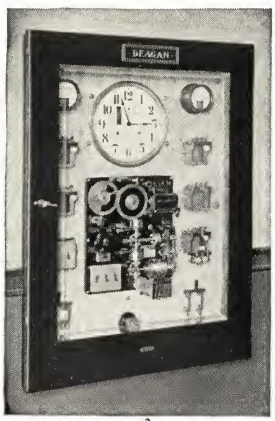
By merely setting the selector the electric player may be made to start the carillon automatically at any desired hour, and to shut it off automatically when the desired program has been concluded



The Deagan Electric Player Plays Carillon Automatically

### Recent Installations

S. A. E. Chapel, Northwestern Univ. Campus, Evanston, Ill.
Shrine of Blessed Sacrament, Washington, D. C.
Michigan Mutual Insurance Bldg., Detroit, Mich.
Cemetery, Wiley Post Burial Place, Oklahoma City, Okla.
St. Vincent's Church, Los Angeles, Calif.
Geo. Washington Masonic Mem., Alexandria, Va.
St. Augustine's Church, Montreal, Que., Canada
First Presbyterian Church, Chicago, Ill.
Estate of Robert S. Brown, Clearwater, Fla.
First M. E. Church, Ft. Worth, Tex.
St. Andrew's Church, Pasadena, Calif.
Woodmen of the World Hospital, San Antonio, Tex.
St. Peter's Lutheran Church, New York, N. Y.
Central United Church, Calgary, Canada
St. Mary's Church, Mobile, Ala.
City Hall, Pretoria, British South Africa
Death Valley Scotty's "Castle," Death Valley, Calif.
Estate of Pierre S. du Pont, Kennett Square, Pa.
University of Alabama, Tuscaloosa, Ala.
Agua Caliente Hotel, Tijuana, Mexico
City Hall, Asheville, No. Carolina
Hall of Science, A CENTURY OF PROGRESS, Chicago




Deagan Westminster Chiming Device Mounted in Wall

# McSHANE BELL FOUNDRY CO.

ESTABLISHED 1856 BY HENRY McSHANE

Founders of Superior Bells and Chimes

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Harford Avenue and B. & O. R. R., BALTIMORE, MD.

NEW YORK, N. Y., 280 Madison Avenue—CAledonia 5-5966 CHICAGO, ILL., Walter J. Buckley, 6156 Vernon Avenue
EXPORT OFFICE FOR FAR EAST: Asano Bussan Co., Ltd., 165 Broadway, New York, N. Y.—Telephone, COrtland 7-8047

## McShane Bells

*Are Known the World Over—*
*More Than 75,000 in Use*

Since 1856, the name "McShane" has signified the best in Bells, Peals, Westminster Chimes, Bell Chimes, Carillons and Tubular Chimes—they are in every State of the Union—and nearly every country in the world. The first Bell Chimes installed in Europe by an American Foundry was a McShane, in Falkirk, Scotland.

There are hundreds of McShane installations in your vicinity. Let us send you a list. Then make it a point to hear one or more of them. Our records show numerous instances of "repeat" orders from delighted customers. One prominent man liked McShane Chimes so well he purchased *three* 11-bell chimes. A clergyman, won by a McShane Chimes 35 years ago is now arranging for an identical set, and has purchased four McShane Bells in the interval. You never forget the lovely tone of a McShane Bell or Chimes.

We make every type of bell for churches, schools and universities, and public buildings. Also Ship and Fire Alarm Bells. We also do recasting. Appraisals made, without cost, of damage to bells by fire or other causes.

**Tubular Chimes**—McShane Tubular Tower Chimes have a sweet, mellow tone, and a good carrying power—they are ideal for towers not specially designed for bells. Tubes are of bronze composition, suspended from framework, ranging from 5 to 10 ft. long, 12 to 14 ins. in circumference.



**McShane Tubular Tower Chimes**

Showing frame and tubes assembled. Standard sets: 10 to 20 tones. Over-all dimensions, 8 ft. square, 12 ft. high

**CHURCH BELLS AND MOUNTINGS**

| Bell | | | Mountings | |
|---|---|---|---|---|
| Tone | Weight, lb. | Diameter, in. | Outside measurements of frame, ft.—in. x ft.—in. | Diameter of wheel, ft.—in. |
| D# | 300 | 25 | 3 — 4 x 2 — 8 | 2 —10 |
| D | 400 | 27 | 3 — 4 x 2 — 10 | 3 — 6 |
| C# | 500 | 29 | 4 — 0 x 2 — 10 | 4 — 4 |
| C | 650 | 31 | 4 — 0 x 2 — 10 | 4 — 4 |
| B | 700 | 33 | 4 — 5 x 3 — 3 | 4 — 9 |
| A# | 800 | 34 | 4 — 5 x 3 — 3 | 4 — 9 |
| A | 1000 | 36 | 4 — 9 x 3 — 4 | 5 — 6 |
| G# | 1200 | 38 | 4 — 9 x 3 — 7 | 5 — 6 |
| G | 1500 | 41 | 5 — 0 x 3 — 10 | 6 — 3 |
| F# | 1800 | 44 | 5 — 4 x 4 — 0 | 6 — 3 |
| F | 2000 | 46 | 5 — 8 x 4 — 6 | 7 — 0 |
| E | 2500 | 50 | 6 — 1 x 4 — 6 | 7 — 0 |
| D# | 3000 | 54 | 6 — 8 x 5 — 0 | 7 — 6 |
| D | 3400 | 55 | 6 — 8 x 5 — 0 | 7 — 6 |
| C# | 4200 | 59 | 7 — 0 x 6 — 0 | 8 — 0 |
| C | 5000 | 62 | 7 — 6 x 6 — 0 | 8 — 0 |
| B | 6200 | 66 | 7 — 6 x 6 — 0 | 8 — 6 |
| A# | 7000 | 72 | 8 — 0 x 7 — 0 | 8 — 6 |



**Westminster Clock Chimes**

**Westminster Chimes**—Operated electrically by automatic clock. Sounds appropriate Westminster changes on quarter hours and hours in their turn. Standard equipment.

**Bell Chimes and Tubular Chimes**—Operated by standard McShane Electric Chiming Action. Consists of keyboard, relay and operating units, which is standard equipment. Pressure on key establishes contact through relay with operating unit which strikes clapper against bell. Instantaneous action. At extra cost, may also be operated direct from organ console.

Where automatic playing is desired we furnish at extra cost, McShane Player-Roll Attachment which operates through a mechanism very similar to player piano. Automatic clock for starting player-roll attachment at specified time, may likewise be had at additional cost.



**Keyboard**



**Church Bell**

## Cast Bells, Peals, Chimes

All McShane Bells are made of the best Lake Superior copper and Straits tin composition, scientifically attuned to McShane System of Equal Temperament by skilled musicians. Noted for richness of tone, maximum volume and carrying power. Cast in weights from 100 lbs. upwards, with long term guarantee against crackage by regular usage.

Bells furnished with complete mountings, for ringing by hand; but where desired, electric device can be furnished, at extra cost, to ring or toll bell, or sound the Angelus. Swinging effect produced. Operated by series of push buttons. Substantial mountings, insuring easy action, minimum vibration. Peals and chimes mounted in frames built to conform to tower conditions. Catalog on request.

**Architectural Service**—We will gladly cooperate with architects, with recommendations for tower construction, etc. We invite correspondence pertaining to bells and chimes.

**Alternating Current Required**—220-volt, 60-cycle, for electric operating devices. Current consumption low. No generators.

***Orders Subject to Approval***—*All orders for McShane Bells, Tubes and Chimes accepted subject to approval of purchaser.*



**Chime Bells**

# MENEELY BELL CO.

MAIN OFFICE AND FOUNDRY
22-28 River Street, TROY, N. Y.
TELEPHONE Troy 525
SALES OFFICE: 220 Broadway, New York, N. Y.—Telephone COrtland 7-1749

## BELLS FOR ALL TYPES OF SERVICES

Church, Chime, Peal, Angelus, School, Tower Clock, Westminster, Fire Alarm, Fog Signal, Ship, Farm, and other Bells.

The accompanying illustrations show a few of the principal bells manufactured by this company. Our bells are located throughout this country and abroad.

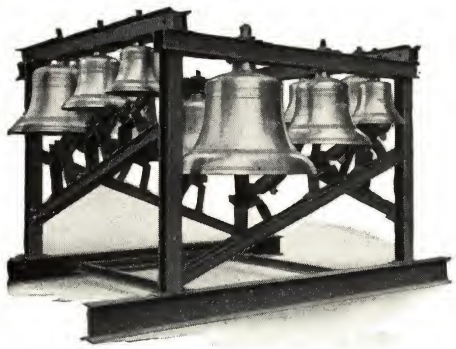
### Essential Preliminary Information for Designing Towers



Church Bell

We are glad to co-operate in the proper design of towers to bring out the best physical and acoustical characteristics of bell installations. Following are some general hints:

Provide opening in tower windows, or trap door large enough to admit bells. Floor of bell deck should be level with window sills. Ceiling should be wood located as close as possible to window heads. Installation of conduits, etc., for electrical wiring at time of construction saves considerable later expense. We are glad to send diagrams and suggestions.



Electrically Operated Chime

## CARILLONS, CHIMES AND PEALS

Because of the emphasis that we place on proper design and matching of tonal qualities, our bells are particularly well adapted for use in tuned sets, and we specialize in this work. A chime or *carillon* (French) consists of a set of stationary bells which contains enough notes to permit the playing of airs. Ten or more bells, tuned to the diatonic scale and including the flat seventh tone, can be used to play hundreds of appropriate pieces.



Electric Keyboard and Console

A peal contains a smaller number of bells than a chime and is used for the playing of "changes." One of the best known types is the Westminster Peal of four stationary bells on which the celebrated Cambridge Quarters can be rung. Swinging peals of two or more bells are also quite common. In these, the bells are tuned to form a musical chord and are swung together.

Due to our development of an efficient electric striking mechanism, we are able to fill the great demand for a means of mechanical operation of bells. Many of the chimes, peals and single bells which leave our foundry are now equipped to be operated from keyboards or pushbuttons; also from automatic clock-controlled chiming, quarter striking, and Angelus selectors.



Tolling, Hour and Angelus Bell

**WEIGHTS, TONES AND SIZES OF CHURCH BELLS**

Specifications of Smaller and Larger Bells on Request

| Bell | | | | Mountings | | |
|---|---|---|---|---|---|---|
| Weight, lbs. | Medium tone | Size, in. Diam. | Hgt. | Size of frame outside ft. in. ft. in. | | Diam. of wheel ft. in. |
| 400 | D | 27 | 23 | 3 | 5x3 8 | 4 4 |
| 450 | C sharp | 28 | 24 | 3 | 5x3 8 | 4 4 |
| 500 | C | 29 | 24 | 3 | 5x3 8 | 4 4 |
| 600 | B | 31 | 25 | 3 | 8x3 11 | 4 9 |
| 700 | B | 33 | 27 | 3 | 11x4 2 | 4 9 |
| 800 | B flat | 34 | 28 | 3 | 11x4 2 | 5 6 |
| 900 | A | 36 | 29 | 4 | 2x4 6 | 5 9 |
| 1000 | A | 37 | 31 | 4 | 2x4 6 | 5 9 |
| 1200 | A flat | 39 | 33 | 4 | 8x4 9 | 6 3 |
| 1500 | G | 42 | 36 | 4 | 10x4 10 | 6 6 |
| 1800 | F sharp | 45 | 37 | 5 | 5x5 7 | 7 0 |
| 2000 | F | 46 | 39 | 5 | 5x5 7 | 7 0 |
| 2500 | E | 50 | 41 | 5 | 9x6 0 | 7 0 |
| 3000 | E flat | 53 | 43 | 6 | 4x6 8 | 7 8 |
| 3500 | D | 56 | 45 | 6 | 4x6 8 | 7 8 |
| 4000 | C sharp | 58 | 47 | 7 | 4x7 2 | 8 6 |
| 4500 | C | 61 | 49 | 7 | 4x7 2 | 8 6 |
| 5000 | C | 63 | 50 | 7 | 4x7 2 | 8 6 |
| 6000 | B | 67 | 53 | 7 | 4x7 2 | 8 6 |
| 7000 | B flat | 69 | 56 | 8 | 11x9 2 | 9 6 |



Bell Cote Installation

*We will gladly send list of local installations of our bells*

# FRED MEDART MANUFACTURING CO.

Gymnasium and Playground Apparatus, Gym Seats, Swimming Pool Equipment

326 W. Madison Street, CHICAGO, ILL. | Potomac and DeKalb Streets, ST. LOUIS, MO. | 16 W. 61st Street, NEW YORK, N. Y.

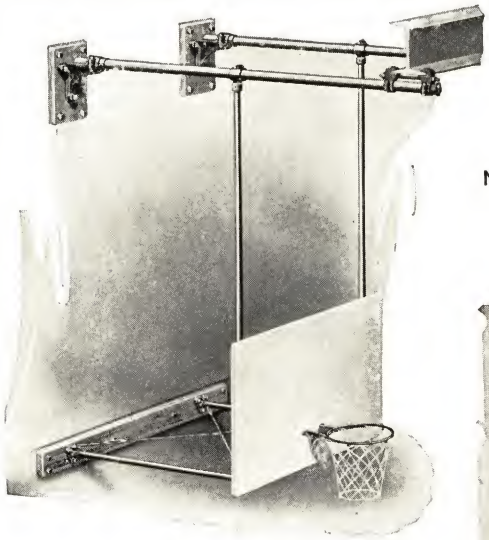
Engineering and Sales Service in Principal Cities

For Medart Steel Lockers, Steel Wardrobes and Gym Seats, see File Index

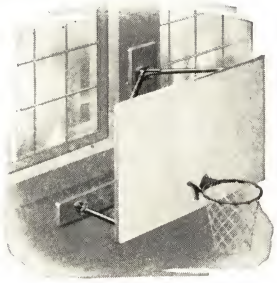
## GYMNASIUM APPARATUS AND BASKET BALL BACKSTOPS

Basket Ball Backstop installations for new buildings require specialized engineering. Girder fittings, extensions, drops, guys, braces, and hoisting devices are planned according to individual structural conditions. Reinforced concrete beams and suspended plastered ceilings require advance planning of the correct type and number of pipe hanger girder fittings for both Backstops and Suspended Gym Apparatus. Such fittings should be specified in the general building contract so as to be in place before concrete is poured or ceilings closed in. A few standard Medart Backstops are shown on this page.

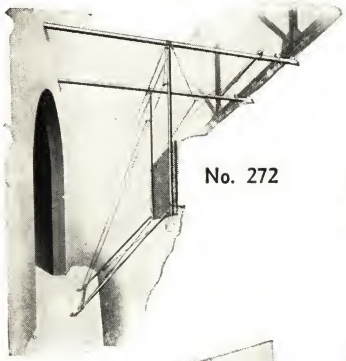
The Medart Engineering Department will completely plan Backstop installations for architects without cost or obligation. Send floor and elevation prints.



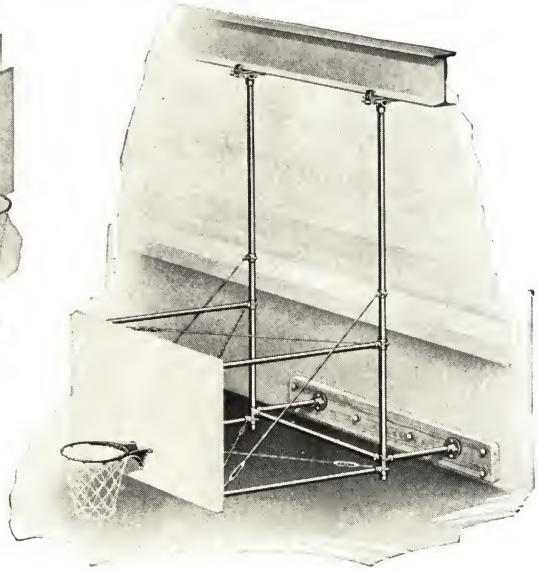
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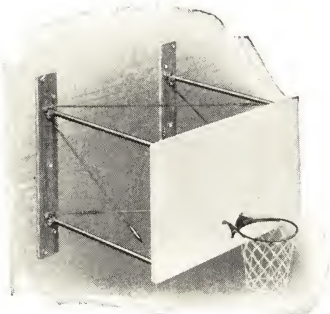
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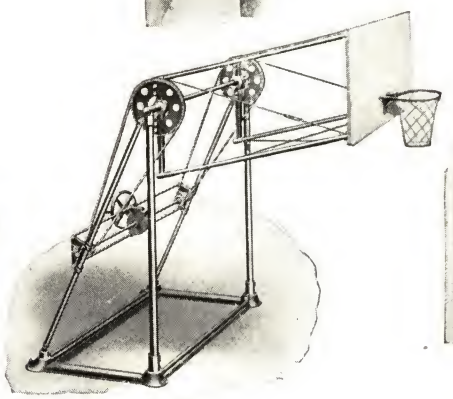
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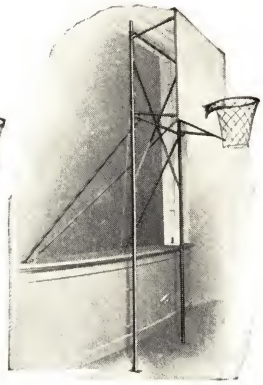
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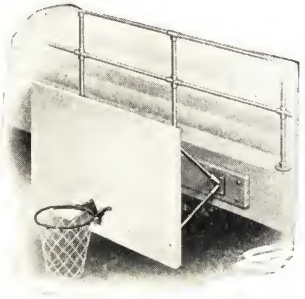
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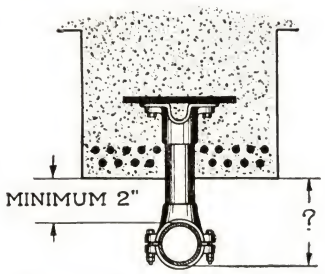
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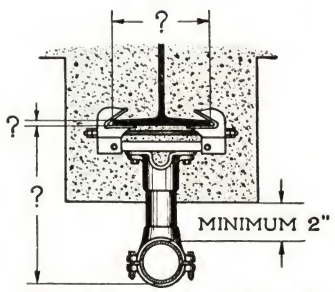
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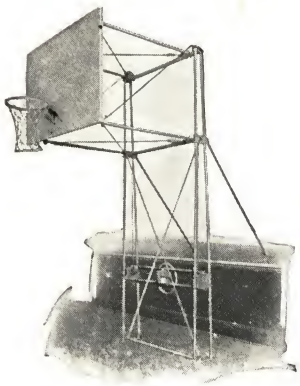
No. 271




Concrete Beam Fitting No. 294




Enclosed I-Beam Fitting No. 325



No. 460

### Catalogs

**Catalog** BB-1 is devoted entirely to Basket Ball Backstops; Catalog G-3 to Gym Equipment; Catalog P-3 to Playground Apparatus; Catalog GS-1 to Gym Seats, Catalog WS-1 to Pool Equipment, Catalog L-5 to Steel Lockers, and Catalog LR-2 to Steel Wardrobes. Sent free on request.

ESTABLISHED 1909

# BABCOCK-DAVIS CORPORATION

## Manufacturers of Folding Semi-permanent and Permanent Grandstands

474 Dorchester Avenue, BOSTON, MASS.

### PRODUCTS AND SERVICES

SELF-BALANCED GYMSEATING.

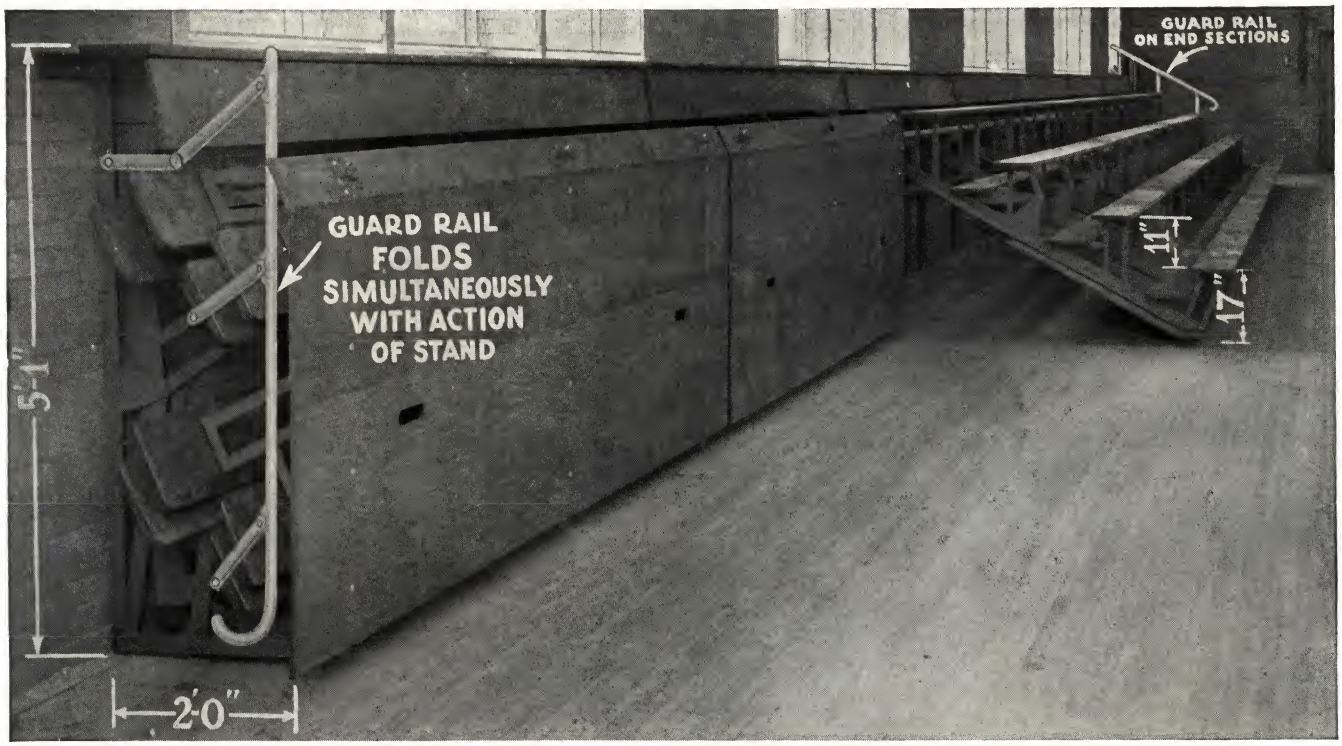
Specialists in Motor-Operating Doors, Windows, Walls, Ceilings, Roofs, Stages, Curtains, Blackboards, and other movable parts or structures.

Our Engineering Department is always ready to furnish layouts, preliminary estimates and specifications where our equipment is to be used. It is imperative, to insure complete and satisfactory installations, that we be advised of a project in its early stages so that the proper clearance, framing and surrounding architectural details may be studied and designed before construction is started.

For our pages on Scuttles, Drives for Hangar Doors, and Flag Poles, see File Index

## SELF-BALANCED "GYMSEATING"

(Patented)




**"Gymseating" Curtis High School, St. George, Staten Island—New York City Board of Education**

End enclosure removed to show how compactly the seats are folded and clearance under the seats when opened

### Easily Operated

*No Springs, Gears, Pulleys, Cables, Worm Screw or Drives*

"Gymseating" provides for: (1) Correct vision—proper rise between seats. (2) Absolute safety to spectator and operator—automatic lock. (3) Permanent folding guard rail at open ends. (4) Self-balancing, easy to operate. (5) No rollers to damage or mark floor. (6) Panel on stand can be made to match the wainscot. (7) Panel enclosure does not touch the floor at any time. (8) When folded takes less height and floor space. (9) Easily cleaned because of ample space below stands; permits entire floor to be cleaned. No obstruction on floor. (10) Adequate circulation of air around radiators or heat units. (11) Protection against ball going behind stand. Completely enclosed.

**DIMENSIONS**

| Size | When Open | | Rise per Row, in. | When Folded | |
|---|---|---|---|---|---|
| | Height, ft. in. | Depth, ft. in. | | Height, ft. in. | Depth, in. |
| 4-row | 4 2 | 6 7 | 11 | 4 2 | 24 |
| 5-row | 5 1 | 8 4 | 11 | 5 1 | 24 |
| 6-row | 6 0 | 10 4 | 11 | 6 0 | 24 |
| 7-row | 7 1½ | 12 0 | 11 | 7 1½ | 27 |

Standard sections 12 ft. long. Distance between rows, 22 in.

### A Few Installations

Lee High School, Lee, Mass.—Morris W. Maloney, Architect
Montgomery High School, Montgomery, N. Y.—Knappe & Morris, Architects
East Chester High School, Tuckahoe, N. Y.—Tooker & Marsh, Architects
Belleville High School, Belleville, N. J.—Guilbert & Betelle, Architects
La Salle Academy, New York, N. Y.—Delano & Aldrich, Architects



**"Gymseating" at Brooklyn Technical High School, Brooklyn, N. Y.**

Shown supporting a load of 235 lbs. per sq. ft. Test by Testing Laboratories, Bureau of Buildings, City of New York

# UNIVERSAL BLEACHER CO.

Manufacturers of Folding Gymnasium Stands; Portable Bleachers and Portable Grandstands

606 So. Neil Street, CHAMPAIGN, ILL.

## FOLD-A-WAY GYMNASIUM STANDS

### Comfortable, Roomy Seating

Universal Fold-A-Way gymnasium stands are designed to provide comfortable, roomy seating that may be folded away in a comparatively small space. They are completely counter-balanced for one-man operation.

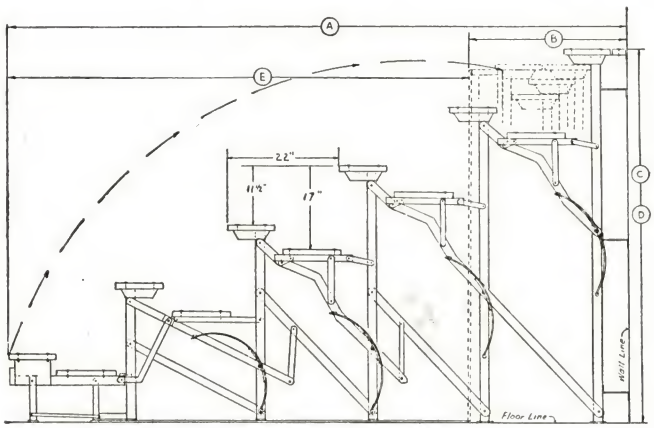


### More Gymnasium Space

When the stands are folded compactly against the wall and shielded with highly finished plywood cabinets, many additional square feet of floor space are made available for physical education classes, basketball practice sessions on cross-courts and other activities requiring a larger space than that of an ordinary basketball court.

### Easy Access for Cleaning

The cabinets on Fold-A-Way stands fold separately, allowing complete access underneath for oiling the various moving parts and for cleaning up the paper, gum wrappers or other fire hazard that might otherwise be inadvertently left to accumulate beneath or behind the stands.




FOLD-A-WAY SIZES

| Rows high | A Depth opened | B Depth closed | C Height in use | D Height closed | E Space gained |
|---|---|---|---|---|---|
| 3 | 4′ 8″ | 1′ 8″ | 3′ 0″ | 3′ 0″ | 3′ 0″ |
| 4 | 6′ 6″ | 1′ 11½″ | 3′ 11½″ | 3′ 11½″ | 4′ 5½″ |
| 5 | 8′ 4″ | 2′ 3″ | 4′ 11″ | 4′ 11″ | 6′ 1″ |
| 6 | 10′ 2″ | 2′ 6½″ | 5′ 10½″ | 5′ 10½″ | 7′ 7½″ |
| 7 | 12′ 0″ | 2′ 10″ | 6′ 10″ | 6′ 10″ | 9′ 2″ |
| 8 | 13′ 10″ | 3′ 1″ | 7′ 9½″ | 7′ 9½″ | 10′ 9″ |
| 9 | 15′ 8″ | 3′ 5″ | 8′ 9″ | 8′ 9″ | 12′ 3″ |
| 10 | 17′ 6″ | 3′ 8″ | 9′ 8½″ | 9′ 8½″ | 13′ 10″ |

### Covered Top

The seat boards nest together in the folded position to form a complete cover over the top of the stand which prevents basketballs, handballs and other objects of this kind from becoming lodged back of the stand.

### Proper and Uniform Rise per Row

The rise per row on Fold-A-Way stands is 11½ in., which means that the sight line of one row of spectators is 11½ in., above the sight line of the row directly below them, assuring perfect vision for every spectator on every row. The rise per row is uniform for all rows and the seat spacing front to back is uniform, both providing the greatest safety for the spectators when walking up and down on Fold-A-Way gymnasium stands.

### Other Fold-A-Way Features

Some of the other more important improvements in folding grandstand design embodied in the Fold-A-Way stand include direct support to the floor under each row, adequate cross-bracing to take care of sway forces, easy access to radiators located behind the stands, and uniform section lengths.

### Estimates

Send us dimensions of spaces available for gymnasium stands or a floor plan, together with the size playing floor to be used. You may obtain different length sections to fill out almost any space and it is advisable to simply specify the space to be filled and let us make the division into section lengths.

It is advisable to provide as substantial a wall as possible for the attachment of the stands and have as few exits or low windows as possible along wall to which stands are to be fastened.

Radiators behind the stands are not advisable as they interfere to some extent with the stands and cause discomfort to spectators.

Folding grandstands take the same classification that lockers do as regard to finish and therefore the matching of interior finish is unnecessary. Specify our standard finish which is red oak stain with one coat of shellac and two coats of spar varnish with proper sanding and rubbing between coats. Metal parts school furniture brown.

### Specifications

We will gladly furnish typical specifications for use in obtaining competitive bids.

### Installations*

Andover, Mass., Jr. High School
Bellport, L. I., N. Y., High School
Bismarck, N. D., High School
Caldwell, Ida., High School
Immaculata High School, Chicago, Ill.
St. Bernard School, Chicago, Ill.
Y. M. C. A., Daytona Beach, Fla.
Washington Normal School, Machias, Me.
Rumson, N. J., High School
Carver Jr. High School, Tulsa, Okla.
Beaty Jr. High School, Warren, Pa.
Weedsport, N. Y., High School

**Partial list of recent installations.*

# WAYNE IRON WORKS

## Manufacturers of Folding Indoor Grandstands, Outdoor Steel Sectional Grandstands, Permanent Stadia, Fencing of All Types

100 Arch Street, WAYNE, PA.

Wayne Steel Grandstands made in types to meet any condition for sport spectators. A few are illustrated. Designed and constructed according to requirements of States, the standard specification of the American Institute of Steel Construction and U. S. Forest Products Laboratory data.

### Safety

*Safety* is the first consideration, combined with *durability, comfort* and *highest quality of material and workmanship.*

### Wayne Portable Grandstands

Wayne Portable Stands quickly erected or removed without use of tools, adapting them for use in many different places for sports and entertainment.

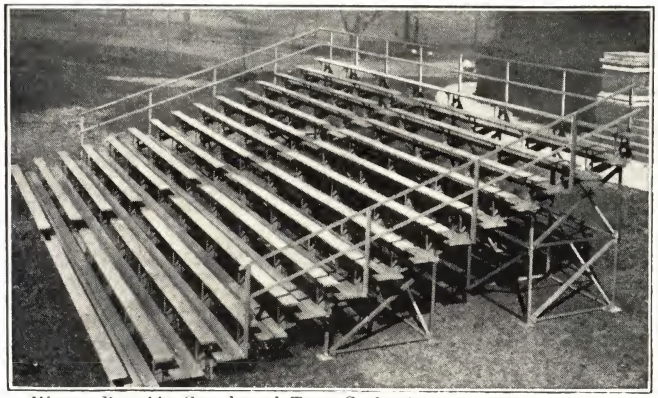
WAYNE STANDS for SAFETY

### Wayne Permanent Grandstands

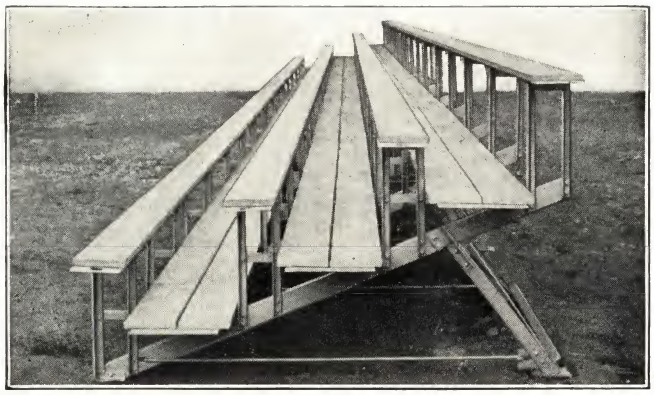
Wayne Permanent Grandstands specially designed to meet local ground conditions and requirements.

### Folding Gymstands

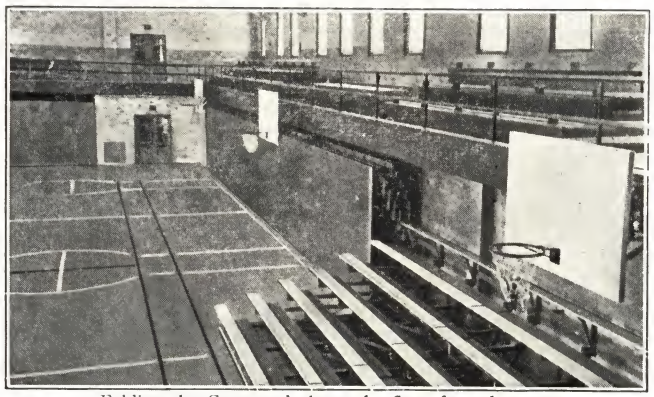
We were the first to design, manufacture and install the Folding Gymstands that open for use or fold for storage in one operation by one man. This makes instantly available valuable area for physical education classes. Our engineering experience is available to architects, or any others interested in sport seating.



Wayne Portable Grandstand Type G, for large attendance outdoors



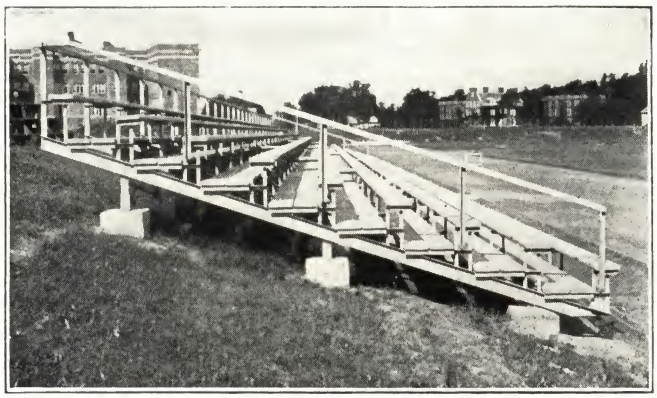
Wayne Portable Grandstand Type C, for compact seating, indoors or out



Folding the Gymstand clears the floor for other uses



Wayne Folding Gymstand makes seats instantly available



A Wayne Permanent Stand, built to conform to slope of the bank



A Complete Stadium, designed, constructed and erected by Wayne

Wayne Folding Gymstands installed in more than 200 schools, colleges, etc., throughout the United States. There are over 750 owners of Wayne Portable and Permanent Grandstands, including schools, colleges, playgrounds, auditoriums and municipalities. This means 429,933 seats

# AMERICAN PLAYGROUND DEVICE CO.

## Swimming Pool and Playground Equipment

ANDERSON, INDIANA, U. S. A.

### Products

SWIMMING POOL EQUIPMENT, including Pool Ladders, Slides, Diving Units, Springboards, Official Regulation Diving Boards, Life Guard Chairs, Life Lines and other equipment incidental to the well equipped pool.

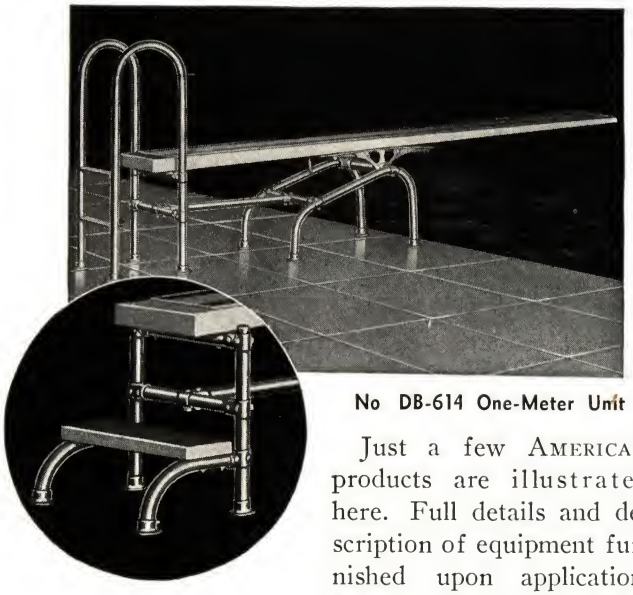
Playground Apparatus; Floodlights; Foot Baths for Athletes Foot.



No. DB-2016 Three-Meter Unit



No. N-16 Pool Walk Slide



No DB-614 One-Meter Unit

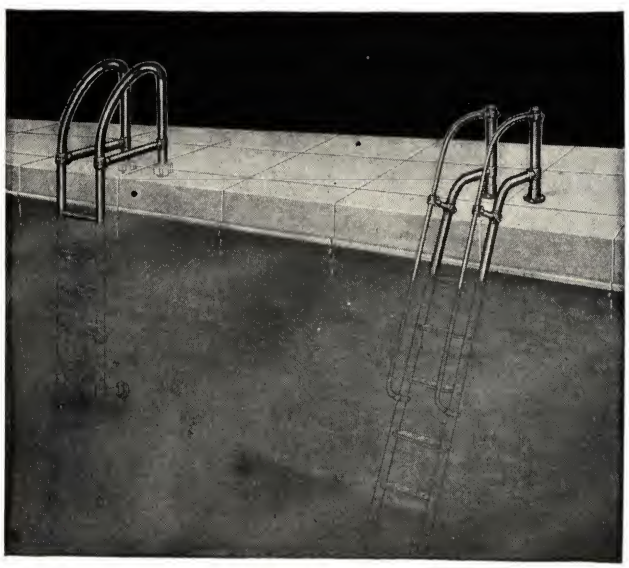
Just a few AMERICAN products are illustrated here. Full details and description of equipment furnished upon application. AMERICAN Swimming Pool Equipment meets all requirements of N.C.A.A. and A.A.U.

### Design and Performance

AMERICAN Equipment is unsurpassed for performance and design. Used and endorsed by leading pool operators from coast to coast. More than a quarter century of experience in producing highest quality products is the reputation behind the AMERICAN line.

### Catalogs and Blue Prints

Complete catalogs and blue prints showing illustration, description and detail of AMERICAN products will be gladly furnished upon application.



Pool Ladders

# RECREATION EQUIPMENT COMPANY

Manufacturers of Swimming Pool and Playground Equipment

ANDERSON, INDIANA

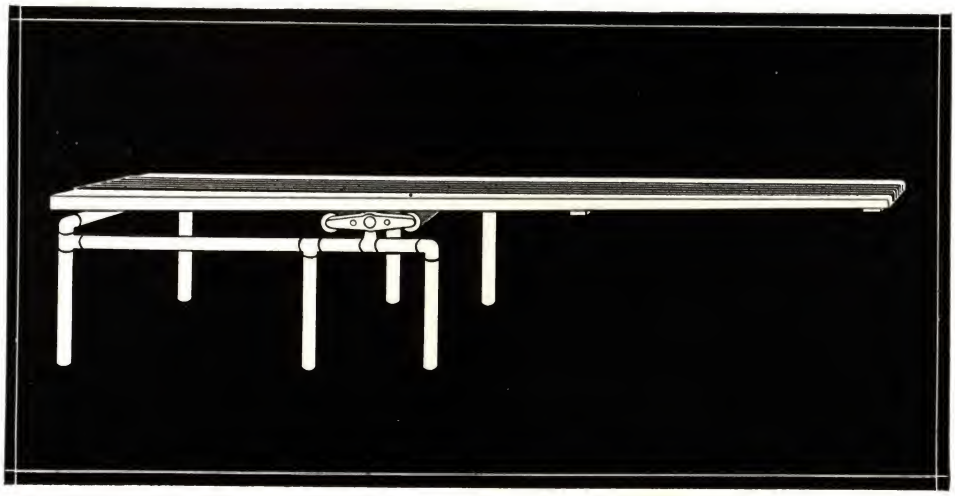
**For Beach and Pool**

Pool Ladders, Diving Board Outfits, Diving Towers, Water Slides, Life Lines, Life Guard Chairs, Racing Lines, Pool Cleaning Devices, Diving Mask Outfits, Cocoa Matting, Umbrellas, Life Buoys.

THE **RECREATION** LINE

**For the Playground**

Climbing Gyms, Swing Sets, Slides, Gym Combinations, Giant Strides, See-Saw Boards, All-Metal Tennis Nets, Basket Ball Outfits, Horizontal Ladders, etc.



**The Most Important Improvement in Recent Years**

The Dual Fulcrum should double the life of the boards, at the same time giving the satisfaction of perfect action. Investigate the principles underlying the design and construction of the "Recreation" Dual Fulcrum

## OFFICIAL AND REGULATION ONE-METER DIVING OUTFIT WITH DUAL FULCRUM

**Materials**

Standard materials are hot galvanized steel and malleable iron. Bolts are cadmium plated. No threaded pipe or fittings used, except on special order. We thus avoid rust and breakage at the threads. Polished brass and chromium plated brass furnished when desired. We also supply chromium plate over hot galvanized steel and malleable iron.



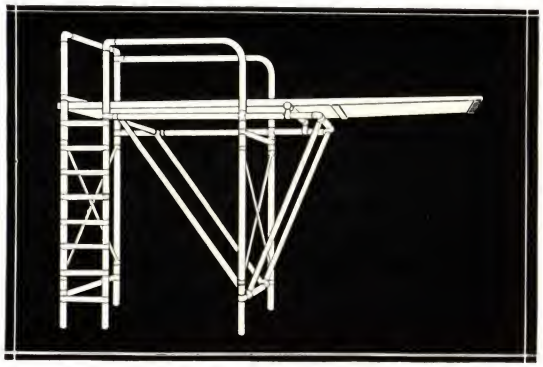
**Pool Edge Slide**
Many designs and sizes offered

**Many Options in Design**

Choice as to type of Diving Board Frames is offered, to meet different conditions. Frames made of 1½ or 2-in. inside diameter pipe.

Either one-piece or laminated boards, all of official dimensions, furnished at difference in price.

Adjustable fulcrums, either single or dual.



**Special Three-Meter Outfit With Overhang Frame**

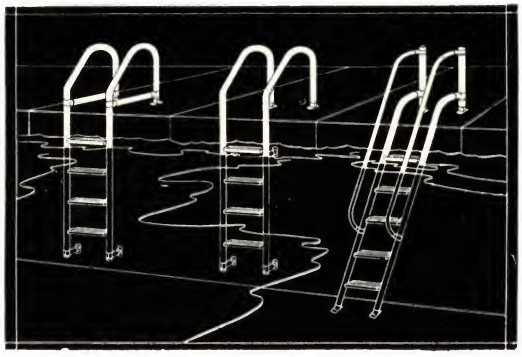
**Official Score Card**

For judging diving.

Free for the asking, in whatever number desired.

Write for a supply of these heavy, tagboard score cards. They are a great convenience.

*Write for catalog.*



**Pool Ladders**
All styles and materials

ESTABLISHED 1888

# VAN ARSDALE-HARRIS LUMBER CO., INC.

SOLE MANUFACTURERS OF

## "Brandsten" International and Intercollegiate Official Springboard Equipment

Fifth and Brannan Streets, SAN FRANCISCO, CALIF.

### NEW "BRANDSTEN" AUTOMATIC ADJUSTABLE FULCRUM SPRINGBOARD (PATENTED)

*The Only Springboard Used at Olympic Games—Antwerp, 1920, Paris, 1924, Amsterdam, 1928, Los Angeles, 1932, and at Berlin, 1936. The United States Diving Teams Both Men and Women Placed First, Second and Third at Each of These Olympiades*

"Brandsten" International and Intercollegiate Official Springboards and Automatic Adjustable Fulcrum and Platforms for one and three-meter diving.

#### General Information

This springboard and Automatic Adjustable Fulcrum is official according to the rules of the Amateur Athletic Union of the United States and its affiliates, also the National Collegiate Athletic Association, the Federation Internationale de Natation and the Amateur Diving Association of Great Britain.

The "Brandsten" International and Intercollegiate Regulation Springboard was originated and designed by Ernst Brandsten—director of aquatic sports, Leland Stanford Jr. University, and coach of the American diving and swimming teams at the Olympic Games at Antwerp, 1920, Paris, 1924, Amsterdam, 1928, Los Angeles, 1932, and Berlin, 1936—in collaboration with Van Arsdale-Harris Lumber Co., Inc.

#### Stocked in One and Three-Meter Height

The new official automatic fulcrum first used at the Olympic Games Diving Events at Los Angeles, California, 1932, has received the enthusiastic approval of the Federation Internationale de Natation, the National Collegiate Athletic Association and the Amateur Athletic Union. Was officially used at Olympic Games, Los Angeles, 1932, and was officially used, Olympics, Berlin, 1936.

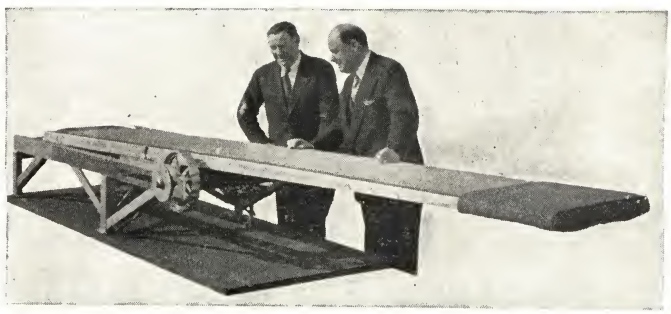
As former disadvantages of a haphazardly fixed fulcrum were studied the need for an easily adjusted, automatic fulcrum became apparent. The spot of greatest resiliency in a wooden springboard varies. The location of this spot also varies according to weight of the particular performer. To synchronize these two elements so that proper timing and height may be attained in the take-off and permit of necessary aerial acrobatics before entering water, was the problem involved.

*The answer to the problem is found in the new Brandsten Automatic Adjustable Fulcrum.*



—World Wide Photo

From a standing position on springboard the individual performer, by a flip of the foot on wheel advances or recedes fulcrum to the proper position for his or her weight or particular dive. Twenty-six different adjustments can be instantly made. Fulcrum can be stopped and locked, if desired, at any one of twenty-six adjustments



**Ernst Brandsten, Olympic Games Coach (Left) and H. W. Handley, Designers of the New Automatic, Adjustable Fulcrum for One and Three-Meter Diving**

Above illustrates one-meter automatic adjustable official fulcrum. *Photograph and drawings of three-meter equipment sent on request*

All working parts are of brass; no lubrication required. No parts that can get out of order.

Write for detailed drawings.

From a standing position on the springboard the individual performer can instantly adjust the new fulcrum by a flip of the foot. In this way board can be made as rigid or limber as height of take-off requires for the performer's particular weight and style. In this way performers of different weights suffer no disadvantage. The show feature of diving events is likewise speeded up.

#### Description

This springboard is a one-piece board, 3 in. thick, 20 in. wide, in 14 and 16-ft. lengths, both of which are official, from *strictly clear specially selected vertical grain Douglas fir* (pseudotsuga taxifolia). This board is not built up or laminated, but is one solid piece. It is tapered to conform to regulations, cleated, bored, oil treated and tested and will not warp, swell or shrink. ("Brandsten" International and Intercollegiate regulation Springboards installed fifteen years ago are still in use.)

#### Service to Architects

Complete working details of plans and specifications of springboard and fulcrum equipment for both the 1-meter height from water line, and diving platform with adjustable fulcrum for the 10-ft. height from water line, will be supplied to architects and engineers upon request without charge.

#### References

*Any champion diver, expert or coach in America or abroad.*

*The Federation Internationale de Natation.*

*The Amateur Athletic Union.*

*The National Collegiate Athletic Association.*

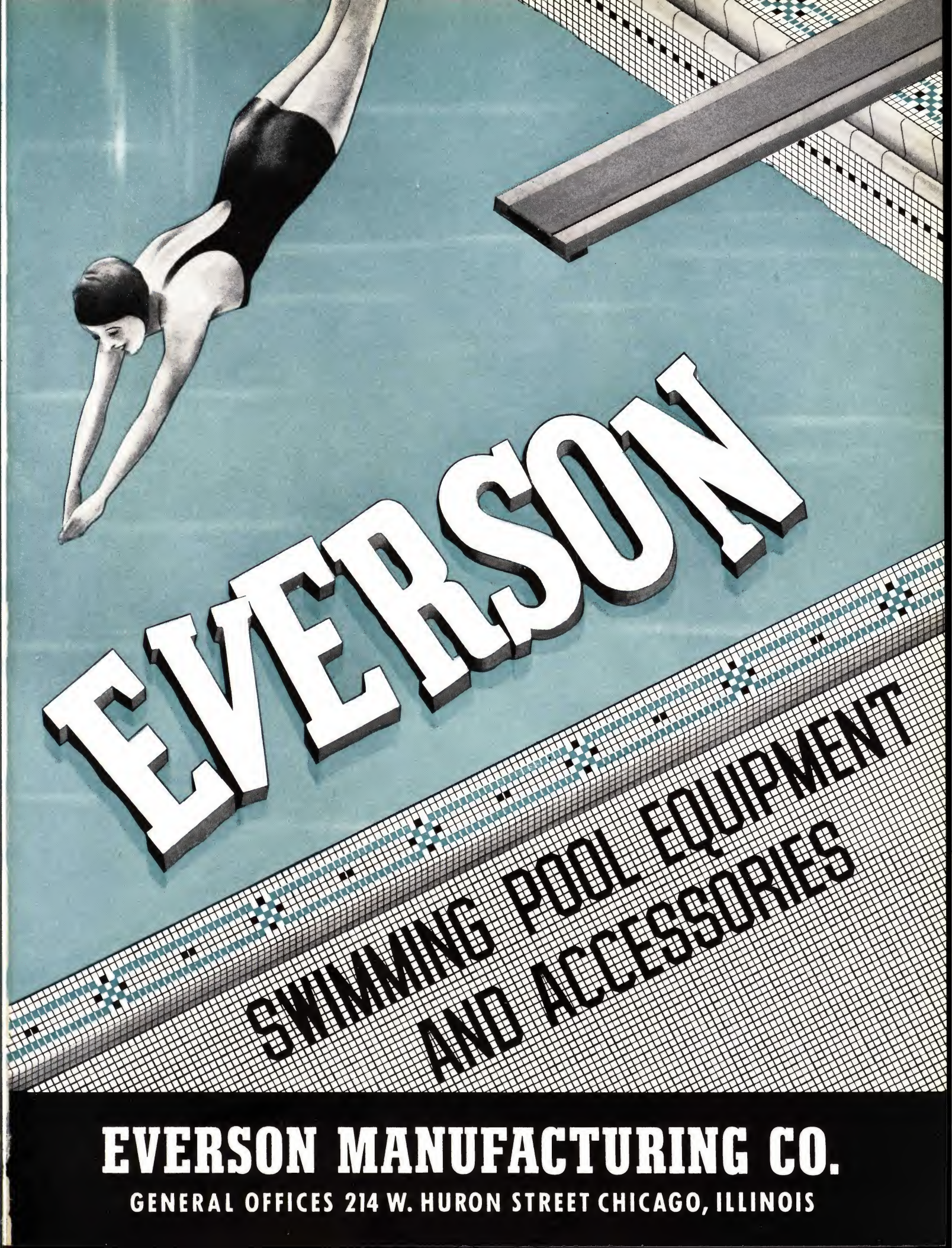
*Olympic Games Swimming and Diving Committee.*

### A Few Prominent Installations

More than twenty-five hundred of our springboards are in use all over the world. A few prominent installations follow:

| Universities | Athletic Clubs | Hotels | Amusement Parks |
|---|---|---|---|
| Yale | Olympic Club, San Francisco | Hotel Del Monte, Monterey | Fleishhacker Pool, San Francisco |
| Princeton | New York Athletic Club | Sovereign Hotel, Chicago | Messina Transvalle Development Co., Lourenco Marques, Messina, South Africa |
| Harvard | Westchester-Biltmore Country, Rye, N. Y. | Ambassador Hotel, Los Angeles | Kennywood Park, Pittsburgh |
| Pennsylvania | Buffalo Athletic Club | Webster Hall Hotel, Detroit | Castle Baths, Long Beach, N. Y. |
| Columbia | Palm Beach | Yosemite Park, California | Broad Ripple Pool, Indianapolis |
| U. S. Military Academy | Bath and Tennis Club | Battle Creek Sanitarium | Temple Terrace Casino, Tampa |
| U. S. Naval Academy | Detroit Athletic Club | Feather River Inn | Rock Point Amusement Park, New York |
| Dartmouth | Toledo Club | Fairmont Hotel, San Francisco | Boulevard Recreation Co., Philadelphia |
| Syracuse | Hollywood Athletic Club | Hotel Flanders | Olympia Games Stadium, Berlin |
| New York | Omaha Athletic Club | White Sulphur Springs | City of Melbourne, Australia |
| Minnesota | | Santa Barbara Biltmore | |

***We still stock Manually Adjusted Fulcrums.***




# EVERSON MANUFACTURING CO.

GENERAL OFFICES 214 W. HURON STREET CHICAGO, ILLINOIS



# SWIMMING

## POOL EQUIPMENT, ACCESSORIES AND SUPPLIES

Safety Electric Sterilizers
Solution Feed Sterilizers
Water Clarification Filters
Underwater Lights
Suction Pool Cleaners
Water Level Control
Special Design Pool Fittings
Suction Pumps
Self-Contained Flood Lights
Swimming Pool Drains
Strainer for Hair and Lint
Recirculating Pumps
Chemical Feeders
Observation Windows
Testing Sets
Water Heaters
Pool Ladders
Diving Boards
Natatorium Slides
Safety Equipment
Foot Baths
Tested Chemicals
Electric Water Coolers
Chlorine Feeders

### EVERSON EXPERIENCE AND LEADERSHIP

During its quarter of a century of leadership, Everson has contributed more to the betterment of swimming than any other institution. Everson pioneered and developed complete equipment for swimming pool filtration and sterilization systems. Everson made the sterilization of water safe with the Everson Safety Electric Sterilizer. Everson created Underwater lighting — a development that has doubled the usable hours of pools. And, through the years, Everson laboratories and engineers have developed and sponsored innumerable refinements in pool equipment. Truly, the name Everson is today recognized as the logical source for "anything for the swimming pool."

### EVERSON SERVICE TO ARCHITECTS

Everson maintains an adequate staff of engineers and experts thoroughly experienced in the design and construction of every type of swimming pool. This staff — built up during a quarter century of specialization in swimming pool equipment — is ready to serve you at all times. Architects and engineers are invited to avail themselves of this service. Advice and information are given without obligation or charge. And, when desired, detailed drawings and estimates are gladly furnished.

Consult Everson first. Here you'll find the correct solution for every problem of pool design, construction, maintenance, and operation.

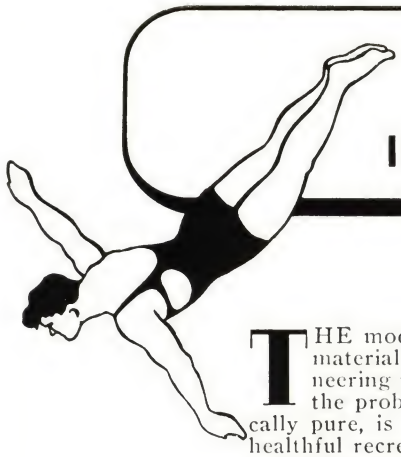
CATALOG No. 1128

# EVERSON MANUFACTURING COMPANY

214 W. Huron Street

CHICAGO ILLINOIS

EVERSON · THE SWIMMING POOL PEOPLE · 2



# ESSENTIAL FACTORS

## IN THE DESIGN AND LAYOUT OF SWIMMING POOL SYSTEMS

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THE modern swimming pool involves considerably more than the placing together of construction materials and filling the tank with water. In reality, it involves all the factors of a sanitary engineering problem. True, questions of location, layout, and construction must be met and solved, but the problem of establishing and maintaining a clean pool with water bacteriologically and chemically pure, is of primary importance. Fundamentally, the swimming pool must be considered a place of healthful recreation where the water supply is scrupulously guarded. Only by incorporating established swimming pool standards in the design of the pool can this ideal be realized.

The Everson organization has worked unceasingly to improve the modern swimming pool. Research work has solved many of the difficult problems and has established essential factors. Thus it is that Everson recommendations are the accepted standards wherever swimming pools are built.

## . . . these are the points to remember

**SHAPES**—Rectangular shapes are best for indoor pools. For outdoor pools use rectangular, circular, U or T shapes, or other variations. Advantages depend upon local conditions. The tendency is to build more than one pool at each location — one for wading, one for depths not exceeding 4 to 5 feet, and another entirely of deep water for swimming and diving.

**DIMENSIONS**—Use multiples of 5 feet for width and 15 feet for length. For Olympic requirements use multiples of 5 feet for width and 25 meters for length.

**DEPTHS**—Provide 3′6″ minimum at shallow end. Provide 10 to 12 feet depth at 15 feet from end of pool. These depths accommodate 3 meter or 10 feet high dive.

**BATHING LOADS**—Figure 12 persons within 10 ft. radius of each board, 27 sq. ft. for swimmers, 10 sq. ft. for bathers. Water over 5 ft. to be considered swimming area. Allow 12 feet of free and unobstructed head room above diving boards. Any space around pool for spectators should be absolutely separated from space used by bathers or swimmers.

**WADING POOLS**—Wading area shall be separate from swimming pool. Source water to come from filtration system but not recirculated. Wading pool to be entirely emptied and cleaned daily.

**PIPING SYSTEM**—Provide for the following: Filling of pool, circulation of pool water, washing of individual filters, filter to waste, operation of suction cleaner and discharge to sewer, emptying of pool, overflow drainage, regulation of flow through pool inlets. See Everson Adjustable Flow Inlet fitting.

**WATER SUPPLY**—A direct connection of potable water supply is prohibited. To accomplish broken connection, install Everson's open surge tank or vacuum break. Overflow drains shall surround entire pool; fittings to be placed on 10 ft. centers. Inlets shall be located on 20 ft. centers around perimeter of pool, to obtain effective circulation. Main drain fittings shall be placed at lowest point in pool not over 10 ft. from side walls and on 20 ft. centers. A trench grating is advisable for all open air pools.

**FILTRATION**—For clarification, equipment shall be of sufficient capacity to provide turnover of pool capacity once in every 4 to 8 hours, based on filtration rate of 3GPM per sq. ft. for pressure filters, and 2GPM for gravity filters. Make-up of battery of 3 or more filters recommended. Backwash rate for filter should be equal to 12 to 15 GPM per sq. ft. of filter area of filter. Because recirculating pump must deliver this supply, battery of 3 or more filter units is recommended.

**STERILIZATION**—Various methods are set forth, but chlorine in one form or another is recommended because of effective results and simplicity in taking tests. In indoor pools the electric sterilizer eliminates the necessity of separate vaults with fans and vents.

**RECIRCULATING PUMP**—Locate below pool water level to insure priming. Any pump located above pool-water level shall be self-priming.

**HEATING**—On indoor pools, heating apparatus should be installed. Blowing steam directly into pool water or placing coils in pool water are not permitted.

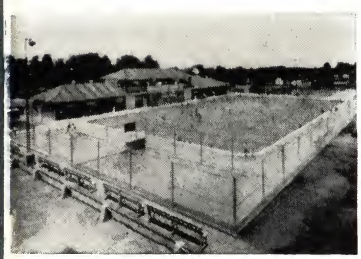
**COOLING**—Frequently, the temperature of the source of supply reaches 90 degrees. To maintain a uniform temperature of approximately 75 degrees, a cooling unit is advisable.

**UNDERWATER LIGHTS**—Locate in both side walls on 10 ft. centers, starting not over 7½ ft. from either end.

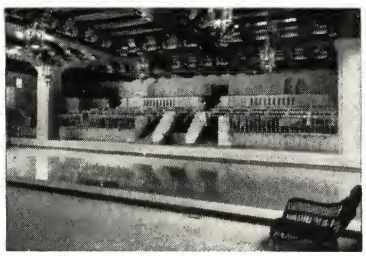
**SUCTION CLEANER**—Should be provided, operated by circulating pump or special portable self-priming pump, the latter for large outdoor pools.

**DIVING BOARDS**—Provide regulation one-meter and three-meter stands and boards.

**LADDERS**—Locate in side walls of pool near ends; on indoor pools provide 4 ladders; on outdoor pools, locate ladders on 50 to 75 ft. centers for depths. Ladders of recess or built-in type are preferable.









# THE RECIRCULATING SYSTEM

## PIONEERED BY EVERSON

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Pioneered by Everson, the recirculating system of pool water purification ended the era of swimming tanks, and made possible the modern pools of today.

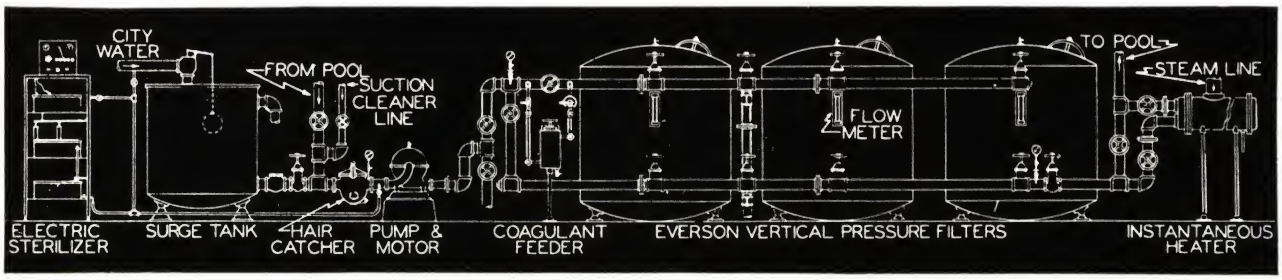
With the Everson Recirculating system, every pool — indoor and outdoor — is an ideal swimming pool, with clear, sparkling water. The sides and bottom are free from deposit or dirty film — hygienically safe and inviting.

An examination of the diagram below will explain how the Everson Recirculating system functions. Briefly, the system operates as follows: Motor driven pumps draw the water from the pool through Outlet Fittings and Strainers. Sterilizing solution is here fed into the line. It is also fed to lines feeding directly to Inlets. The pump then forces the sterile water through the filters and back into the pool through Inlet Fittings. Pure and fit to drink, the water meets every requirement of Municipal, State, and Federal Health Department specifications.

It must be apparent that under the Everson system, filter beds remain sterile — do not become infected breeding places for bacteria. Unquestionably, this system keeps the water pure at all times.

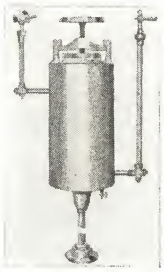
The Everson Recirculating system is furnished for installation complete as shown, or the units and fittings can be obtained separately.

**EVERSON FILTERING AND STERILIZING SYSTEM FOR AN INDOOR POOL**



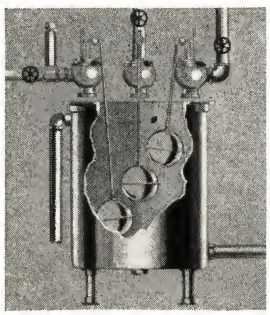

## EVERSON FILTERING EQUIPMENT MAKES THE POOL MODERN

This invention definitely prevents any swimming pool water from backing up, syphoning, or coming in contact with the city water supply, thereby conforming to the recommendations of the highest authorities on sanitation. It is furnished in various sizes and capacities, and supplied with balanced float-controls on the city-water and return lines from the pool, and becomes a part of the recirculating system. The Everson Hair and Lint Catcher consists of a strainer basket encased in cast iron and placed in the suction line of the pump. It prevents coins, marbles, hair, lint, etc., from clogging the pump and from entering the filters. All water passes through while all objectionable matter collects in the strainer. When the basket becomes clogged, it is easily taken out and cleaned.



**ALUM POT COAGULATOR**

The assembly of an efficient filtering system is a specialized function of the Everson engineers. In addition to all standard equipment, Everson is prepared to provide many special items, such as the filter controls listed here.



**WATER LEVEL CONTROL**

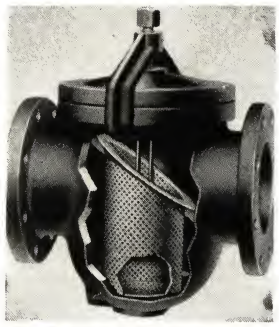
**Alum Pot Coagulator**—This unit dissolves and feeds alum to the filter bed where it fills minute openings between particles of the bed — thus increasing filtering efficiency.

**Pressure Gauges**—Properly placed, these gauges give an instant check on the operation of all units.

**Strainers**—Improved new T type, non-clogging strainers. Provided in several sizes.

**Rate of Flow Indicator**—Registers rate of flow—a measure of output.

**Sight Glass**—For observing condition of water during filtering or back-washing.



**HAIR AND LINT STRAINER**

**SELECTION TABLE FOR CIRCULATING EQUIPMENT**

| Pool capacity | Filters | Sterilizer | Hair catcher | Pump capacity | Space requirements |
|---|---|---|---|---|---|
| 50,000* | 3-48″ diam. V | E-6 | 4″ | 110 GPM. | 20′x15′x 8′ high |
| 75,000* | 3-60″ " V | E-6 | 4″ | 160 " | 25′x15′x 8′ " |
| 100,000 | 3-66″ " V | R-51 | 4″ | 210 " | 25′x15′x 8′ " |
| 150,000 | 3-84″ " V | R-52 | 6″ | 325 " | 30′x15′x 8′ " |
| 200,000 | 3-90″ " V | R-52 | 6″ | 420 " | 30′x15′x 8′ " |
| 300,000 | 4-96″ " V | R-53 | 8″ | 625 " | 35′x17′x10′ " |
| 400,000 | 3-8′x12′ H | R-54 | 8″ | 850 " | 35′x20′x10′ " |
| 500,000 | 4-8′x12′ H | R-55 | 8″ | 1050 " | 40′x20′x10′ " |

*Indoor.

# EVERSON FILTRATION EQUIPMENT



*Produces crystal-clear water with the utmost economy*

## SELECTING THE PROPER FILTER

Nearly every filtration project requires an individual type of filtering system. In determining the type of filter to be used, one thing should be considered paramount—the most efficient method for clarification of the water. Satisfactory filtration service can be secured only when all conditions have been analyzed. Yet certain refinements have a distinct bearing upon the ultimate results. The arrangement of the interior underdrainage system and strainer valves, the quality of the filter material, pipe sizes, backwashing facilities, and the design of the operating manifold, control largely, the life, economy and efficiency of the filter.

## EVERSON FILTER EQUIPMENT ASSURES SATISFACTORY AND ECONOMICAL RESULTS

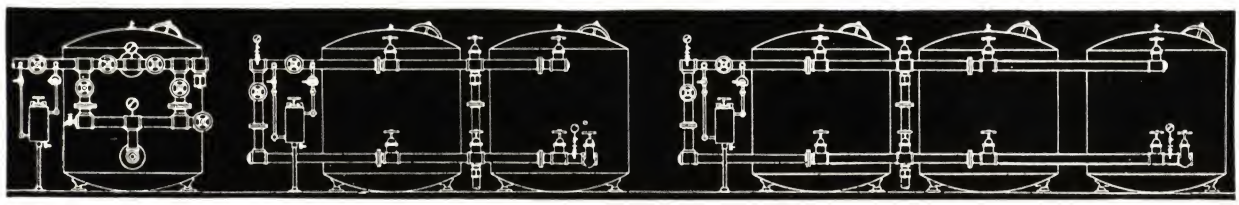
Everson has built and furnished thousands of filter units for swimming pools, industrial plants, theatres, drinking water supplies, etc., and architects and engineers can be assured of satisfactory and economical results by specifying Everson standard units to meet capacity requirements.

Occasionally some water filtration project presents problems as to type and construction of filters, and the specialized engineers of the Everson organization welcome inquiries. A table setting forth capacities of battery of one, two, or three filters based on a filtration rate of 3 G.P.M., per square foot of filter area is given below for ready reference. Because of regulations set forth by a majority of State Health Departments governing swimming pools, it is recommended that consideration be given to a battery of three filter units to meet the backwash requirements.

### TABLE OF AREA, CAPACITY, PIPE SIZES AND APPROXIMATE FLOOR SPACE AND WEIGHTS OF ALL FILTERS

| Diameter of filter | | 30″ | 36″ | 42″ | 48″ | 54″ | 60″ | 66″ | 72″ | 78″ | 84″ | 90″ | 96″ | 108″ | 120″ | 8′x10′ | 8′x12′ | 8′x16′ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sq. ft. of filter area | | 4.9 | 7.0 | 9.6 | 12.6 | 16.0 | 19.6 | 23.7 | 28.3 | 33.2 | 38.5 | 44.2 | 50.0 | 63.6 | 78.5 | 77 | 87 | 117 |
| One filter | Cap. G.P.M. | 14.7 | 21.0 | 28.8 | 37.8 | 48.0 | 58.8 | 71.1 | 84.9 | 99.6 | 115.5 | 132.6 | 150.0 | 190 | 235 | 230 | 260 | 350 |
| | Cap G.P.H. | 882 | 1,260 | 1,728 | 2,268 | 2,880 | 3,528 | 4,266 | 5,094 | 5,976 | 6,930 | 7,956 | 9,000 | 11,400 | 14,100 | 13,800 | 15,600 | 21,000 |
| | Cap. G. P. 24 Hr. | 21,168 | 30,240 | 41,472 | 54,432 | 69,120 | 84,672 | 102,384 | 122,256 | 143,424 | 166,320 | 190,944 | 216,000 | 273,600 | 338,400 | 331,200 | 384,000 | 504,000 |
| Two filters | Cap. G.P.M. | 29.4 | 42.0 | 57.6 | 75.6 | 96.0 | 117.6 | 142.2 | 169.8 | 199.2 | 231.0 | 265.2 | 300.0 | 380 | 470 | 460 | 520 | 700 |
| | Cap. G.P.H. | 1,764 | 2,520 | 3,456 | 4,536 | 5,760 | 7,056 | 8,532 | 10,188 | 11,952 | 13,860 | 15,912 | 18,000 | 22,800 | 28,200 | 27,600 | 31,200 | 42 000 |
| | Cap. G.P. 24 Hr. | 42,336 | 60,480 | 82,944 | 108,864 | 138,240 | 169,344 | 204,768 | 244,512 | 286,848 | 332,640 | 381,888 | 432,000 | 547,200 | 676,800 | 662,400 | 768,000 | 1,008,000 |
| Three filters | Cap. G.P.M. | 44.1 | 63.0 | 86.4 | 113.4 | 144.0 | 176.4 | 213.3 | 254.7 | 298.8 | 346.5 | 397.8 | 450.0 | 570 | 705 | 690 | 780 | 1,050 |
| | Cap. G.P.H | 2,646 | 3,780 | 5,184 | 6,804 | 8,640 | 10,584 | 12,798 | 15,282 | 17,928 | 20,790 | 23,868 | 27,000 | 34,200 | 42,300 | 41,400 | 46,800 | 63,000 |
| | Cap. G.P. 24 Hr. | 63,504 | 90,720 | 124,416 | 163,296 | 207,360 | 254,016 | 307,152 | 366,768 | 430,272 | 498,960 | 572,832 | 648,000 | 820,800 | 1,015,200 | 993,600 | 1,152,000 | 1,512,000 |
| Approx. floor space | One | 3′x3′ | 4′x3′ | 4′x4′ | 5′x4′ | 5′x5′ | 6′ x5′ | 6′x6′ | 7′x6′ | 8′x7′ | 8′x7′ | 9′x8′ | 10′x9′ | 10′x14′ | 11′x14′ | 10′x15′ | 10′x17′ | 10′x22′ |
| | Two | 3′x6′ | 4′x7′ | 4′x8′ | 5′x9′ | 5′x10′ | 6′x11′ | 6′x12′ | 7′x13′ | 8′x14′ | 8′x15′ | 9′x16′ | 10′x17′ | 21′x14′ | 23′x14′ | 20′x15′ | 20′x17′ | 20′x22′ |
| | Three | 3′x10′ | 4′x11′ | 4′x13′ | 5′x14′ | 5′x16′ | 6′x17′ | 6′x19′ | 7′x20′ | 8′x22′ | 8′x23′ | 9′x25′ | 10′x26′ | 31′x14′ | 34′x14′ | 30′x15′ | 30′x17′ | 30′x22′ |
| Room height required | | 6′1″ | 8′ | 8′ | 8′ | 8′ | 8′ | 8′ | 8′ | 8′ | 8′ | 8′ | 8′ | 9′ | 9′ | 10′ | 10′ | 10′ |
| Main header supply and outlet pipes | One | 1½″ | 2″ | 2″ | 2½″ | 2½″ | 3″ | 3″ | 3½″ | 3½″ | 4″ | 4″ | 5″ | 5″ | 6″ | 6″ | 6″ | 6″ |
| | Two | 2″ | 2½″ | 2½″ | 3″ | 3″ | 3½″ | 3½″ | 4″ | 4″ | 5″ | 5″ | 6″ | 6″ | 8″ | 8″ | 8″ | 8″ |
| | Three | 2½″ | 2½″ | 3″ | 3″ | 3½″ | 3½″ | 4″ | 4″ | 4″ | 5″ | 5″ | 6″ | 6″ | 8″ | 8″ | 8″ | 8″ |
| Approx. weights of filters | Tank and fittings | 600 | 1,300 | 1,500 | 2,000 | 2,500 | 3,000 | 3,200 | 3,500 | 4,000 | 5,500 | 6,000 | 6,500 | 8,500 | 10,000 | 8,900 | 11,500 | 15,700 |
| | Filter bed | 1,400 | 2,100 | 2,800 | 3,600 | 4,800 | 5,800 | 7,100 | 8,400 | 9,900 | 11,500 | 13,000 | 15,000 | 19,000 | 23,500 | 23,000 | 26,000 | 35,000 |
| | Total | 2,000 | 3,400 | 4,300 | 4,300 | 5,300 | 7,300 | 8,800 | 10,300 | 11,900 | 13,900 | 19,500 | 21,500 | 27,500 | 33,500 | 31,900 | 37,500 | 50,700 |
| | Operating | 3,000 | 4,500 | 6,000 | 8,000 | 10,000 | 12,000 | 14,000 | 17,000 | 21,000 | 25,000 | 29,000 | 33,000 | 41,500 | 53,000 | 47,500 | 60,000 | 82,500 |

### EVERSON FILTERS—SINGLE AND IN BATTERIES

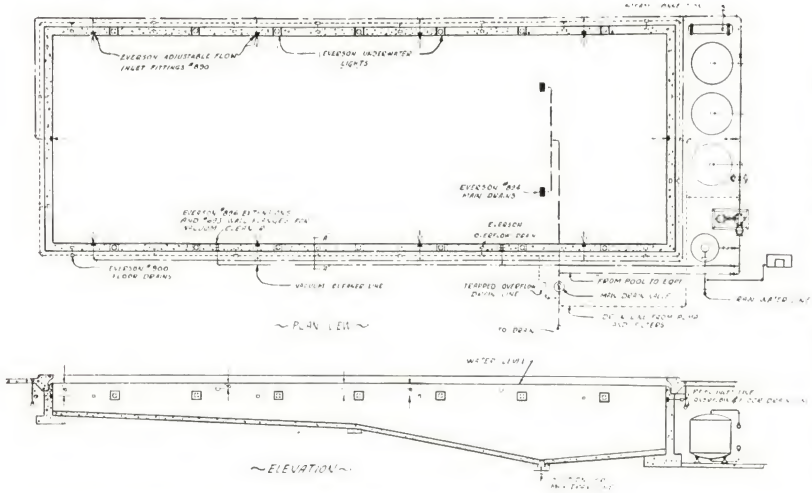


# EVERSON POOL FITTINGS

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*A pool is no better than its fittings*

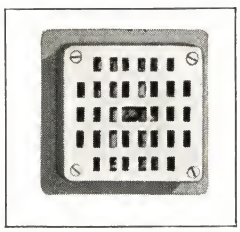
## THE SELECTION AND PLACING OF THE STANDARD FITTINGS FOR




## THE IDEAL POOL

The life of the pool depends on its fittings. For only with properly designed fittings can the water be recirculated efficiently. To insure long life, low maintenance costs and proper operation, architects, engineers and pool operators insist on Everson Pool Fittings throughout. Because Everson Pool Fittings are especially designed for pool use — not just adapted. They embody more than a quarter century of specialized experience in swimming pool equipment. Properly installed, they simplify piping, lower frictional loss, and give trouble-free service for the life of the pool.

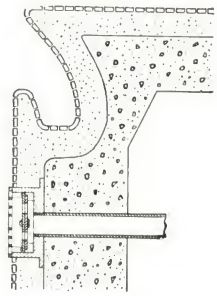
## THE NEW EVERSON ADJUSTABLE FLOW INLET FITTING

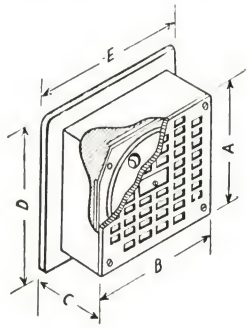


This adjustable flow inlet fitting is truly a new departure from the ordinary inlet fitting. It adapts itself to old pools where new State Health Requirements make necessary the installation of additional inlets. It also adapts itself to new pools where it is desired to distribute accurately the circulating water to all parts of the pool. The new fitting prevents any possible stagnation of water at any point in the pool, and makes unnecessary all other valving in the individual pool inlet line.

Adjustment of the orifice is accomplished through the front grating, and the flow rate can be set for continual operation.

The body of this fitting can be furnished in either cast brass or cast iron japanned or galvanized, with special Cora Metal front plates.

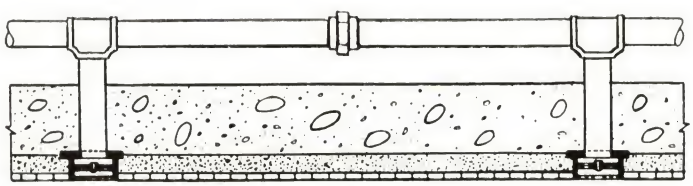


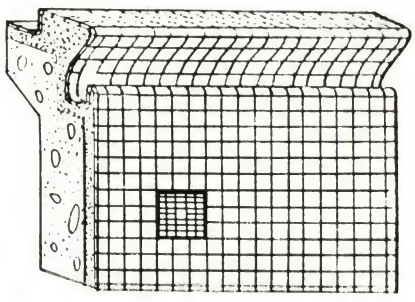



**ADJUSTABLE FLOW INLET FITTINGS**

| Catalogue number | Supply pipe size | Dimen. A | Dimen. B | Dimen. C | Dimen. D | Dimen. E | Total weight |
|---|---|---|---|---|---|---|---|
| 890 | 1¼" | 3¾" | 3¾" | 2" | 4¾" | 4¾" | 4½ lb. |
| 890 | 1½" | 3¾" | 3¾" | 2" | 4¾" | 4¾" | 4½ lb. |
| 891 | 2" | 4¾" | 4¾" | 2⅜" | 5¾" | 5¾" | 7 lb. |
| 891 | 2½" | 4¾" | 4¾" | 2⅜" | 5¾" | 5¾" | 7 lb. |







# SWIMMING POOL DRAINS

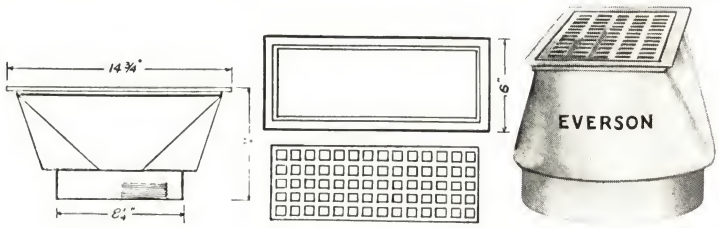
**BY EVERSON**



## MAIN DRAINS . . . . .

### FOR POOL FLOOR No. 894

This large capacity main drain fitting is intended for use as a main outlet from the deep part of the pool to the suction side of the recirculating system. It is designed for permanent and trouble-free installation. The bodies are of one-piece construction and are so designed as to embed themselves in concrete to avoid leakage. Bodies are of cast iron with special Everson Cora Metal strainer plates. This drain is furnished for 6" or less I.P.S. connection, or 6" caulked connection. These drains should be installed in pairs, on 20 ft. maximum centers.

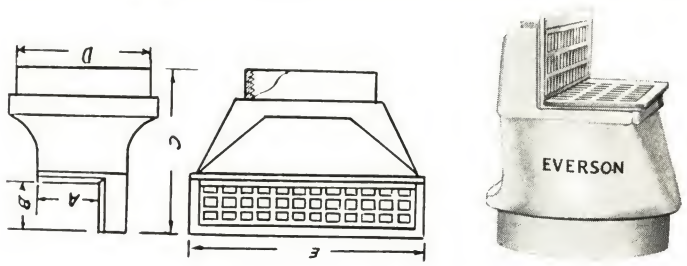



**MAIN DRAINS**

| Catalogue number | Drain pipe size | Total weight |
|---|---|---|
| 894 | 6" Female Pipe Thread<br>6" Caulking Joint | 34 lb.<br>38 lb. |
| 894 | 4" Female Pipe Thread<br>4" Caulking Joint | 42 lb.<br>45 lb. |

### ANGLE FLOOR DRAIN a side wall drain No. 897

No. 897 is a side wall pool drain. It allows the main drain line to extend directly out from the pool wall, if installed in a horizontal position. This drain can be installed with a minimum of excavating. It is ideal for installation in old swimming pools because it can be installed without excavating under the pool floor. No. 897 is furnished with female pipe thread or calking joint. The heavy cast iron body is furnished black japanned or galvanized. Strainer plates come in two pieces finished in polished Cora Metal.



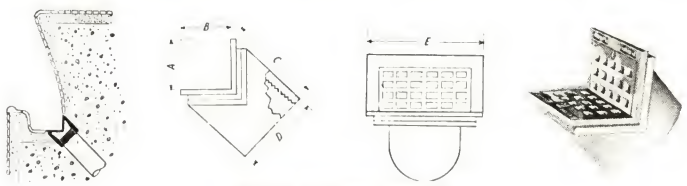

**897 SIDE WALL MAIN DRAINS**

| Catalogue number | Drain pipe size | Dim'n. A | Dim'n. B | Dim'n. C | Dim'n. D | Dim'n. E | Weight |
|---|---|---|---|---|---|---|---|
| 897 | 6" Female Pipe Thread<br>6" Caulking Joint | 4¼" | 3¾" | 10¼" | 8¼" | 14" | 41 lb.<br>45 lb. |
| 897 | 4" Female Pipe Thread<br>4" Caulking Joint | 4¼" | 3¾" | 10¼" | 8¼" | 14" | 49 lb.<br>52 lb. |

## GUTTER DRAINS . . . .

### ANGLE GUTTER DRAINS No. 910 & 918

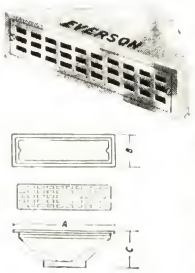
This angle overflow drain for installation in the overflow trough of swimming pools was designed specifically to accomplish a definite purpose. It has a horizontal and vertical grating which allows for quicker flow off of sudden surges of water through overflow trough and also allows for flow off of water in case the openings in the horizontal gratings become clogged for one reason or another. This fitting is made of the same high standard type of construction as other Everson fittings with special Cora Metal face plates, bodies of cast iron or brass.




**ANGLE GUTTER DRAINS**

| Catalogue number | Drain pipe size | Dimen. A | Dimen. B | Dimen. C | Dimen. D | Dimen. E | Weight |
|---|---|---|---|---|---|---|---|
| 910 | 2" | 2" | 2" | 3" | 3" | 4½" | 3 lb. |
| 918 | 2½" | 2½" | 2½" | 3½" | 3¾" | 5½" | 5 lb. |

### FLOOR AND GUTTER DRAIN No. 893 & 900



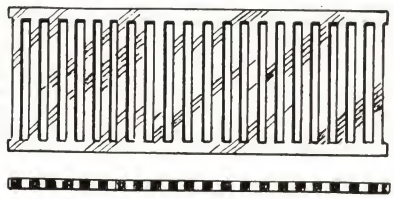

Here is a flat-surfaced floor or gutter drain most applicable for draining splash water from pool walks or other flat surfaces. It may also be used in flat-bottomed gutters as an overflow drain. This drain is made of heavy, durable cast iron, and furnished galvanized or black japanned. Strainer plates are of polished Cora Metal.

**OVERFLOW OR FLOOR DRAIN**

| Catalogue number | Drain pipe size | Dimen. A | Dimen. B | Dimen. C | Dimen. D | Weight |
|---|---|---|---|---|---|---|
| 893 | 2" | 8" | 2" | 2" | 3" | 3½ lb. |
| 900 | 2½" | 9" | 3" | 2½" | 3¾" | 6½ lb. |

### GRATING FOR FLOOR DRAIN TRENCHES

This grating is made of heavy, durable cast iron, and is used to cover a trench drain. It is suitable for any large-volume drain requirement. Furnished in black japanned or galvanized iron and brass.



| Catalogue number | Size | Total area of openings | Weight |
|---|---|---|---|
| 904 | 12x20 | 49 sq. in. | 50 lb. |

# EVERSON SOLUTION FEED CHLORINE STERILIZERS

*Everson builds Chlorine Swimming Pools, Industries,*

21/67

## EMBODYING THE NEW ROTA-METER FOR ACCURATE GAS MEASUREMENT



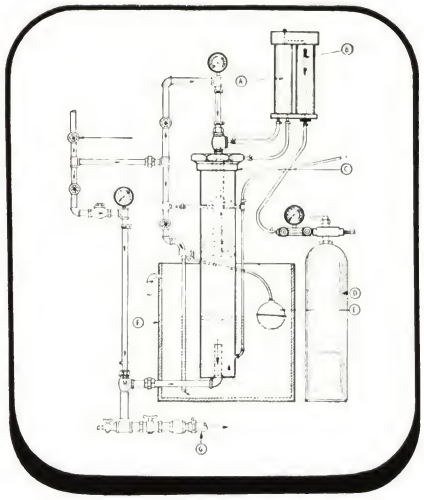
The Rota-Meter is a flow-metering instrument used to measure accurately the flow of chlorine gas. It consists essentially of a tapered, chemical glass tube, and a rota shaped like a top. The rota is placed inside the tube and is held in suspension by the upward flow of the gas. This rota is made of pure silver and is so designed and machined that it maintains a given operating ratio. So accurate are the readings of the Rota-Meter that we guarantee it to vary less than 1%.

The rota operates freely by means of specially shaped slots cut in the head. The gas passing through the Rota-Meter impinges against the head, causing it to rotate.

The area of the annular orifice through which the gas must pass increases as the rota is carried upward by the increased flow of the gas. The position of the rota is therefore in direct relation to the rate of flow.

The tapered glass metering tube is provided with a reference scale to facilitate accurate determination of the rota position. A capacity chart is furnished to compute the scale readings.

### . . . HERE'S HOW IT OPERATES



After the chlorine gas passes from the Pressure Tank (D) to the Rota-Meter (B) it is drawn first to the vacuum Cylinder (A) and then to the hard-rubber Absorption Tower (C) by induced vacuum, created by injection of auxiliary water supplied under pressure through injection. This atomized water crosses the path of the gas, creating under vacuum considerable turbulence. This action exposes a maximum surface to the gas, causing an intimate mixture and complete absorption. In solution, it falls to the bottom of the Absorption Tower where it is further diluted with water from the Mixing Tank (F). The flow, regulated by the Float Valve (E), which maintains the water seal of the mixing tower, passes through the Outlet Pipe (G) to the point of delivery.

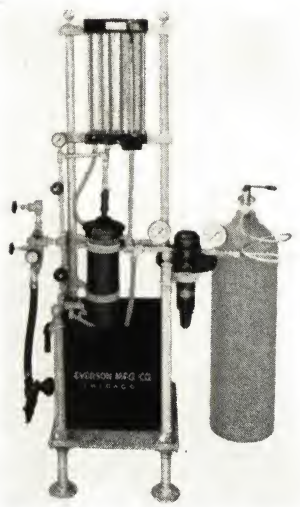
Where other chemicals are to be added, such as "chemical bricks," to maintain the Ph content, they can be introduced in the large rubber supply tank.

### ROTA-METER MODELS

Rota-Meter sterilizers are furnished in 4 models, R, DCR, CR, and PR. The R and DCR models are here illustrated. The operating principle, mechanism, and extreme accuracy of gas flow are identical for both models. The only difference comes in appearance, the DCR model being furnished with a beautiful steel cabinet in crackled black japan finish and with a glass hood which houses the rota-meter. Information on the CR and PR models, also identical in operating principle, will be furnished on request.

### OTHER STANDARD MODELS

Everson Pulsating Meter Sterilizers (Series G) can be furnished in 4 sizes, standard models, with chlorine capacities ranging from 1 to 40 pounds.



### STERILIZER SELECTION TABLE

| Size number | Capacity range per 24 hours | Size number | Capacity range per 24 hours | Size number | Capacity range per 24 hours | Height | Weight | Floor space |
|---|---|---|---|---|---|---|---|---|
| R50 | ½ to 5 | R53 | 2 to 20 | R56 | 5 to 50 | 5'-9" | 350 lbs. | 20"x20" |
| R51 | 1 to 10 | R54 | 3 to 30 | R57 | 7½ to 75 | 5'-9" | 350 lbs. | 20"x20" |
| R52 | 1½ to 15 | R55 | 4 to 40 | R58 | 10 to 100 | 5'-9" | 350 lbs. | 20"x20" |

Information on larger capacities furnished on request.

*Sterilizers for Waterworks, and Sewage Treatment...*

# EVERSON SAFETY ELECTRIC STERILIZERS

21/67

## BUILT IN A COMPLETE RANGE OF CAPACITIES OF CHLORINE PER 24 HOURS AND ACCURATELY METERED, THERE IS AN EVERSON STERILIZER TO FIT ANY JOB YOU MAY HAVE

The Everson Safety Electric Sterilizer is one of the great achievements of the Everson laboratories for it affords the safest and most convenient method of applying a sterilizing agent to swimming pool water. It produces at the pool site a neutral solution of sodium hypochlorite, known as one of the most effective germicides.

Sodium hypochlorite retains its activity in the pool. It permeates every part, keeping the water germ-free. Also, the Everson Safety Electric Sterilizer ends over-chemicalized water. A rheostat control of volume permits exact measuring of the sterilization required.




**DELUXE MODEL SAFETY ELECTRIC STERILIZER**

### DESCRIPTION OF OPERATION

The Everson Model E Safety Electric Sterilizer provides the safest and most convenient means of applying a sterilizing agent to swimming pool water. It produces at the pool site a neutral solution of sodium hypochlorite, one of the most highly efficient germicides known.

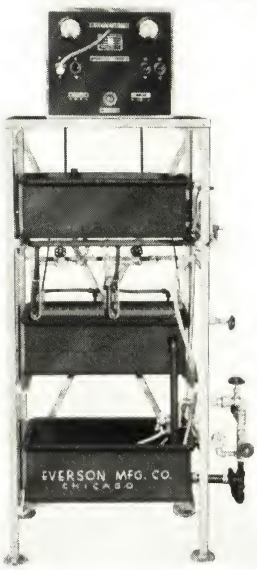
The unit consists of a specially designed and constructed electrolytic cell which is supplied with a solution of common salt from a brine tank mounted above it. The product of electrolysis — sodium hypochlorite — flows into the solution tank located beneath the cell. From this tank, it is drawn directly into the recirculating system.

### INSTALLATION SUGGESTIONS

Provide space 20"x40" conveniently near the source of application of the sterilizing solution, or near the water circulating pump.

Provide an electrical outlet with A.C. current at 110 volts, 60 cycle, 15 amperes.
Provide a main water service line to the sterilizer, ¾" is sufficient.
Provide a floor drain.

Locate sterilizer above the level of the pool so that sterilizing agent will feed to pool by gravity. If the equipment cannot be located above pool level, it may be placed at any convenient point below the inlet lines. A ¾" city water supply to operate ejector is sufficient.




### ADVANTAGES OFFERED BY THE EVERSON SAFETY ELECTRIC STERILIZER

SAFETY—This sterilizer solves many problems and provides a genuine factor of safety. The hazards of gas leakage are ended because all storage of gas is eliminated. Fans, vents, vaults, and separate housing are also unnecessary.

ALKALINITY—Sodium Hypochlorite produces a neutral solution. Applied to the water in the swimming pool, it maintains alkalinity, thus preventing irritated skin or sore eyes for bathers.

LOW COST—This low-cost sterilizer for all types of swimming pools is more economical and more practical than any other type. With the use of the Everson Safety Electric Sterilizer, you can be certain that the pool water is neutral, non-irritating, free of germs, and fit to swim in.

**STERILIZER SELECTION TABLE**

| Type | Capacity available chlorine per 24 hours | Water capacity of swimming pool | Space required | Approximate weight |
|---|---|---|---|---|
| E-3A | 3 lbs. | 50,000 to 75,000 gals. | 18"d x 36"w x 80"h | 300 lbs. |
| E-6A | 6 lbs. | 75,000 to 125,000 gals. | 18"d x 36"w x 80"h | 350 lbs. |
| E-12A | 12 lbs. | 125,000 to 200,000 gals. | 18"d x 54"w x 80"h | 500 lbs. |

# SWIMMING POOL LIGHTING EQUIPMENT

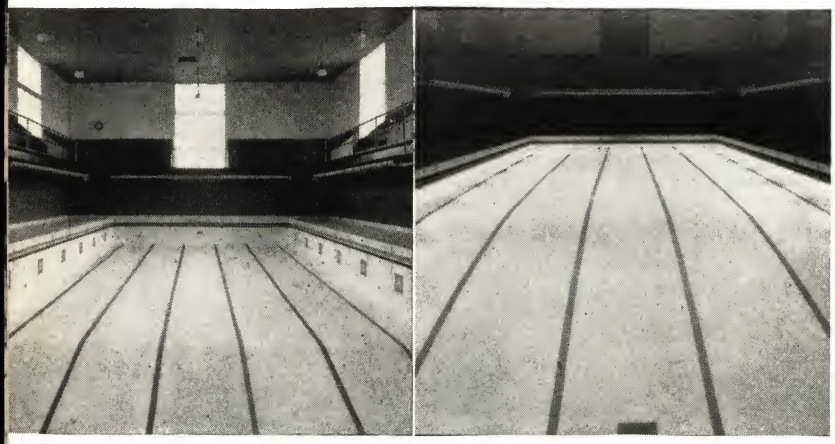


Illustration (left) Shows Pool Without Water. At Right, Same Pool, Filled with Water and Underwater Lighted

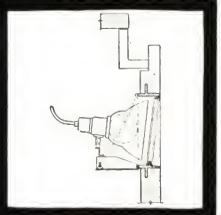
## *On Lighting the Ideal Pool*

TODAY, no pool is strictly modern without Everson Underwater Lights which convert the pool water into a beautiful, luminous mass through which swimmers glide — clearly visible at all depths. Everson Underwater Lights greatly enhance the beauty of any pool and add to enjoyment, utility and safety. By eliminating the need for overhead lighting, they end fatiguing surface glimmer, add interest to contests and exhibitions, because every detail of stroke and form is easily followed by spectators. Underwater Lights permit many fascinating effects for pool parties and water carnivals.

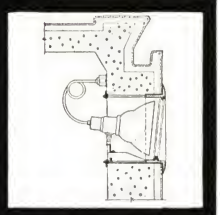
Today, the finest lighted pools are equipped with Everson Lights. Types are provided for every construction — for concrete, tile, or cast marble pools — accessible for servicing from tunnel or service pit.



Service Pit Lights serviced from above



Installation for cast marble pools



Service Tunnel. Side view



Service Tunnel. Rear view

# EVERSON UNDERWATER LIGHTS

Everson Lights are a remarkable engineering achievement accomplished only after tireless research and experimentation. They should not be confused with various adapted lights offered for underwater lighting, many require emptying of the pool to permit servicing, cleaning or re-lamping. Placed in the pool walls, their special double lenses and deep reflectors compensate for all refraction and give evenly, diffused illumination.

Everson Underwater Lights are made in four different series to meet the various types of pool construction. Each series consists of the Angle Type for depths of water 5 feet and over, and the Vertical Type for depths of water under 5 feet.

To produce an evenly diffused light throughout the pool water, without shadows or dark spots, it is recommended that light units be placed in each side wall on maximum centers of 10 feet, starting not more than 7½ feet from either end.

It is not necessary to place units in either end wall or on two levels in side walls to obtain perfect illumination.

Everson units are installed to provide access from the rear or top end. With such application it is not necessary to empty the water from the pool for cleaning or re-lamping as with lights of other make. All servicing can be done while the water is in the pool.

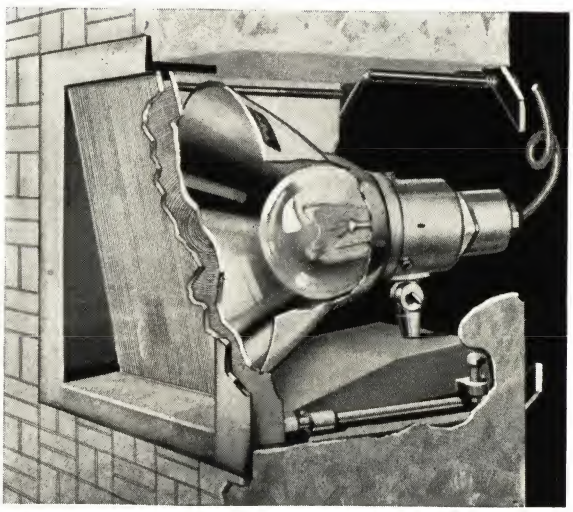
### ONLY EVERSON LIGHTS OFFER

• **Cora-Metal Frames**—Cast from special Everson alloy, are silver in color and take a high, permanent polish. The frame is properly proportioned to give a pleasing effect in the wall and is free from protruding parts or angles which might injure bathers. When set, as directed, it forms a permanent leakproof receptacle for the lenses.

• **Holophane Lenses**—Concentrate light in a uniform beam, are set inside the frame and project the light rays through non-shattering, diffusing lens on the water side.

• **Lights and Reflectors** — Standard 500 watt Mazda Lamps, replaceable anywhere, set in a 11½-in. reflector designed for this particular size. The reflecting surface is a silver mirror of high coefficient of reflection. The silver plating is hermetically sealed between glass and copper which protects it from corrosion, and assures a permanent lighting installation.

*For additional information send for bulletin No. 731.*

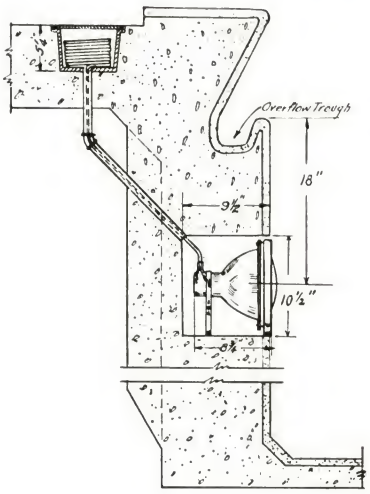


EVERSON · THE SWIMMING POOL PEOPLE · 10

# SWIMMING POOL LIGHTING EQUIPMENT



## THE EVERSON 960. A SELF-CONTAINED FLOODLIGHT FOR UNDERWATER USE



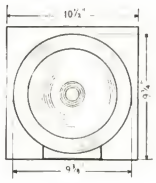

This light unit is placed in a niche in the pool wall and adjusted so that the light beam is tilted as desired. Fifteen feet of water-proof cord can be unreeled from the electric junction box to permit the light unit to be lifted above the water for renewing the bulb. This eliminates the necessity of drawing water from the pool.

The spacing of the lights should be less than 10 feet apart, and in some cases spaced 5 feet apart. In pools having a greater depth than 8 feet, an extra row of lights spaced 5 to 6 feet on centers and about 5 to 6 feet below the overflow trough are recommended.

The No. 960 unit (250 watts) is made of solid castings, fitted with a water-tight lens door. The lens 8⅜" in diameter is a convex diffusing roundel with stippled grooves that spread and diffuse the light beam over a wide area.

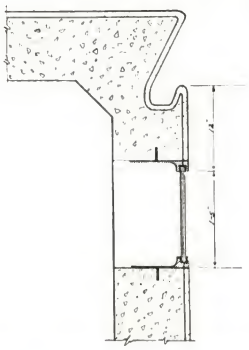


FRONT VIEW OF THE EVERSON 960



## EVERSON'S NEWEST AID TO SWIMMING INSTRUCTIONS

# THE EVERSON OBSERVATION WINDOW



With the aid of an observation window placed in the pool wall below the water level, coaches find the problem of instructing swimmers greatly simplified. Through the observation window, every movement of the diver or swimmer can be observed. Faults are readily apparent, and proper instruction can be given to remedy mistakes. Many coaches too, find that by taking moving pictures from observation windows, they make swimming instruction much more interesting.

Pools provided with observation windows should also be provided with underwater lights.

Complete information on the Everson Observation Window will gladly be sent on request.





Every Movement of Swimmers Under Water Can Be Seen Through the Everson Observation Window

# SUCTION POOL CLEANERS





## *Two Types of Cleaners*

### FIT EVERY TYPE AND SIZE OF POOL

The Everson Pool Cleaners operate much like the ordinary domestic vacuum cleaners, except that the dirt carrying agent is water instead of air. They are used to remove the sediment which settles on the floor and walls of the pool. The standard Everson Pool Cleaner is designed to operate in connection with a recirculating system, but can be used in all types of swimming pools, provided that a motor driven pump is installed.



### PUSHER TYPE

This pool cleaner is constructed of brass, highly polished, complete with special hair-bristle brush and wire-woven hose, particularly adapted for this purpose. It is light, rigid, and has rollers on the cleaner nozzle, which permit easy operation by one man.

This cleaner is 16 inches wide. It is equipped with polished brass handle and 50 foot length of special Everson non-collapsible hose.

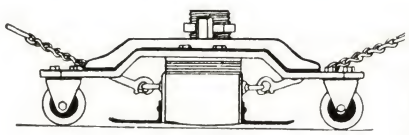
The unit operates direct from the recirculating pump and is propelled over the bottom of the pool by an operator walking around the pool walk.

### TOW TYPE

For large pools — indoor or outdoor — the Tow type pool cleaner is recommended. It is made in three sizes, 24-30-36 inch suction spread. It is of the drag type and is equipped with four rubber wheels and drag ropes with which it is moved over the floor of the pool by attendants.

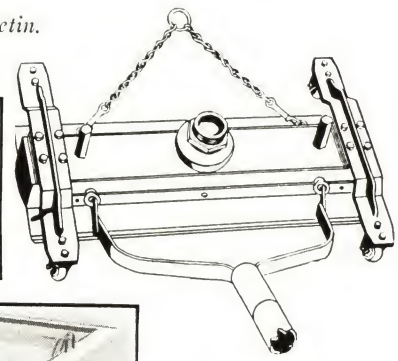
The Everson Tow type pool cleaner is speedy in operation. It is durable and easy to handle. It removes all sediment without draining or scrubbing the pool — leaves the floor clear and inviting.

*Write for our special bulletin.*



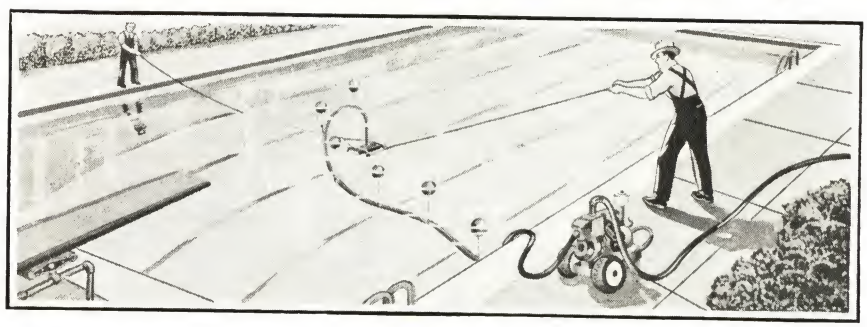
### POOL CLEANER SELECTION TABLE

| No. | Type | Hose | Hose size | Hose length | Handle | Tow line | Ship. weight |
|---|---|---|---|---|---|---|---|
| 1016 | Push | 15″ | 1½″ | 50′ | 2-7′ | None | 75 lbs. |
| 1018 | Push | 18″ | 1¾″ | 50′ | 2-7′ | None | 100 lbs. |
| 1019 | Tow | 18″ | 1¾″ | 50′ | None | 100′ | 100 lbs. |
| 1024 | Tow | 24″ | 2″ | 75′ | None | 150′ | 185 lbs. |
| 1030 | Tow | 30″ | 2″ | 100′ | None | 200′ | 225 lbs. |
| 1036 | Tow | 36″ | 2½″ | 150′ | None | 250′ | 350 lbs. |



### DELUXE MODEL

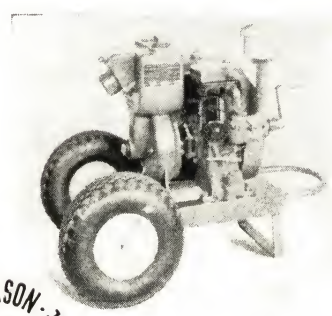
Here is the finest pool cleaner built. It is made of heavy cast brass, heavily chrome plated. Furnished with double tow chains, and with detachable push handles for use in shallow water. Replaceable rubber wheels at each end of the cleaner make possible free and easy manipulation of cleaner over pool floor.



### SIDE VIEW

The Deluxe Model has two extension fins — one on each side of the nozzle. These fins spread suction over a greater area of the pool floor, permit the easy flow of sediment without disturbing the water. This model is ideal for use where heavy deposits of leaves, sand, or algae occur.

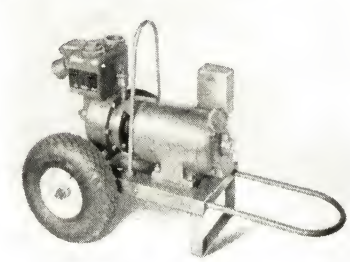
# EVERSON PORTABLE SUCTION PUMPS



In pools where built-in circulating pumps are not provided, and in large outdoor pools, the Everson Portable Self-Priming Suction Pump becomes an economical and necessary part of the pool cleaning system.

These portable self-priming pumps, obtainable in proper sizes and capacities to accommodate the size of pool cleaner selected, may be had with either an electrically driven or gasoline driven motor.

Pump with motor is mounted on a sturdy iron base equipped with two wheels and pneumatic rubber tires. These tires are extra large and are therefore easily rolled across sand, grass, or soft places.



# SPECIFICATIONS



## For Equipping the Ideal Pool

It is the intent of these specifications to cover all necessary equipment to provide not less than an eight-hour turnover of the water supply of a swimming pool —— x —— containing —— gallons.

All items of equipment as hereinafter set forth and which is a part of the swimming pool circulating system shall be furnished by Everson Manufacturing Company, 214 W. Huron Street, Chicago, Illinois, which company will guarantee all equipment against inherent defects for a period of one year, and shall further guarantee that if equipment is installed and operated according to its instructions, that the water in the pool will be bright and clear, free from sediment visible to the unaided eye, and of a degree of sterility acceptable to Local and State Boards of Health.

**FILTERS**—The filter equipment shall consist of (——) (——) diameter pressure units having a combined capacity of —— gallons per hour. These units shall be type S.I. as manufactured by Everson Manufacturing Company, and shall be complete with steel filter shells with all necessary openings, interior spreader and strainer system, fitted with Everson improved type "T" strainers, adjustable supporting jacks, quartz filter material to provide a 36-in. filter bed for each unit, and all necessary pipe, fittings and valves for external operating manifold, together with accessories such as sight glasses, test cocks, pressure gauges and air reliefs.

The external operating manifold shall be so designed as to provide for all necessary operations, and more specifically covering filtering, backwashing, filtering to waste and by-pass of any one or all units.

**COAGULANT AND ALKALINITY FEEDERS**—Two cast iron pots of special design, complete with brass pipe, fittings and regulating valves for connection to recirculating system. The size and capacity of these feeders shall coordinate with filters.

**STERILIZER** *(Select Style of Sterilizer Suitable for Type of Pool)*—(A) One Everson Model E—— Electrolytic Cell Chlorinating apparatus, complete with all necessary operating parts, including electric rectifier unit to operate from 110 volt, single phase, electric supply. (For indoor and outdoor pools to 125,000 gallons.)

(B) One Everson Model R—— Chlorine Solution Feed Equipment, complete with all necessary accessories, and including cylinder of chlorine gas.

Manufacturer shall furnish services of engineer to supervise installation of chlorinator equipment and start same in operation.

**CHLORINE AND ALKALINITY TESTING OUTFITS**—One Everson No. 7019 Orthotolidin Testing Outfit for determination of chlorine residual, and one Everson No. 7019-A pH Testing Outfit for determination of alkalinity content.

**HAIR AND LINT CATCHER**—One —— in. improved Everson No. 784 hair and lint catcher equipment. This equipment shall have yoke clamp cover affording easy removal of basket for cleaning purposes. It shall also be fitted with compound vacuum pressure gauge.

**RECIRCULATING PUMP, MOTOR AND STARTER**—One fully bronze fitted centrifugal pump having a capacity of —— gallons per minute when operating against a —— head. Pump shall be mounted on cast iron base and direct connected by flexible coupling to a —— hp., —— phase, 60 cycle, —— volt, 1800 r.p.m. motor. There shall also be furnished a starting switch with push button station providing overload and undervoltage protection.

**SURGE TANK**—One —— in. diameter by —— in. high open steel tank, complete with necessary openings and fully adjustable supports. With this equipment there shall be furnished a tight closing balance piston float valve equal to Everson No. 398 for installation on the city water supply.

**VACUUM CLEANER** *(For indoor or outdoor pools to 200,000 gallons)*.—One Everson No. 1016 vacuum cleaner equipment consisting of improved brass suction nozzle fitted with fully adjustable brush and wheels, extension with swivel tee, two, seven ft. extension handles, and fifty ft. of special wire-woven rubber lined vacuum cleaner hose with swivel couplings.

*(For large capacity outdoor pools.)*
One Everson No. 1030 vacuum cleaner equipment consisting of 30-in. brass suction nozzle with fully adjustable bristle brush, wheel carriage, 75 ft. of special 2-in. wire-woven rubber lined hose with brass swivel couplings, floats and necessary tow ropes.

*(Pump for operation of large vacuum cleaner units.)*
One fully self-priming portable centrifugal pump direct connected to suitable electric motor (or gasoline engine) all mounted on a truck with fully pneumatic tired wheels and 10 ft. of discharge hose.

**SWIMMING POOL FITTINGS**—The various fittings for installation in the swimming pool shall be of special design as manufactured by Everson, and all shall be fitted with special polished white metal faceplates. The various fittings required are as follows:

——6-in. Everson No. 894 main drains
——2-in. Everson No. 890 adjustable flow inlet fittings
——2-in. Everson No. 910 angle overflow gutter drains
——2½-in. Everson No. 900 floor drains
——2-in. Everson No. 693 vacuum cleaner connections.

**INSTANTANEOUS HEATER** *(For Indoor Pools)*—One instantaneous type steam operated swimming pool heater having a capacity of —— g.p.m., 50 to 80 degrees F., when supplied with steam at atmospheric pressure. This heater shall be furnished with all necessary openings for water, steam, condensation and drain connections.

**UNDERWATER LIGHTING**—In the walls of the swimming pool there shall be installed —— 500 watt underwater light units as furnished by Everson Mfg. Co., 214 W. Huron Street, Chicago, Illinois. These units shall consist of Cora Metal front frames, specially applicable to the construction and finish of the pool walls, 12½-in. square non-shattering front diffusing lens; 12-in. square rear concentrating lens; 11½-in. hermetically sealed silver mirrored reflector fitted into porcelain receptacle, mounted with full ratchet adjustment on portable stand, together with extension cord and plug.

*NOTE*: Install Everson Underwater Light units in both side walls of the swimming pool on not over 10 ft. centers opposite each other, starting not over 7½ ft. from either end, with horizontal center of unit 1'5" below overflow water level.

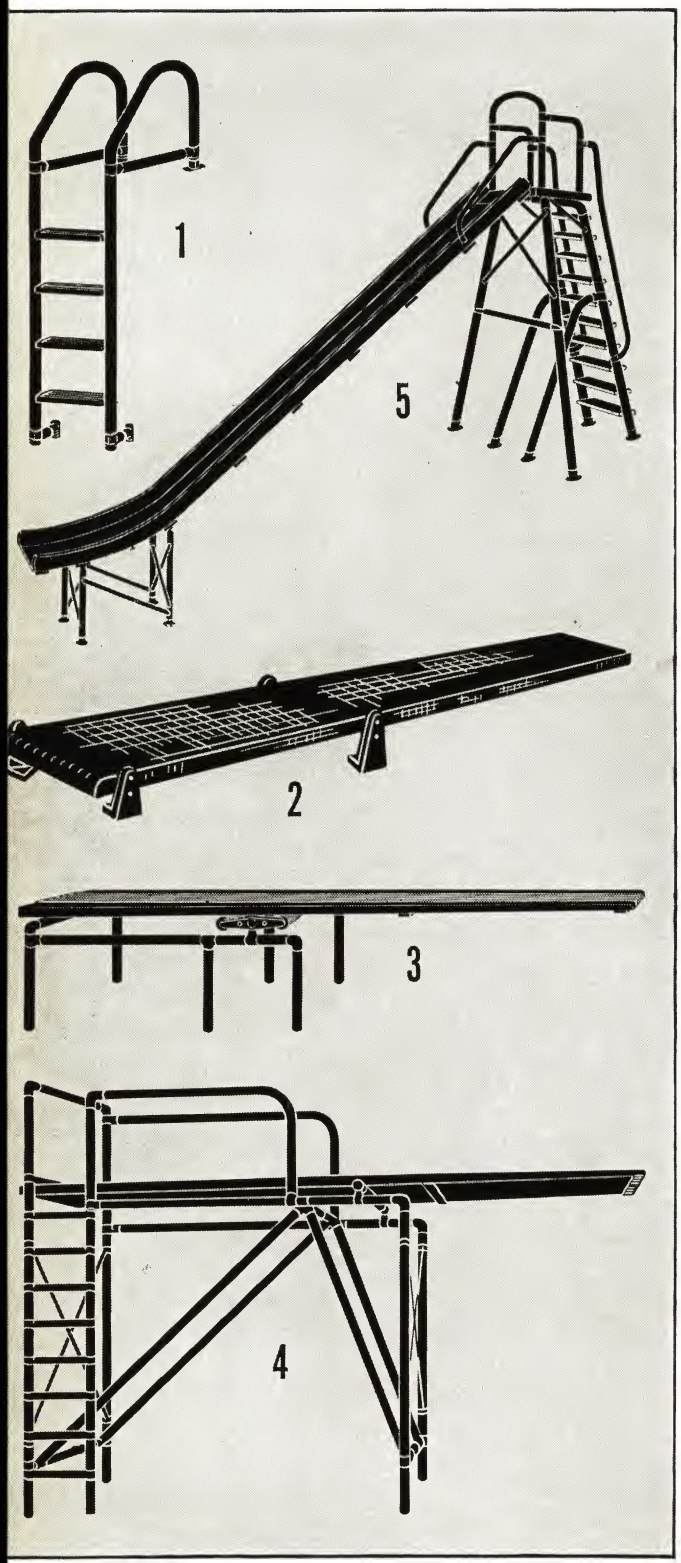
THE EVERSON ORGANIZATION WILL GLADLY ASSIST IN SUBMITTING TO ARCHITECTS AND ENGINEERS, WITHOUT OBLIGATION, TYPICAL SPECIFICATIONS, LAYOUTS AND DATA PERTINENT AND APPLICABLE TO A SPECIFIC PROJECT OR REQUIREMENT.

EVERSON · THE 15 SWIMMING POOL PEOPLE

# POOL ACCESSORIES

**BY EVERSON . . .**

21 — 67




Everson Equipment adds to the popularity of any swimming pool, because each piece is exactly suited for its purpose. You will find this equipment carefully designed, accurately made of the finest materials. It will give long, dependable service. On special orders, ladders and mountings for springboards can be furnished in "Alzack" or "Aluminite" with various colors available in the latter.

## 1. EVERSON POOL LADDERS

Everson Removable Pool Ladders are substantially built. Standard ladders are furnished with risers of galvanized iron, polished brass or chromium plate. Treads are so designed as to give safe and easy footing. Anchors are of the dual type embedded in the walk, flush with the floor line, leaving no projection when the ladder is removed. Anchor fittings also permit immediate and effortless removal of the entire ladder.

A special line of ladders, "Aluminite" treated, in colors can be obtained on special order. Colors obtainable are black, blue, green, red, maroon, yellow, orange and white, and this type of ladder is appropriate for the unusual and private swimming pool where harmonizing color schemes and beautiful effects may be desirable.

## 2. EVERSON LOW DIVING BOARD

The Everson Low Diving Board is constructed of selected boards, doweled, battened and fitted without rough edges or wavy surfaces. Board is 12'0" long and is tapered from rear to tip. Board is covered with cocoa mat which is easily removable. This board has a noiseless "whip up," provides a superb spring, and will give years of satisfactory service.

## 3. NATIONAL ONE-METER REGULATION DIVING BOARD

This board conforms in all essentials with the specifications of the National Collegiate Athletic Association and the Amateur Athletic Union of the U. S. The board is 14' long by 20" wide, tapering from 3" at rear to 1½" at tip, either of laminated or one-piece construction. Adjustable fulcrum is furnished in single or dual type. Standard mounting in 1½" or 2" for board furnished in galvanized steel pipe and malleable fittings, or chrome plate over galvanized, brass, or chrome plate over brass. Entire apparatus is readily removable through special type of anchors which are embedded in walk. Stand provided so that tip of board is exactly one meter above the water. Mountings can be furnished in "Aluminite" in colors on special orders.

## 4. EVERSON IMPROVED REGULATION 3-METER DIVING BOARD STAND

This stand complies in every particular with the specifications of the National Collegiate Athletic Association and the Amateur Athletic Union. The board is 16' long by 20" wide, tapering from 3" at rear to 1½" at tip, either of laminated or one-piece construction. Adjustable fulcrum is furnished in single or dual type. Standard mounting in 1½" or 2" for board furnished in galvanized steel pipe and malleable fittings, or chrome plate over galvanized, brass, or brass chrome plate.

Stand provided so that the tip of the board is exactly 3 meters or 10' above the water. Mountings can be furnished in "Aluminite" in colors on special orders.

## 5. EVERSON NATATORIUM SLIDES

This slide can be used for either indoor or outdoor pools. It is constructed of galvanized steel and malleable iron, and is obtainable in several sizes. The chute side rails and the broad stair treads are made of suitable hardwood. All metal chutes can also be furnished. The slide can be bolted to concrete, tile, wood flooring.

# POOL ACCESSORIES

. . . BY EVERSON



## 6. RUBBER FOOTBATHS

In the control of what is termed "Athlete's Foot" sodium hypochlorite or a chlorine solution has been found most effective. As rubber is impervious to such solutions, Everson developed sturdy molded hard and semi-hard rubber footbaths suitable for installation in shower rooms, locker rooms, runways, etc. These footbaths are 31" x 26" x 3½" deep; color black, with double wall construction affording curved top, spout to facilitate emptying solution. These footbaths have corrugations on interior bottom making them non-skid.

## 7. COCOA MATTING

For springboards and many other places around swimming pools, as steps, runways, ramp and walks, to safeguard against slipping. This matting comes in 18" and 36" widths, approximately 5/16" thick, and weighing about 1½ pounds per square yard.

## 8. LIFE GUARD CHAIR

This is an item of necessity, especially on larger outdoor swimming pools. It is constructed of either 1½" or 2" galvanized pipe and fittings with hardwood seat, backboard and footboard. Height overall as shown, 7'6" with seat 5'9" above walk. Anchors for setting are of type to make entire stand removable. Hooks furnished for each side for carrying life buoys. Furnished with or without umbrella.

## 9. LIFE BUOYS

This accessory is practically a necessity for all types of swimming pools. Life Buoys are made in two sizes — 24" and 30" in diameter, weighing 5 and 10 pounds respectively. Made of solid cork and heavy white duck with ½" hand rope stitched in. All 30" buoys comply with U. S. Department of Commerce inspection.

## 10. SKIMMING NET

For smaller outdoor pools of country club and private nature this accessory is of great assistance in keeping water free from floating particles. The rim for net has a 15" diameter; net is 14" deep. Pole is 12' long and made of wood or aluminum.

## 11. TESTING OUTFITS

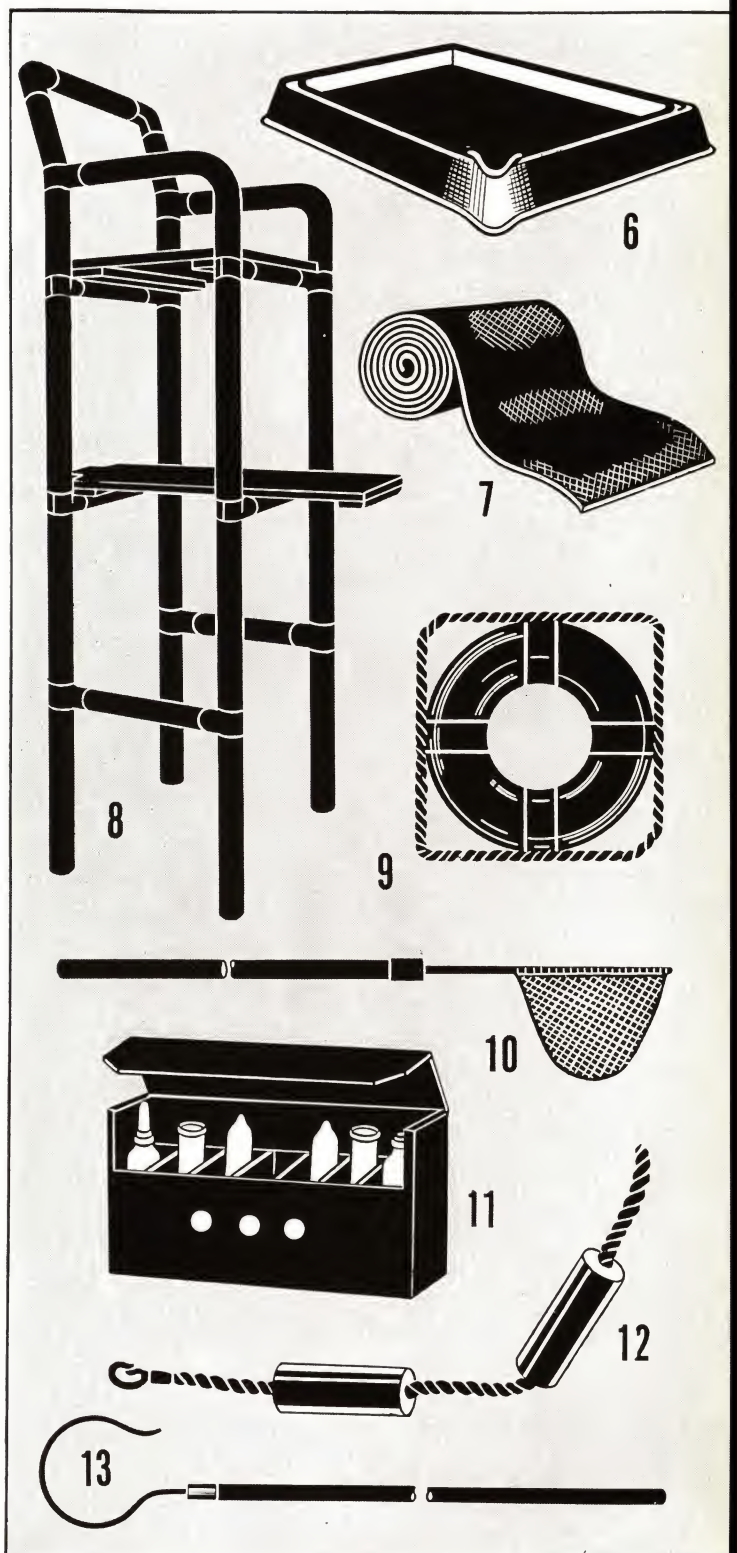
In the operation of any pool it is necessary to ascertain chlorine residual and alkalinity content of the water supply. Everson has developed a compact outfit for each test and so simple that anyone can determine the actual conditions. The cases are 10" long, 6" high and 2" deep, containing test tubes, color standards and testing reagents.

## 12. LIFE LINE

Life lines are of best quality sisal rope, ¾" in diameter with floats of either cork or wood. Cork floats are 9" long and 6" in diameter. Sisal rope is furnished with brass end eyes or brass clevis. For new swimming pools recessed life line anchors are furnished for setting flush with wall.

## 13. RESCUE POLE

An essential item for either safety or teaching facilities. The hook is of galvanized rod, with an appropriate 18" diameter fitted to either a wooden or aluminum handle 14' long.



# A FEW REPRESENTATIVE EVERSON INSTALLATIONS

## MUNICIPAL POOLS

G —Blytheville, Arkansas
R —Arlington Heights, Illinois
Bellwood, Illinois
G —Cicero, Illinois
E —Kewanee, Illinois
Lyons, Illinois
Park Ridge, Illinois
Peru, Illinois
Rushville, Illinois
Springfield, Illinois
Brazil, Indiana
G —Wabash, Indiana
G —Washington, Indiana
G —Grundy Center, Iowa
E —Newton, Iowa
G —Concordia, Kansas
G —Cadiz, Kentucky
G —Morganfield, Kentucky
Lansing, Michigan
G —Geneva, Nebraska
G —Wilbur, Nebraska
Dickinson, North Dakota
G —Canton, Ohio
Cleveland, Ohio
G —Wapakoneta, Ohio
Ponca City, Oklahoma
G —Canyon, Texas
G —Kilgore, Texas
Perryton, Texas
Wausau, Wisconsin
G —River Falls, Wisconsin

## COUNTRY CLUB POOLS

E —Cheyenne Mountain Country Club, Colorado Springs, Colo.
E —Griswold Hotel, New London, Conn.
G —Lincolnshire Country Club, Crete, Ill.
H —Idlewild Country Club, Flossmoor, Ill.
E —Lake Shore Country Club, Glencoe, Ill.
E —Glenview Country Club, Golf, Ill.
H —Exmoor Country Club, Highland Park, Ill.
G —Ravisloe Country Club, Homewood, Ill.
G —Joliet Country Club, Joliet, Ill.
G —LaGrange Country Club, LaGrange, Ill.
Onwentsia Club, Lake Forest, Ill.
Winter Club, Lake Forest, Ill.
G —Quincy Country Club, Quincy, Ill.
G —Forest Hills Country Club, Rockford, Ill.
G —Edgewood Valley Country Club, Western Springs, Ill.
E —Indian Hill Country Club, Winnetka, Ill.
G —Hill Crest Country Club, Indianapolis, Ind.
South Bend Country Club, South Bend, Ind.
Hyperion Club, Des Moines, Iowa
Blaney Park, Blaney, Mich.
G —Cascade Country Club, Grand Rapids, Mich.
Bridlespur Country Club, Kirkwood, Mo.
Butte Country Club, Butte, Montana
Fairview Country Club, Elmsford, N. Y.
E —Bonnie Briar Country Club, Mamaroneck, N. Y.
E —Pelham Country Club, Pelham, N. Y.
Metropolis Country Club, White Plains, N. Y.
Mayfield Country Club, Cleveland, Ohio
Cleveland Country Club, Cleveland, Ohio
H —Dayton Country Club, Dayton, Ohio
J —Springfield Country Club, Springfield, Ohio
J —Shawnee Country Club, Shawnee, Okla.
G —Janesville Country Club, Janesville, Wis.

## PRIVATE POOLS

E —Matthew C. Brush, South Norwalk, Conn.
H —Albert Edgar, Greenwich, Conn.
Wm. F. Buckley, Sharon, Conn.
E —Garret Hobart, Clearwater, Fla.
Warren Wright, Golf, Ill.
E —Leonard Florsheim, Highland Park, Ill.
F. W. Woodruff, Joliet, Ill.
E —E. O. Freund, Lemont, Ill.
Wm. V. Kelly, Lake Forest, Ill.
E —Phillip Armour, Lake Forest, Ill.
E —Laurence Armour, Lake Forest, Ill.
E —Roy D. Keehn, Lake Forest, Ill.
A. D. Lasker, Lake Forest, Ill.
E —B. J. Cahn, Lake Forest, Ill.
E —E. J. Bermingham, Lake Forest, Ill.
E —B. F. Stein, Lake Forest, Ill.
E —C. H. Schweppe, Lake Forest, Ill.
E —Gwethalyn Jones, Lake Forest, Ill.
E —David Adler, Libertyville, Ill.
H. Good, Moline, Ill.
E —Jules J. Rubens, Plano, Ill.
Wm. Grunow, River Forest, Ill.
E —Max Epstein, Winnetka, Ill.
J —C. J. Root, Allendale, Ind.
E —Vincent Bendix, South Bend, Ind.
I. J. Leuter, Eaton Rapids, Mich.
Peter Berkey, Lake City, Minn.
H —E. J. Weschecke, St. Paul, Minn.
E —Virgil Lewis, St. Louis, Mo.
G —H. T. Weston, Beatrice, Nebr.
Duane Van Vechten, Taos, N. M.
M. Flook, Ossining, New York
J —A. J. Appell, Pnrdys Corner, N. Y.
H —I. J. Fox, Peekskill, N. Y.
E —Mary R. Babcock, Reynolda, N. C.
H —T. W. Miller, Ashland, Ohio
J —H. H. Timken, Canton, Ohio
J —Ellsworth Augustus, Kirkland, Ohio
E —D. S. Blossom, Lyndhurst Village, Ohio
E —F. B. Black, Mansfield, Ohio
H. S. Black, Mansfield, Ohio
R. L. Ireland, Shaker Heights, Ohio
J. A. Chew, Xenia, Ohio
T. W. Phillips, McBride, Pa.
J —C. O. Wanvig, Brown Deer, Wisc.
F. L. Maytag, Lake Geneva, Wisc.
Don Shepard, Neenah, Wisconsin
E —Herbert Kurth, Thiensville, Wisc.

## INSTITUTIONAL POOLS

G —Boys' Club, Little Rock, Ark.
High School, Cripple Creek, Colo.
E —Y.W.C.A., Pueblo, Colo.
G —Croation School, Des Plaines, Ill.
E —Monticello College, Godfrey, Ill.
E —Ill. School for the Deaf, Jacksonville, Ill.
E —Lake Forest High School, Lake Forest, Ill.
E —Western Ill. State Teachers' College, Macomb, Ill.
E —North Central College, Naperville, Ill.
Oak Park High School, Oak Park, Ill.
University of Illinois, Urbana, Ill.
Waukegan High School, Waukegan, Ill.
High School, Columbus, Ind.
Y.M.C.A., Elkhart, Ind.
Horace Mann High School, Gary, Ind.
G —Hammond Recreational Bldg., Hammond, Ind.
E —Y.M.C.A., Indianapolis, Ind.
E —High School, Fort Dodge, Iowa
G —Wyandotte High School, Kansas City, Kan.
G —Y.M.C.A., Topeka, Kansas
E —Southeastern High School, Battle Creek, Mich.
E —Southwestern High School, Battle Creek, Mich.
E —Boy Scouts' Temple, Battle Creek, Mich.
E —Ford Recreational Bldg., Dearborn, Mich.
Monroe High School, Monroe, Mich.
E —Owosso High School, Owosso, Mich.
Y.M.C.A., Minneapolis, Minn.
Roosevelt High School, Virginia, Minn.
E —Marquette Natatorium, Cape Girardeau, Mo
E —Tandy Park Community Center, St. Louis, Mo.
E —Y.M.C.A., Lincoln, Nebraska
Father Flanigan's Home, Omaha, Nebr.
G —Officers & Soldiers Pools, Hempstead, N. Y.
Y.M.C.A., Hornell, N. Y.
High School, Niagara Falls, N. Y.
Y.M.C.A., Oneonta, N. Y.
High School, Fargo, N. D.
Y.W.C.A., Cincinnati, Ohio
Y.W.C.A., Columbus, Ohio
High School, Dayton, Ohio
G —Sugar Camp Pool, Dayton, Ohio
Y.M.C.A., Dayton, Ohio
G —Y.M.C.A., Mt. Vernon, Ohio
E —Y.M.C.A., Piqua, Ohio
Normal School, Aberdeen, S. D.
School of Mines, Rapid City, S. D.
University of South Dakota, Vermillion, S. D.
Y.M.C.A., Chattanooga, Tenn.
Southern Seminary, Buena Vista, Va.
Lawrence College, Appleton, Wisc.
State Teachers College, LaCrosse, Wisc.
High School, Manitowoc, Wisc.
13 High Schools, Milwaukee County, Wisc.
6 Natatoriums, Milwaukee, Wisc.
More than 75 pool installations in Chicago, Illinois.

# EVERSON MANUFACTURING COMPANY

**Main Office and Factory 214 W. Huron St., Chicago, Tel. Superior 3337**

**NEW YORK • BOSTON • ST. PAUL • LOS ANGELES**

**OFFICES IN ALL PRINCIPAL CITIES**

# HYGEIA FILTER COMPANY

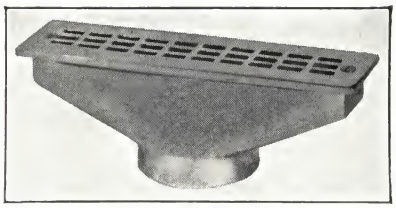
Manufacturers of Quartz (Sand), Bone Black, Minchar, Birm and Stone Filters for Industrial Uses, and Complete Swimming Pool Equipment

3422-3440 Denton Avenue

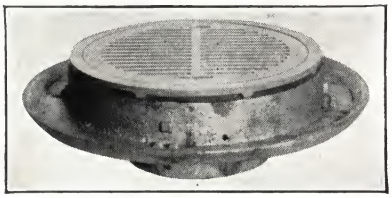
DETROIT, MICHIGAN

REPRESENTATIVES IN PRINCIPAL CITIES

## HYGEIA POOL EQUIPMENT



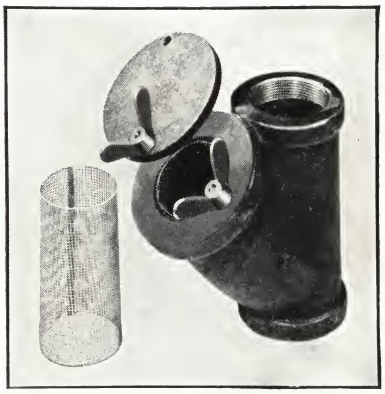
**Hygeia Type "E" Gutter Drain**
Iron, Brass or German Silver. 1½ to 2½ in. Also used as Floor Drains and Inlets



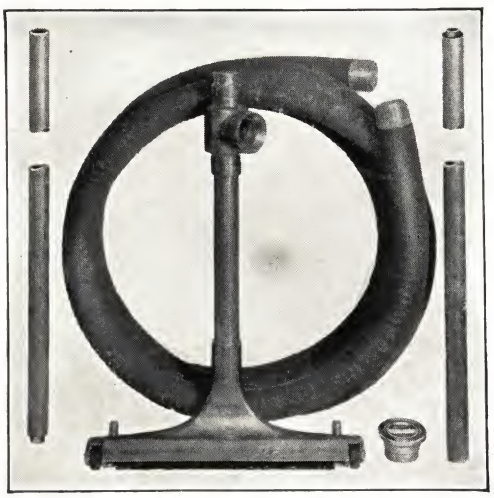
**Hygeia Type "B" Main Drain**
Iron or Brass. 1½ to 6 in. Also Elbow type



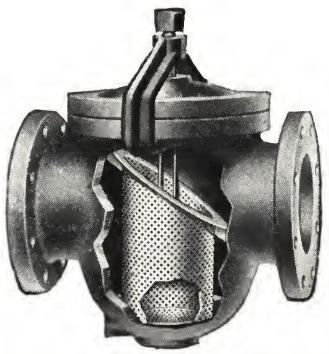
**Hygeia Type "F" Inlet**
Iron or Brass. 1½ to 2½ in



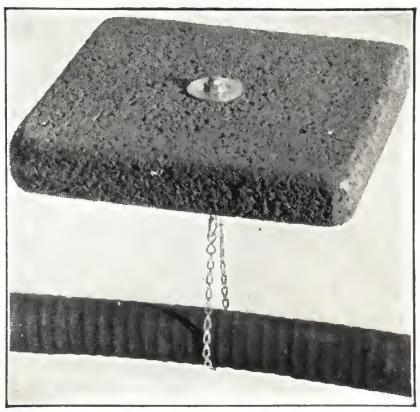
**Hygeia Type "B" Improved Hair and Lint Catcher**
Cast Iron Body. Brass Basket. 1½ to 6 in.



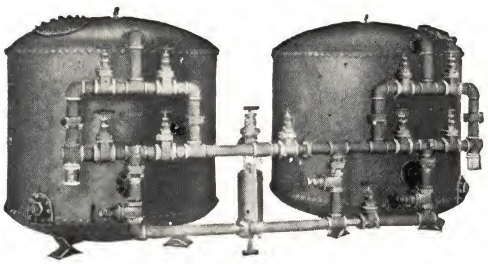
**Hygeia Standard Pool Cleaner**
Also Tow Type and Portable Type



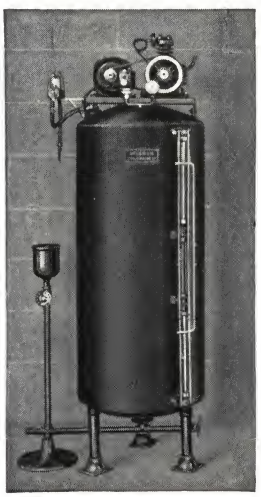
**Hygeia No. 528 Pot Type Hair and Lint Catcher**
Cast Iron Body. Brass Basket. All sizes



**Hygeia Pool Cleaner Hose Float**



**Hygeia Swimming Pool Filters in Battery**
Agitator and Non-Agitator type



**Hygeia Type R.L. Chlorinator**
All sizes and styles

# MARSH ELECTRO CHLORINATION COMPANY, INC.

TELEPHONE
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101 Park Avenue, NEW YORK, N. Y.

## PERFECT SANITATION OF SWIMMING POOLS

### Neutral Disinfection with Marsh System of Electro Chlorination

Marsh System provides the safest, most effective and most desirable form of chlorination. It produces a powerful yet neutral (non-irritant) oxidizing solution, sodium hypochlorite, a product similar to Dakin's solution, and delivers it to the water in accurately controlled doses.

WATER AND AIR SAFETY — MARSH ELECTRO CHLORINATOR — PURIFICATION NON-IRRITANT

**MARSH SYSTEM**

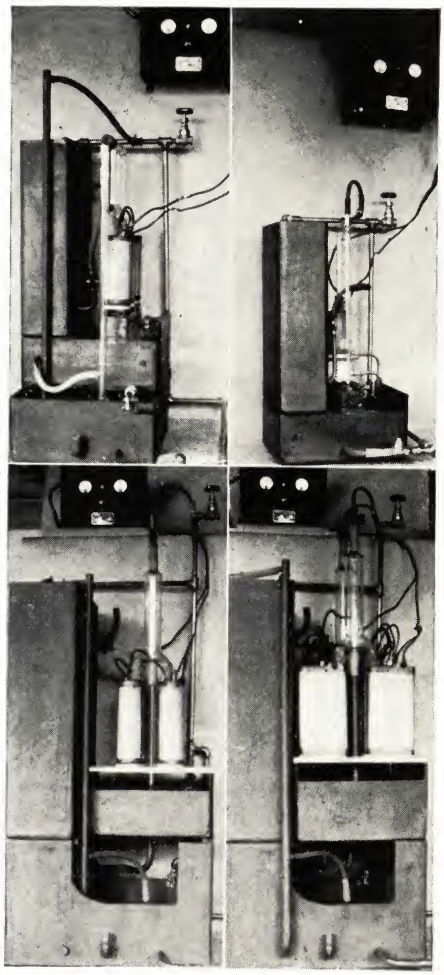
PERFECT SANITATION SWIMMING POOLS

MARSH ELECTRO CHLORINATION COMPANY, Inc.

NEW YORK CITY

### Wide Scope of Installations

The Marsh Electro Chlorinator has been installed over a period of years in every type, size and kind of swimming pool for universities, hotels, hospitals and clubs, and in private pools. Each year finds a larger number installed than the year before. More and more architects and engineers recognize that here is a quality equipment offering the most desirable features of a sterilizing apparatus that successfully surmounts previous disadvantages.



Hard Rubber Types

### Important Advantages

Provides complete and uniform sterilization in every part of pool.

Control is accurate, dependable and convenient because it is operated by electricity.

Operates on alternating or direct current.

No commodity to buy but salt.

Simple and easy to install.

Eliminates extra cost for protection in handling and storing hazardous chemicals.

Filtration is improved.

Eliminates outlay for expensive prepared solutions.

Inexpensive to operate.

No irritating and unpleasant conditions in the water.

Has long life because all parts are non-corrodible.

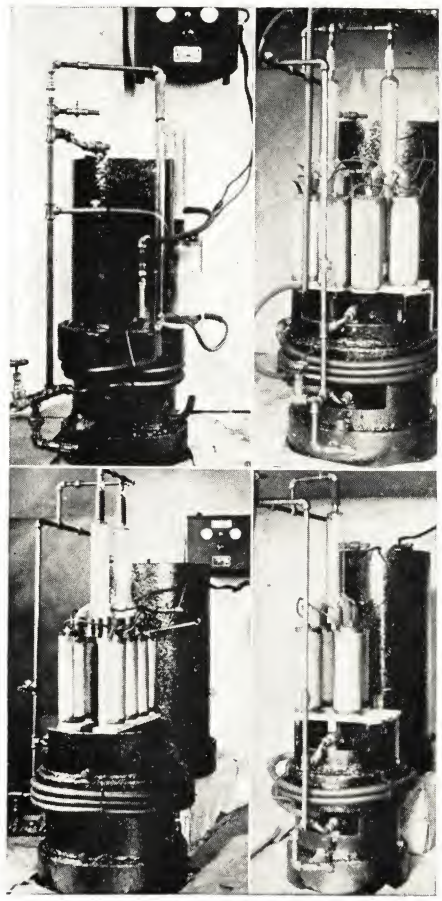
Apparatus is kept new and accurate by inexpensive renewals of Marsh cells.

Foot baths automatically sterilized with the antiseptic solution for prevention of "athlete's foot," etc.

### Complete Marsh Equipment

Includes battery of Marsh Cells with pyrex manifold, chlorine outlet, electrolytic soda solution feed and absorber coils, battery charger, electrical control board, upper tank containing salt and water for brine feed to cells, middle tank containing soda solution from cells for feed to absorber coils, and lower tank receiving electrolytic sodium hypochlorite solution from the absorber coils for delivery to pool or storage for sanitary uses.

*Complete Marsh Recirculation, Filtration, Chlorination System furnished for outdoor and indoor pools.*



Transite Types

### Co-operative Service

We will be glad to co-operate with architects and engineers in furnishing them with suggestions as to the proper application of the Marsh System to any water purification requirement, as well as to submit quotations, specifications, and other information desired.

### Short Specification for Swimming Pools

*Note:* Architects and engineers can be assured that by specifying a Marsh Electro Chlorinator they are stressing quality and effectiveness of results, the use of modern convenience of electrical control with its ease and simplicity of operation, its dependable accuracy, and above all, pleasantness and non-irritation. They can be assured also that the owner obtains the best at reasonable initial cost, and operating, maintenance and depreciation cost which will keep his overhead at a minimum year in and year out.

**Specification**—Contractors to furnish and install in accordance with manufacturer's directions, one Marsh Electro Chlorinator, manufactured by the MARSH ELECTRO CHLORINATION COMPANY, INC., 101 Park Avenue, New York, N. Y., of sufficient capacity to provide sterilization by available chlorine dosage in the form of non-irritant (neutral) electrolytic sodium hypochlorite solution.

### Other Uses for Marsh System

Marsh equipment provides convenient and effective means of supplying solutions for many other purposes as follows:

*Hospitals:* Highest quality of antiseptic and disinfectant solutions.

*Laundries:* Neutral electrolytic bleaching solution protects fabrics with reduction of cost in most cases.

*Water supplies:* Most effective and pleasant form of sterilization.

*Sewage problems:* Stabilized chlorine solutions produce better results.

*Deodorization:* For comfort stations in bathing houses, etc.

*Country estates, stock farms, dairies:* An incomparable disinfectant at the lowest cost.

*Algae:* Removal of algae and other growths in water is accelerated by chlorination.

*Note:* The finest and purest soda and bleaching solutions can be made for use in textile, paper and industrial plants.

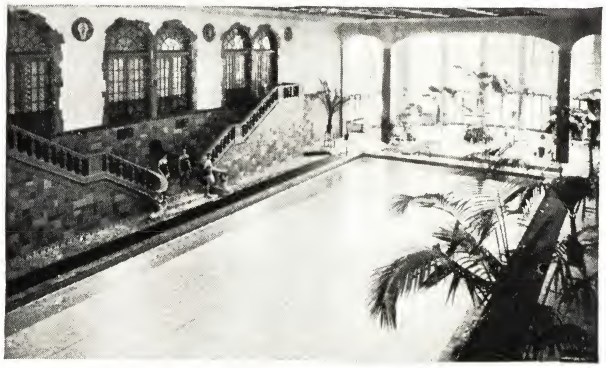
# ROBERTS FILTER MANUFACTURING CO.

638 Columbia Avenue
DARBY, PA.

For our page on Filters, see File Index

## SWIMMING POOL RECIRCULATION SYSTEMS

### Swimming Pool Sanitation



Recirculation has completely solved the question of Swimming Pool Sanitation. It is mandatory under State Board of Health regulations in many states. With recirculation, the fouled water is drawn from the pool by a centrifugal pump and returned to the pool through filters and sterilizing equipment, and, in the case of indoor pools, through a heater.

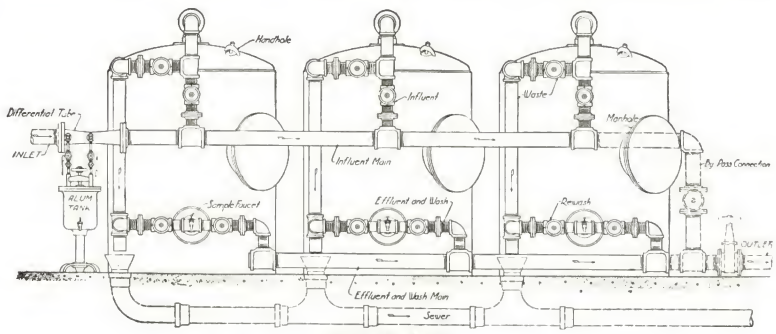
Architects and engineers planning the design of a swimming pool should apply to the Health Board in their respective States for such printed matter as is available, and State requirements or recommendations should form a part of their specifications. This is particularly desirable in connection with establishing the "period of recirculation" and "rate of filtration," as there is variation of opinion among authorities regarding these important design factors.

A typical recirculating plant for an indoor pool is shown in this catalog, but every pool should be given separate study so that the arrangement of pool fittings, recirculating equipment and piping will be such as to insure greatest efficiency and economy. Our Bulletin 110 will prove a great aid in designing the recirculating plant, and our Engineering Department welcomes the opportunity to assist architects and engineers in making the proper selection of equipment. Typical specifications will be supplied as a part of this service.

### Design

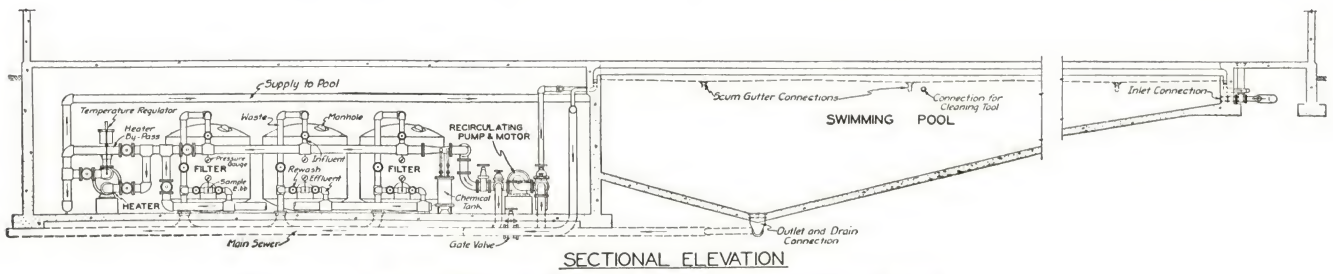
Where the bathing load is normal, the recirculating plant for pools of not more than 100,000 gallons capacity should be designed to recirculate the entire capacity of the pool in 8 hours. For non-congested pools containing greater capacity, a recirculating period of 12 hours can be employed. The rate of filtration should preferably be 3 gallons per square foot per minute, but in no case should it exceed 4 gallons per minute per square foot.

The arrangement of filters and piping should always be such as to allow use of the same pump for both recirculating and backwashing the filters with water from the pool. This will avoid illegal cross connections between city water service and the recirculating plant. We recommend a backwashing rate of 12 gallons per square foot per minute, which requires 4 filters in parallel, operating at a 3 gallon per square foot per minute rate; or, at the higher filtering rate of 4 gallons per square foot per minute, a battery of 3 filters, similarly arranged.




FRONT ELEVATION
BATTERY OF THREE STYLE-H-VERTICAL PRESSURE FILTERS

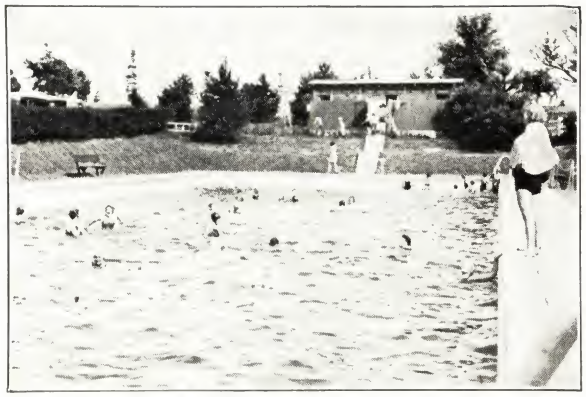
We have illustrated in this Catalog a suitable piping arrangement for a battery of 3 filters, and, of course, this same arrangement of piping is proper for 4 filters in parallel.




SECTIONAL ELEVATION

**Typical Arrangement of Swimming Pool Recirculating System**

While we endorse a closed recirculating system for usual indoor pools and small outdoor pools, with a hair and lint catcher in the pump suction line, we urge the inclusion of an open screen well in the recirculating facilities for larger pools. With a closed system, the water passing into the scum gutter is lost; whereas, with an open suction or screen well, this water can be recovered and returned with the recirculated pool water. Furthermore, an open screen well permits the feeding of coagulating chemicals by means of calibrated orifice boxes, assuring accuracy and economy.



### Responsibility

It is accepted practice to purchase all items of recirculating equipment from one source under a single order. This avoids divided responsibility and places on the one manufacturer the task of co-ordinating all equipment and supplying finished installation drawings of the recirculating plant.

The equipment contract should cover the filters, pump and motor with starter, coagulant and alkalinity devices, flow indicators, heater, hair catcher or screens, sterilizer and testing outfits, vacuum cleaner, and pool fittings. To make the installation altogether complete, the same contract can include all piping for the recirculating plant within the equipment room.

### Experience

Roberts Filters and Recirculating Plant Equipment are in service on more than eight hundred swimming pools. Installations can be found in every State of the Union and throughout Canada and Latin America.

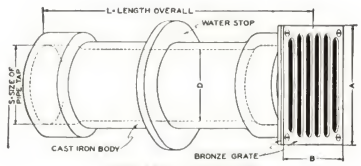
The pools range from small Therapeutic Baths to the largest Outdoor Swimming Centres.

The list includes schools and colleges; athletic clubs; branches of the Young Men's and Young Women's Christian Associations; commercial baths; hotels; apartments; private estates and residences; amusement centres; and, finally, community-owned pools, both indoor and out.

Water Rectification has been our specialty for more than thirty years.

### Filters

Data on all types of Roberts Pressure Filters will be found in the Filter Section of this Catalog, also in our Bulletins 60, 80 and 100.



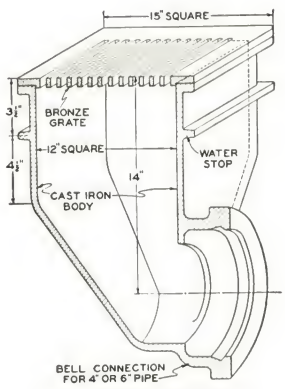

POOL INLET CONNECTION

SCHEDULE OF DIMENSIONS

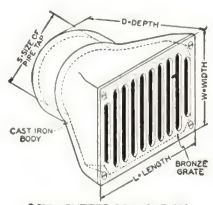
| S | D | L | A | B |
|---|---|---|---|---|
| 1½" | 2" | 13" | 4" | 4" |
| 2" | 2" | 13" | 4" | 4" |
| 2½" | 3" | 13" | 5" | 5" |
| 3" | 3" | 13" | 5" | 5 |

### Accessories

We manufacture pool fittings and hair catchers as shown, as well as other accessories. Obtain our Bulletins 105 and 120.



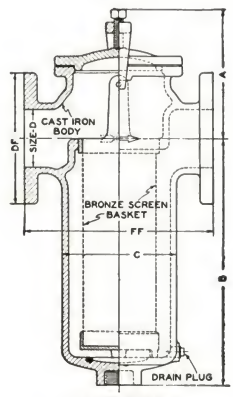

POOL OUTLET AND DRAIN CONNECTION




SCUM GUTTER CONNECTION

SCHEDULE OF DIMENSIONS

| S | L | W | D |
|---|---|---|---|
| 1½" | 6" | 3" | 3½ |
| 2" | 6" | 3" | 3½ |
| 2½" | 8" | 4" | 4" |
| 3" | 8" | 4" | 4" |




AIR CATCHER

SCHEDULE OF DIMENSIONS

| SIZE-D | DF | FF | A | B | C |
|---|---|---|---|---|---|
| 2½" | 7" | 10" | 7½" | 13" | 5½" |
| 4" | 9" | 13" | 6½" | 17" | 8" |
| 6" | 11" | 17" | 9½" | 23" | 10" |
| 8" | 13½" | 20" | 9½" | 23" | 10" |

# WALLACE & TIERNAN CO. INC.

## Manufacturers of Chlorine and Ammonia Control Apparatus for Swimming Pool Sterilization—"Swim in Drinking Water"

NEWARK, N. J.

SALES OFFICES AND SERVICE HEADQUARTERS

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SYRACUSE, N. Y.
WASHINGTON, D. C.

CANADA: Wallace & Tiernan Ltd., TORONTO, ONT., MONTREAL, QUE., WINNIPEG, MAN.
ENGLAND: Wallace & Tiernan Ltd., LONDON

REPRESENTATIVES IN MOST FOREIGN COUNTRIES

### Products

CHLORINE CONTROL APPARATUS (trade name "Chlorinators") for all types and sizes of indoor and outdoor swimming pools—capacities to meet all conditions.

AMMONIA CONTROL APPARATUS ("Ammoniators") for application of anhydrous ammonia—in the practice of the chloramine process of swimming pool sterilization.

Direct Feed types with all capacity ranges.

DRY CHEMICAL FEEDERS for application of chemicals in the dry state, either coarse, granular or finely powdered.

*"Swim in Drinking Water"*

### A Nationwide Service

Continued satisfactory operation of W & T equipment is the direct responsibility of a nationwide service organization. A field staff operating from 29 district offices is available to assist architects and engineers in selecting the proper equipment for each job. Their recommendations involve no obligation. Call on them.

### Current Literature

Current literature on the sterilization of swimming pools, swimming pool design and practice, diagrammatic layouts of suggested recirculating equipment is available free to architects and engineers on request.

## W & T PROCESSES

### Chlorination

Swimming pool sterilization with chlorination properly applied not only completely sterilizes the water at the point of application but also leaves a certain amount of chlorine in the treated water.

This is spoken of as a residual chlorine and acts to disinfect immediately any subsequent pollution which may be introduced by bathers or otherwise. It is this residual action that makes chlorination the complete and safe method of sterilizing swimming pool water. At every point in the pool—from top to bottom and from inlet to outlet—this penetrating residual action searches out pollution and disinfects it before it can be transmitted from one bather to another.

Over 3500 pools throughout the world are now employing chlorination's certain protection.

### Ammoniation

A further advantage in swimming pool water purification results from the use of ammonia in addition to chlorine, to form chloramine. Chloramine (chlorine plus ammonia) offers several refinements and benefits over the use of chlorine alone. Chloramine residuals are more stable and persist for longer periods. On large outdoor pools where the bathing load is heavy and rate of recirculation slow, this persistent chloramine residual increases the factor of safety and provides constant sterilization. Chloramine is not affected by aeration or the actinic rays of the sun, and its use has often resulted in a substantial saving in the operating cost.

Chloramine is odorless and tasteless enabling the operator to maintain high residuals. Algae control is more complete by virtue of the stable and persistent residual.

## W & T APPARATUS

Chlorine may be applied either by solution feed or direct feed, that is, either first mixed with a minor flow of water and the resulting solution applied, or applied directly to the water being treated. Of the two, solution feed method is far the best as all dangers of incomplete mixing are nullified and mechanical parts for handling gas reduced to a minimum.

Ammonia on the other hand, being far more soluble in water than chlorine, is handled easily by direct feed method. Ammoniators of this type are similar to direct feed chlorinators, differing only in materials particularly adapted to handling ammonia gas.

Application of such minute quantities of gas as are employed in water treatment requires that apparatus must be carefully and precisely built. Non-corrodible materials must be used and every precaution exercised in design and construction to insure continuity of operation in the important work it has to do.



W & T Type MSP Chlorinator



Equiscale Chlorinator

Wallace & Tiernan Chlorinators and Ammoniators are built to the highest standards. More than twenty years' experience in the design and manufacture of gas control apparatus have enabled W & T to eradicate points of weakness and offer equipment so durable, accurate and easy to operate that every demand is satisfied. Over 20,000 units of W & T apparatus are now in use in all parts of the world.

**W & T Type MSP Solution Feed Chlorinator**—For pools up to 500,000-gal. capacity. Operates on a semi-vacuum principle giving accurate control of small amounts of chlorine with a feed range sufficiently wide to include all changes in bathing loads. Ease of operation and dependable, trouble-free service please both operator and owner.

**Equiscale Chlorinator**—An improved type of visible vacuum chlorinator for small installations requiring less than 12 lb. of chlorine per 24 hours.

**Rotor Chlorinator**—A visible vacuum chlorinator designed to meet the demand for extremely low capacity apparatus. This machine will accurately feed as little as .03 lb. of chlorine per 24 hours.

**W & T Chloro Clock**—Feeds predetermined quantities of sodium hypochlorite or similar solutions by means of a traveling displacement cylinder operated by clock work. Efficient sterilization for the very small pool. Easy to understand and operate.

**W & T Direct Feed Ammoniator**—Applies ammonia gas directly to water being treated. Simplified design and sturdy construction make it a fit companion in every way for world famous W & T Chlorinators.



Rotor Chlorinator



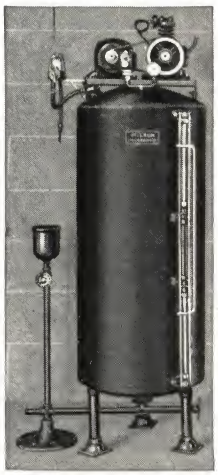
W & T Type MDPA Ammoniator

# WILSON CHEMICAL FEEDERS, INC.

Manufacturers of Hypo-Chlorinators and Ammonia Feeders
BUFFALO, N. Y.

## PRODUCTS

The following details cover the Type RL—a perfected system of Swimming Pool Sterilization. The Wilson Line includes automatic sewage feeders; pump type pressure feeders; vacuum feeders and injector feeders for water supplies and sometimes used on swimming pools. Write for information on other types of equipment listed above.



Type RL-P
3 Standard Sizes

## TYPE RL FEEDERS FOR SWIMMING POOLS

Time tested, proven, and accepted by authorities everywhere, Wilson Type RL Hypo-chlorinators and Ammonia Feeders are protecting the health of bathers in all parts of the country. The experience of swimming pool operators testify convincingly to such facts as low operating cost, ease of operation, flexible control, etc. In fact, the Type RL Feeders have established new standards of perfection in swimming pool sterilization. First costs are only about half that heretofore paid for apparatus of equal efficiency. Standardized to three convenient sizes for pools up to one million gallons capacity. Larger sizes made to order.

### Unit and Remote Controls

The control element is mounted on a bracket and attached to the machine unit. (See illustration RL-P.) Using sufficient tubing this control element may be placed on a convenient wall or post, or attached to the water main near the point of feed. The two types of remote controls are type RL-W, pedestal mounted, and the Type RL-F, with control in a panel box, for placement in the wall at poolside. If chlorine feed is to be controlled by the engineer use the Type RL-P as illustrated. If controlled by physical director either remote control handily situated is best. Write for data on remote controls.

### Points of Superiority

(1) Single manual control valve with visible feed (a feature with all Wilson Feeders), may be adjusted from 0-oz. to 50 lbs. of available chlorine per day.

(2) Uses hypochlorite solutions now available everywhere. Positively no hazards from chlorine gas.

(3) First cost is very low, and installation requires no changes in the building. No expensive service man required.

(4) Storage tank is completely enclosed, insuring against loss of available chlorine through exposure or evaporation. Tank is equipped with calibrating gauges for preparing feeding solutions of fixed chlorine content.

(5) Machinery runs intermittently, resulting in slight wear. The machine is built and guaranteed for long service.

**SIZES AND CAPACITY RATINGS**

| | Type and Cat. No. | Storage capacity, gal. | Pool size gal. | Floor space and head-room, in. | Shipping weight lbs. |
|---|---|---|---|---|---|
| Chlorine only | RL-P 20 | 20 | 60,000 | 16x16x42 | 250 |
| | RL-P 40 | 40 | 150,000 | 20x20x48 | 375 |
| | RL-P 80 | 80 | 500,000 | 24x24x60 | 600 |
| Chlorine and Ammonia | RL-PA 20-20 | C-20 A-20 | 60,000 | 16x44x42 | 450 |
| | RL-PA 40-20 | C-40 A-20 | 150,000 | 20x52x48 | 675 |
| | RL-PA 80-40 | C-80 A-40 | 500,000 | 24x60x60 | 1000 |

### Facilities Required

For the proper installation of Type RL equipment there is required, in addition to the floor space mentioned, a floor drain that may be reached by a hose. A ¾-in. water supply line to connect to storage tank and an electric connection for a ⅓ hp. motor which it is preferable to operate on the lighting circuit of 110 volts.

## INSTALLATION POINTS

(1) Place the chlorinator in a convenient place with access to a floor drain.

(2) Connect with a water supply having pressure or head sufficient to fill the tank, placing the valve as shown at 'M' on drawing.

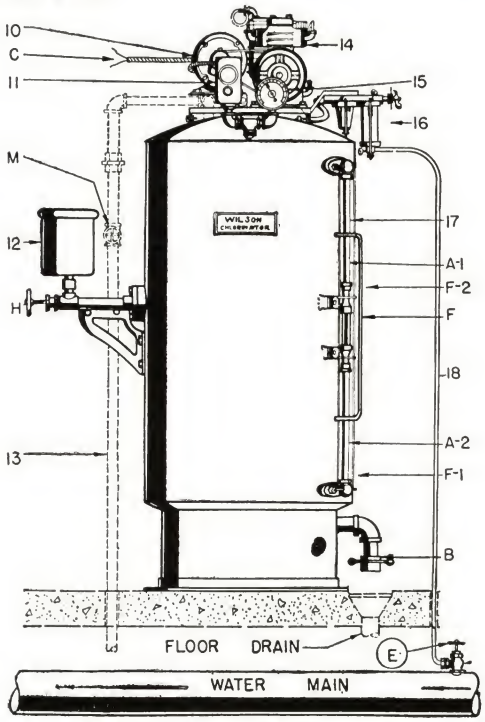
(3) Connect the motor either permanently with lever switch or push plug as regularly furnished.

(4) Tap ⅜-in. I.P.S. thread in the pool main at the point of feed as shown at 'E'.

(5) The complete system includes all parts shown in solid lines with 20 ft. of tubing No. 18.

(6) The control element No. 16 may be detached and mounted elsewhere in a convenient place.

(7) If automatic start and stop feed are desired specify a Wilson solenoid control, to be cross wired to the motor of the recirculating pump.




## GENERAL SPECIFICATIONS

### Scope of Performance

The chlorinator shall be capable of feeding hypochlorite solution in sufficient volume to maintain a chlorine residual within the pool to meet any requirements of swimming pool or health authorities.

The feeder shall possess an adjustable dialed control valve interposed between a visible sediment trap and a visible feed chamber in such manner that the physical characteristics of the feeding solution and the rate of feed may be observed by the operator.

Provision shall be made, without stopping the machine or loosening connections, for the quick removal of crystalline formations, lime deposits, etc., that may form in the feed tip orifice.

Storage tank shall be capable of carrying a pressure 30 lbs. in excess of the maximum pressure at the point of feed and the pressure shall not vary more than 1½ lbs. per sq. in., and provision shall be made for placing feeding solutions within the tank without manual handling of more than 10% of the water used.

### Specifications

One Wilson Hypo-chlorinator, Type RL.., Size ..... for pool of ..... gallons capacity. Include sufficient rubber tubing to place chlorinator ..... feet from point of feed. Include Quick Clearing Feed Tip, and all appurtenances for a complete installation. (Electric connections and ¾-in. water supply to be provided by the owner). One Wilson Chlorine Testing Set and bottle of orthololidine fluid.

Include sufficient hypochlorite for first charge of 1% feeding solution. The electric current is .... cycles ..... volts ..... phase.

All parts coming in contact with feeding solution shall be constructed of materials unaffected by hypochlorite in any form or concentrate.

# GUY C. FOSTER, INC.

SOLE AMERICAN AGENT

TELEPHONE
HAnover 2-2061

128 Water Street, NEW YORK, N. Y.

CABLE
GUYFOS

### Products

Standard Red Tennis Courts.
Special Red Tennis Courts.
Domestic Green Tennis Courts.
Deluxe Green Tennis Courts.
Private Estate Tennis Courts.
Deck Tennis Courts.
Colourcourt—Surface Dressing for clay courts.
Badminton Courts.
Clay Tennis Courts.
Tennis Court Fittings and Equipment.

### Characteristics of En-Tout-Cas Fast Drying Tennis Courts

These courts are usually ready for use within thirty minutes or less after rainfall. En-Tout-Cas Fast Drying Tennis Courts have all the desirable playing qualities of fine turf. Specifically, En-Tout-Cas is resilient under foot and imparts a true and uniform bound to the ball. The Red or Green color prevents glare and gives greater visibility. Their porous and elastic texture produces, on the average, two months more tennis each season.

Construction, with average care, is permanent. Courts laid in 1915 are still in active use. En-Tout-Cas is dustless. For indoor installations En-Tout-Cas is ideal. Out of doors the rich color of an En-Tout-Cas surface blends delightfully with the landscape. Metal or fabric marking tapes are laid flush with the court and securely and properly fastened down eliminating poor lines, tripping, etc.

### The En-Tout-Cas Tennis Surfaces

En-Tout-Cas offers a complete line of tennis courts, each with special characteristics of its own. They vary as to cost, playing qualities and maintenance required, and availability. The group is headed, of course, by the world famous STANDARD RED—we believe the best known and finest tennis surface on the globe—followed by DOMESTIC GREEN and SPECIAL RED, *the lowest maintenance courts of this type existent.* Deluxe Green is the world's finest, greenest court of its type. The Private Estate, and clay courts are all good surfaces of their type although their all-around efficiency is limited by certain naturally inherent restrictions. Space does not permit detailing the particular characteristics of each court.

These En-Tout-Cas courts cover the entire field of good tennis courts.

### Maintenance

The En-Tout-Cas Domestic Green and Special Red Courts require *less maintenance* than any other court that is made, except those of the "fixed" type. Due to their specially processed materials, these En-Tout-Cas courts require rolling only once every week or ten days —even after hard daily usage. A quick sprinkle and drag suffices for daily play. In all, an average of less than 30 minutes a day per court is sufficient for full and complete maintenance. Standard Red requires normal care.

The exact requirements of the court installed, are carefully detailed to owner and superintendent by the Construction Foreman, before he leaves the installation. Printed instructions are also given with the courts.

### Court Fittings and Equipment

Imported and domestic nets, various types of net posts, center guides, different types of marking tapes, specially built rollers, court brushes, sprinklers and sprinkling systems, fences, etc., are supplied as selected.

### Prices

Court prices depend on number of courts, the type selected, size of area and for clay courts, on the specifications for foundation and top.

### Reputation

En-Tout-Cas has been building tennis courts throughout the World from India west to Australia for more than twenty years and in that time has built more than 27,000 tennis courts. More En-Tout-Cas fast-drying tennis courts are used each year for famous tournaments than any other make.

### Guarantee

While there is no actual guarantee given with any of these courts they must at all times measure up to our requirements, as long as they are maintained according to instructions. It is our earnest endeavor to see every En-Tout-Cas court in the United States at least once each year and have a detailed report sent to the owner. (This service has, perforce, been somewhat restricted these past few years.)

### Co-operation with Architects and Contractors

GUY C. FOSTER, INC., are keenly interested in cooperating in every detail of tennis court planning, including the selection of the proper court, the selection of the site, its proper grading and protection, etc.

It has been our pleasure, through the years, to have been associated with many architects and builders in the installation of tennis courts for their clients.

### Construction Requirements

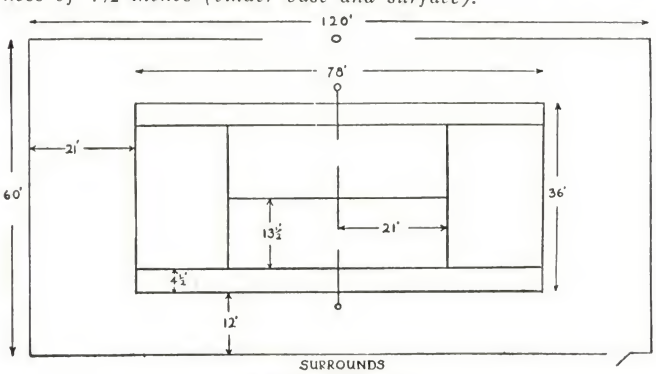
(Standard Sized Court 60x120 ft.)

Thoroughly consolidated site graded level or with 2-in. cross court fall, depending on nature of soil.

*No underdrainage is necessary, although the court must be protected from surface flow from surrounding terrain.*

135 yds. first grade soft coal cinders.
600 brick for edging court (finished flush with surface.)
About 50 common labor days.
Miscellaneous sand, cement, etc.

*En-Tout-Cas Fast-drying Courts have a total finished thickness of 4½ inches (cinder base and surface).*




A Standard Layout

# HAR-TRU CORPORATION

Fast-drying, Turf-like Tennis Courts
17 East 45th Street, NEW YORK, N. Y.

## HAR-TRU TENNIS COURTS

### Fast-drying, Turf-like Resilience, Low Maintenance, Long Life

HAR-TRU Tennis Courts are especially designed and perfected for American climatic conditions and are 100% American-made. They afford the greatest amount of genuine pleasure and skill from actual play. This includes such factors as a turf-like bounce (waist-high), the ball more or less "hanging" in the air, giving the player (whether skilled or unskilled) freedom to time and direct his strokes as do the best turf courts, without the disadvantages of uncertain bounce; the court is springy and resilient but the surface is neither too hard nor too soft and does not scuff up under hard play; fatigue is minimized due to the resiliency; tennis balls may be used twice as long; the cool green color is restful and pleasing to the eyes and, furthermore, harmonizes beautifully with landscaping, et cetera.

Maintenance for HAR-TRU is remarkably low. It is no greater than for a good clay court and many owners emphatically claim it is less. With normal care HAR-TRU courts will last a lifetime.

Rapid drying qualities of HAR-TRU are always most welcome to court owners and players alike. These courts are available for immediate play within 30 to 60 minutes after heavy rains. The construction of them also allows for earlier play in the spring and later play in the fall.

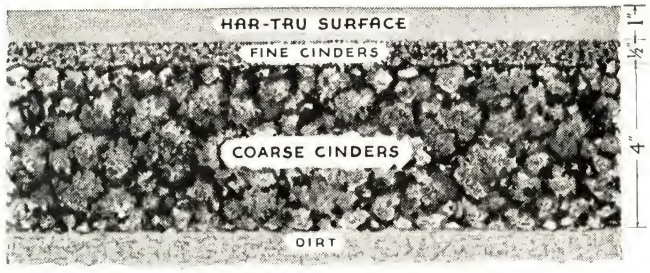
HAR-TRU courts are surfaced with a manufactured, granular composition of definite screen and chemical specifications. The surfacing material is porous and moisture-absorbing. Surface resiliency and drainage is augmented by the carefully laid cinder foundation.

### Choice of Cool Green or Maroon

A beautiful *cool* green, especially restful to the eyes, may be obtained for the surface—or an attractive maroon. Neither color will fade. HAR-TRU was the first (1931) *natural green,* fast-drying tennis court on the market and the green surfacing material is at least 15% more moisture-absorbing than any other known patented material used for this purpose. It is fully protected by U. S. Patent No. 1,999,130.

### Methods of Construction

There are two types of contracts under which HAR-TRU courts may be purchased. One is known as the Complete Construction contract; the other as the Surfacing Material and Supervision contract. The type of contract has no bearing on the amount of work to be done. It merely determines *who* does the work and it places the responsibility.




**Cross-section View of Har-Tru Tennis Court**

The building of HAR-TRU courts can be divided into three major sections—in the order named:

(1) Preparation of site or subgrade.
(2) Actual construction of the court proper.
(3) HAR-TRU surfacing material and supervision.

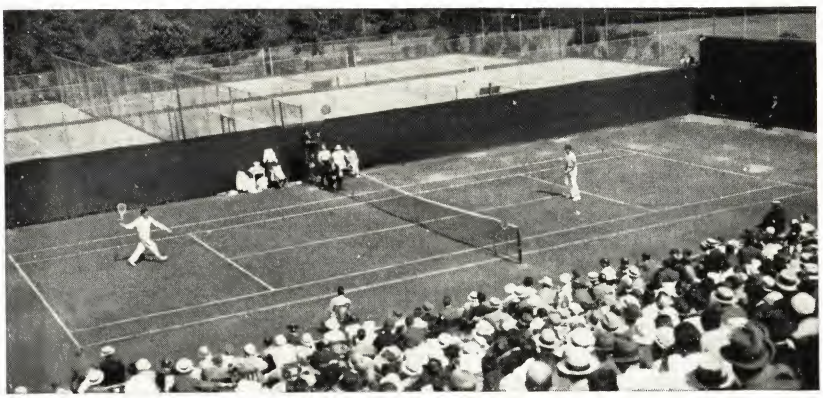
Our price for the construction of a HAR-TRU court may include all three of the above parts of the total cost, or just the HAR-TRU surfacing material and supervision, depending upon the type of contract into which the client wishes to enter with us. Someone has to do the first and second sections and in some cases the client wishes to do these himself or have his local contractor do them. We are prepared to do *all* of the work under one contract, or simply furnish the HAR-TRU surfacing material and services of foreman, co-operating with others in the actual construction of the court proper. Our only stipulations are that the site must be prepared to our specifications and that the actual construction of the court proper must be done under our supervision.

*Included* in the purchase of HAR-TRU surfacing material are the services of one of our experienced foremen to supervise the actual construction of the court proper, regardless of whether the latter is done under contract with us or otherwise.

### Specifications

Preparation of site or subgrade calls for a perfect plane 60x120 ft. for one court, thoroughly consolidated and fine-graded, with a fall, or pitch, of 1 in. for every 30 lin. ft. *in one direction only* of the court. Actual construction of the court proper includes principally the furnishing, either by client or by us, of 130 yds. of soft coal cinders, from 550 to 600 man-hours of common labor, 600 bricks, small quantity of sand and cement, necessary wheelbarrows, shovels, et cetera.

HAR-TRU surfacing material is not sold for construction, except under our supervision. The surfacing material is shipped f.o.b., under our Surfacing Material and Supervision Method, and services of our foreman commence with installation of cinder base and brick curbing.



**Championship Play on a Har-Tru Court**
Davis Cup Matches, 1932—Philadelphia Country Club

### Constant Repeat Orders

The many repeat orders for additional HAR-TRU courts denote unqualified satisfaction. HAR-TRU has received two separate *repeat* orders from the West Side Tennis Club, Forest Hills; and three different orders from the Army-Navy Country Club brought HAR-TRU the distinction of having nine of its courts at one club. Repeat orders have also been received from the Old Field Club, Exmoor Club, Northmoor Country Club and Country Club of Virginia.

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*Detailed Specifications, Additional Information, Catalog, etc., Will Be Furnished Upon Request*

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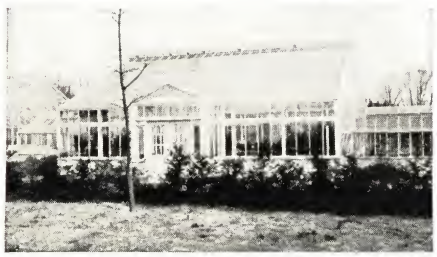
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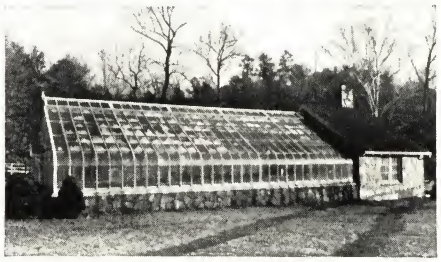
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### Services

We will be glad to send catalogs and prepare preliminary plans and specifications, and otherwise co-operate with the Architect. Personal calls made when desired. No matter what your glass enclosure problem may be, American-Moninger can assist you in planning and building.







**STANDARD WIDTHS, LENGTHS OF SECTIONS, ETC.**

Curved Eave and Semi-Curvilinear Types: 11, 16, 18, 21, 25, 29, 36 ft. Straight Eave Type, Ornamental Gutters: 11, 16, 18, 21, 24, 29, 36 ft. Standard Sections (16-in. glass spacing) 8 ft. 4¾ in., (24-in. glass spacing) 8 ft. 3⅜ in.

## OUTLINE SPECIFICATIONS FOR AMERICAN-MONINGER GLASS ENCLOSURES

**Steelwork**—American-Moninger Glass Enclosures are carefully designed, in accordance with approved practice for this exacting type of construction. Great care is exercised to assure a design of framework that is safe and rigid, yet neat. Standard structural shapes are used throughout with the exception of American-Moninger ⅛-in. steel plate wall sills and ornamental gutters. These members are specially bent to proper form and are *hot process galvanized after fabrication.* The sills are designed to cap 8-in. masonry walls. Proper sway bracing is provided whenever necessary to assure proper longitudinal rigidity. Where truss members are required, such members are neatly designed, and shop riveted connections are provided so far as is practical. Other connections are securely bolted, using substantial bolts.

**Woodwork**—All wood members are milled from only genuine air-dried Tidewater Gulf Red Cypress; they are guaranteed to be free from sap, wanes, checks or other imperfections. All items are accurately machined to appropriate pattern, and correct for the purpose intended. Curved members are cut from one-piece lumber. They are never steamed and bent. All sash and doors are made with blind mortise joints, and are carefully assembled true and square.

**Ventilating Apparatus**—Encased gear type of ventilating machines, self-locking and self-oiling, are furnished, with hand wheels conveniently located for access from walks or doors. Standard 1¼-in. wrought-steel pipe shafting securely connected with double pinned malleable couplings operates in hangers bolted to the supporting framework. Elbow type ventilator arms are furnished.

**Glazing**—Glazing bars are arranged to receive glass either 16 or 24-in. wide, as desired. For all standard work glass is clear, double thick, flat drawn, green house quality. Special grades of glass are supplied when, and as, specified. Curved glass is carefully bent to proper radius. All glass is carefully bedded in special elastic glazing composition, and secured with American-Moninger ¾-in. 16-gauge *hot galvanized glazing brads,* the best greenhouse glazing brad in use today.

**Painting**—All woodwork is painted at the factory with one coat of selected primer, the entire structure, except the galvanized parts, is painted with two additional coats of the best quality of greenhouse paint after erection, the final coat being applied after glazing.

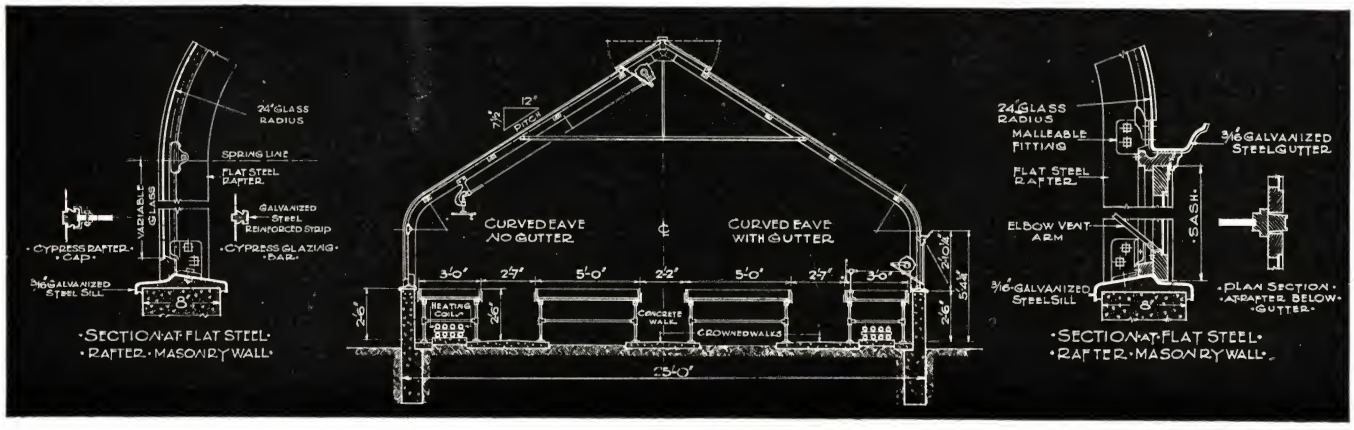
**Hardware**—All sash are hung with three hot galvanized butts, each with fast brass pins. The doors are furnished with brass butts with loose brass pins, bronze locks and knobs. Tumbler locks and knobs furnished for all outside doors. Bolts, screws and nails are all either hot galvanized or cadmium plated.

**Benches**—Several types of plant tables or benches are available. They can be furnished with either 1-in. *galvanized* pipe legs and framework throughout, with cypress bottoms and sides, or, if desired, American-Moninger *galvanized* steel frame type, with tile bottoms and slate sides. Other plain, economical types can be furnished when desired.

**Heating**—Hot water systems, using 2-in. wrought steel pipes, with individual greenhouse boilers, have proven best for the purpose. Steam systems can be furnished if preferred. Mains are usually placed in trenches, coils are individually valved and vented. Thermostatic control systems are furnished when specified. For systems heating several compartments, a mechanically circulated system is recommended.

**Plumbing**—Watering systems are usually arranged to permit use of 25-ft. lengths of hose, one ¾-in. brass hose valve in each aisle. All pipe and fittings, except valves, are furnished galvanized.

*Note: American-Moninger offers a complete service, from the design stage to completion. Full satisfaction is assured. We will be glad to mail work sheets and specifications. State size and type of structure being considered.*



E. A. WARD, President and Treasurer H. W. PRATT, Vice-president R. B. WARD, Secretary

# WM. H. LUTTON COMPANY, INC.

## Manufacturers and Builders of Greenhouses, Conservatories, Solariums, Tennis Court and Swimming Pool Enclosures, Greenhouse Equipment

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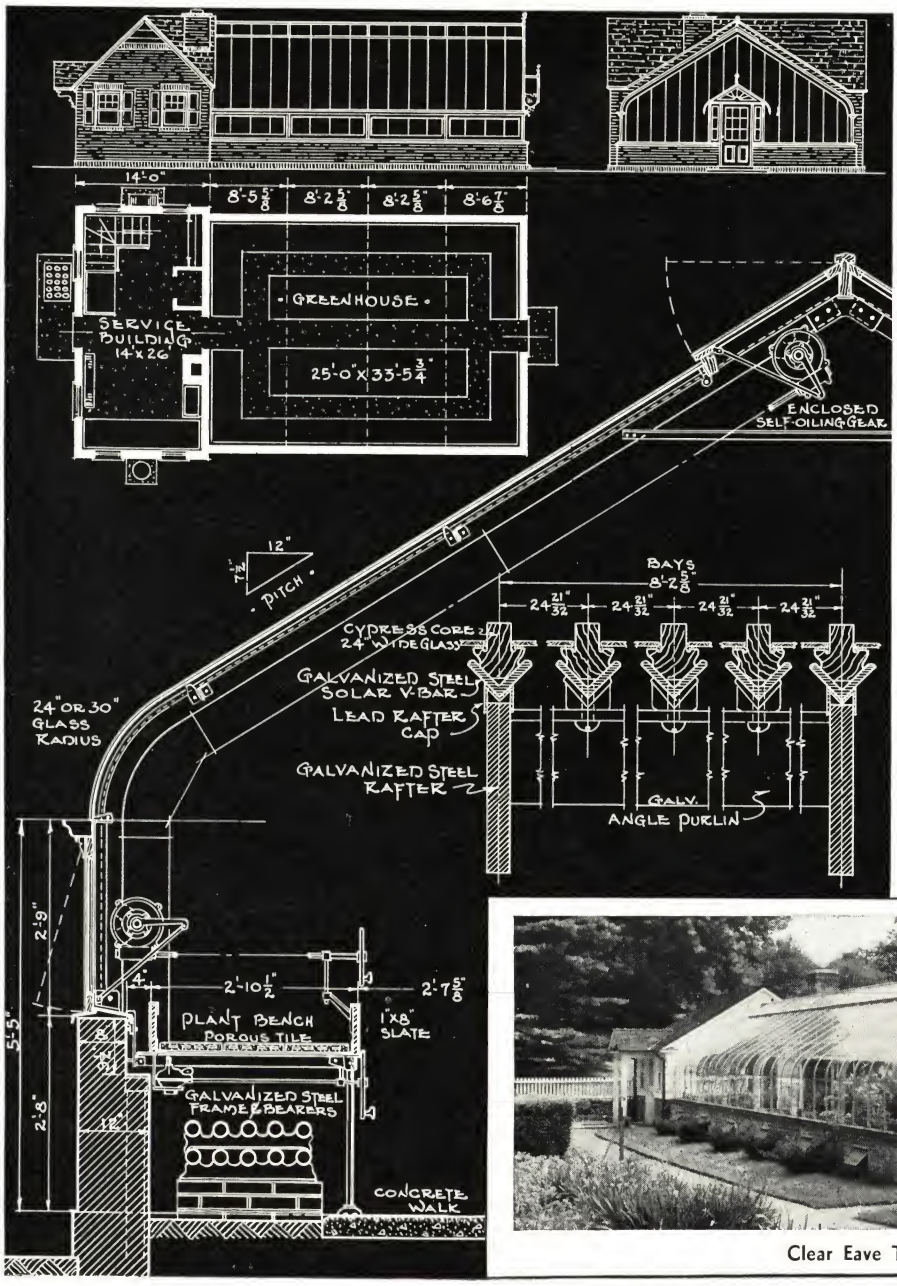
### The Original Solar V-Bar

A Galvanized *Steel* bar with small cypress cushion for glazing seat, invented, patented and used by us for a quarter of a century in greenhouses, conservatories, solariums, swimming pool and tennis court enclosures. The Solar V-Bar is not a *Wood* bar with a metal reinforcement, but a *Steel* glazing bar protected against rust by the *Hot Dipped Galvanizing Process after fabrication;* they are used with and without metal glazing caps. Solar V-Bars are used in conjunction with galvanized steel frames, correctly designed to overcome glass breakage resulting from unequal expansion and contraction of glass and steel.

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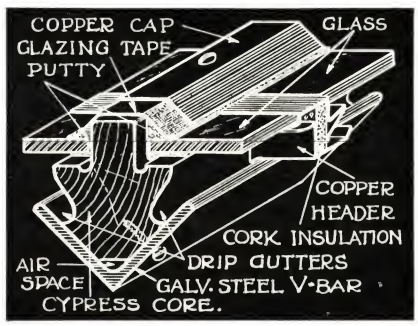
### Greenhouses and Conservatories

Lutton Solar V-Bar Construction is superlative for all greenhouses and for conservatories used for plant growing and display. Standard widths, from outside to outside of masonry walls are determined by convenient widths of benches and walks for private estate greenhouses and are as follows: 11 ft. for two side benches; 18 ft. for two side and one center bench; and 25 ft. for two side and two center benches. For standard lengths note dimensions on plan. Standard widths and lengths may be modified to conform to any unusual conditions. Glazed cross partitions may be placed under any pair of rafters.




### Special Glass Enclosures

For glass enclosures, other than greenhouses and conservatories, such as solariums, swimming pools, indoor courts, recreation and dining rooms the Lutton Solar V-Bar Special Construction *(see detail below)* is recognized by architects as an outstanding achievement. In this type of construction the glass is laid with flush joints, made possible by the cork-insulated glazing headers, and the glazing bar cores are capped with metal.




### Advisory Service

Our Engineering Department, specially trained to meet the problems usually encountered in designing successful glazed structures, is always available for consultation without cost to architect or owner.



Clear Eave Type, Wall Vents

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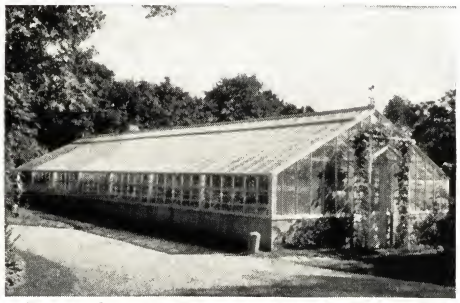
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*The only greenhouse manufacturers, having factories in the east, west and Canada and sales offices in principal cities*

### PRODUCTS

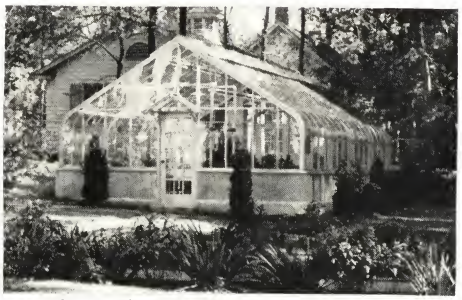
GREENHOUSES for Every Purpose; LEAN-TO CONSERVATORIES; HIPPED ROOF CONSERVATORIES; SOLARIUMS for SUN BATHING; DRIP-PROOF GLASS ROOFS; GLASS ENCLOSED SWIMMING POOLS; GLASS ENCLOSED TENNIS COURTS; GREENHOUSE BOILERS and HEATING; GLASS COVERS for SEWAGE TREATMENT PLANTS; SASH OPERATING DEVICES: For many years we have been designing and installing the highest grade Sash Operating Devices for banks, churches, schools, factories and public buildings. Send for A. I. A. Folder on manually or automatically operated sash opening devices.



*No. 1—Straight Eave greenhouse with workroom contained in the Glass structure. Built for Roy E. Tomlinson, Montclair, N. J.*

### SCOPE OF WORK

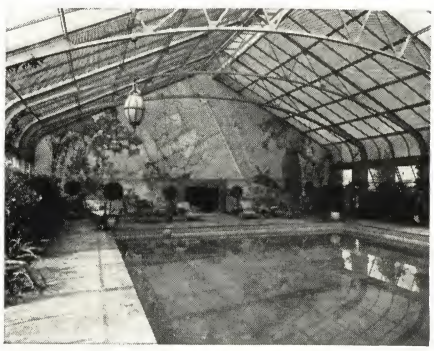
Designers, manufacturers and builders of *every* type of glass enclosure from those that are simple and inexpensive to those of monumental and of classic beauty. All embody the best weathertight, light and shadow-free principle of construction and are fabricated from the highest grade of materials practical for the purpose. All engineering and erection work is done by specialists in greenhouse manufacturing and heating.



*No. 2—Curved Eave greenhouse with workroom contained in the Glass structure. Built for C. R. Gay, Halesite, L. I., N. Y.*

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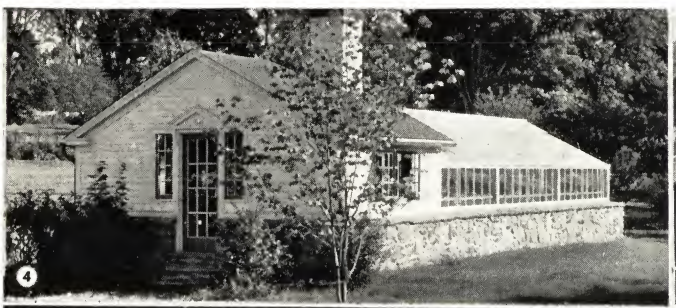
Our representatives and engineers are always ready to assist with complete service directly applicable to the particular requirements of any glass-enclosed job. They will furnish you with preliminary visuals, architectural renderings in color and complete *finished* plans, including specifications, masonry plans, etc.



*No. 3—Glassed-over Swimming Pool. Built for J. P. Donahue, Southampton, L. I., N. Y.*

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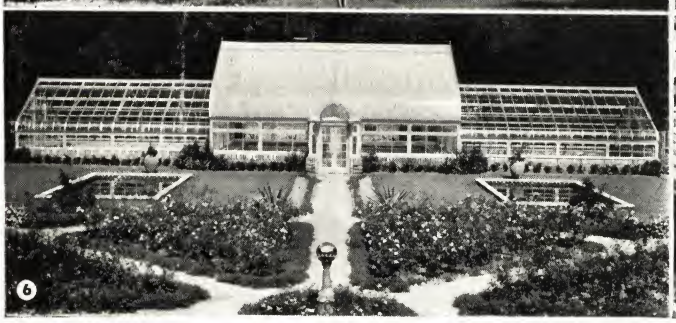
*Our A. I. A. folders are yours for the asking.* They contain specifications and detailed plans for modern greenhouse and conservatory construction, including complete data on newest heating equipment. Also plans and large reproductions of actual greenhouses and conservatories built on many of the finest estates in America!



*No. 4—Straight Eave greenhouse with frame workroom. Built for Miss G. Louise Robinson, Sharon, Conn.*



*No. 5—Greenhouse joined to residence. Built for Mrs. J. R. Schmeltzer, Greenwich, Conn.*



*No. 6—Tropical Plant House with wings. Built for Walter D. Bellingrath, Mobile, Ala.*



*No. 7—Longwood Gardens, Kennett Square, Pa. Built for Pierre S. du Pont*

*See next three pages for Details and Further Information*

*Standard greenhouse details are shown here in brief only. Send for our A. I. A. Folders for further information. See next two pages for adaptive features for Conservatories, Sunshine Rooms, Flower Rooms, etc.*

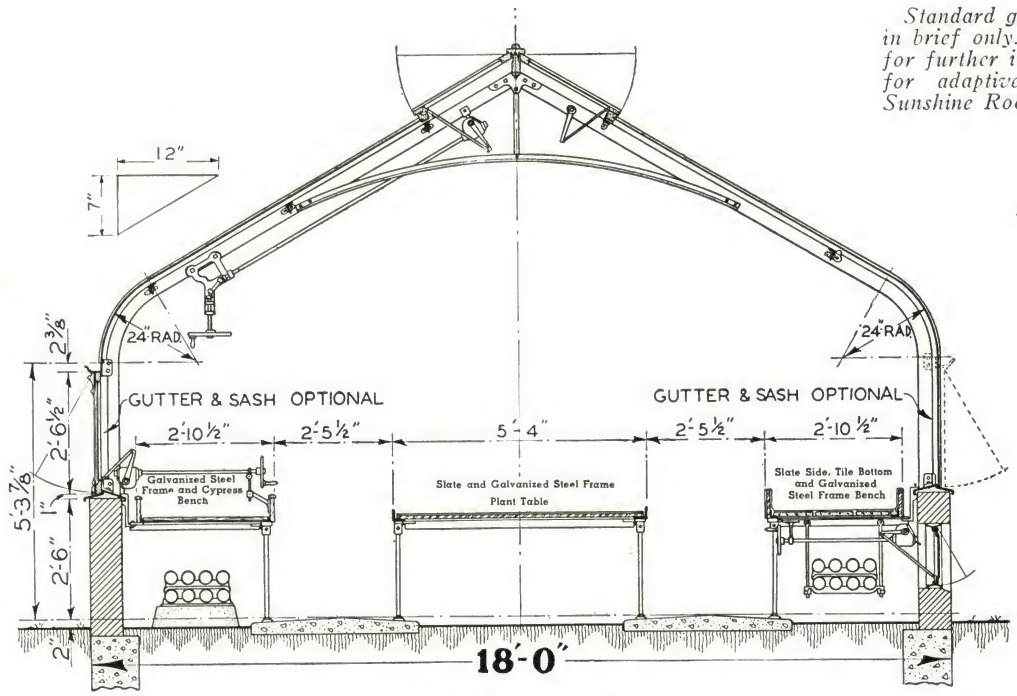



**Fig. No. 8. Curved Eave Section**

Built with curved steel rafters and glazing bars with curved glass at the eave line. Glass is 24 in. wide, bays are 8 ft. 3 ins. long. Standard widths are 10 ft., 14 ft. 6 ins., 18 ft., 21 ft. 6 ins., 25 ft.

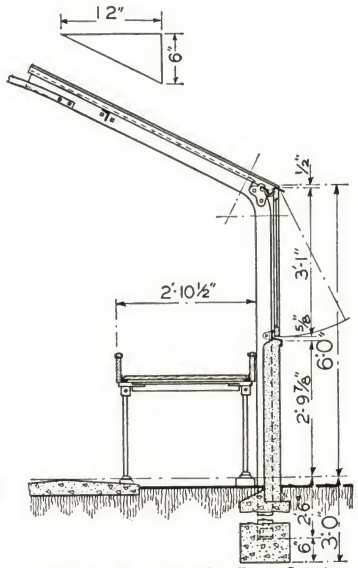



**Fig. No. 9. Straight Eave Section**

Except for the side details shown the straight eave house is same as the curved. See "General." Standard widths are 14 ft. 6 ins., 16 ft., 18 ft., 21 ft. 6 ins., and 25 ft.

## General

Both curved eave and straight eave houses are built with steel rafters, angle purlins and arched steel ties as shown in the sketches. Glazing bars can be of the U-Bar, V-Bar or wood bar type as shown in Figs. 10, 11 on this page, or Fig. 24 on page 4. Side sash and cast iron gutters may be omitted on narrow width houses or conservatories. Panel wall vents can be used in cases where side sash are eliminated.

All wood members are made of tidewater red gulf cypress-tank grade. All cypress parts are painted 3 coats. On U-Bar and V-Bar houses, all steel and cast iron parts are usually specified galvanized by the hot dip process and painted with aluminum paint. Painted steel work may be substituted at a lower cost.

The walls can be brick, stone, concrete or double boarding. U-Bar and V-Bar houses are built with 10-in. cast iron sills and concrete, stone or brick walls. Wood bar houses can be built with 4-in. concrete or double board walls and "Z" sills as shown in Fig. 9. Gables and partitions are of similar construction.

**U-Bar Houses**—The U-Bar makes an excellent greenhouse. It is lighter because the steel "U," being one of the strongest structural shapes, permits a design using fewer and narrower members. It will last longer because all the steel parts are hot galvanized and for extra protection copper caps and webbing may be placed over the tongue of the bars. See Fig. No. 24 on page 4. It can be used with or without the channel drip.

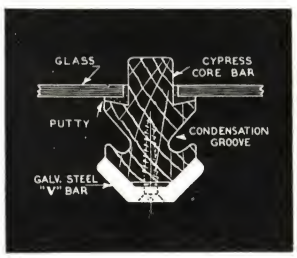



**Fig. No. 10. Improved Master V-Bar for Greenhouse and Conservatory Construction**

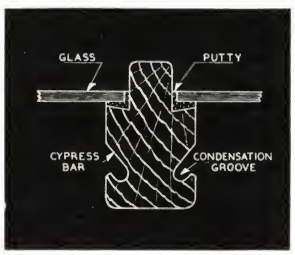



**Fig. No. 11. Master Cypress Bar for Greenhouses and Conservatories**

**Master V-Bar Houses**—The Master V-Bar is a noteworthy refinement that makes a most beautiful greenhouse. The glazing bars are reinforced with a special steel bar and all the steel parts are galvanized by the hot dipping process after fabrication. See Fig. No. 10. A copper cap may be placed over the tongue of the bar as in Fig. 24.

## Lean-to Greenhouses

These are one-half the width of a standard greenhouse section. Fig. No. 12 shows curved eave side detail; Fig. No. 13 straight eave. Minimum width is indicated by dimension B, but can be extended up to 4 ft. wide by use of a deck, shown by dimension X. All items under "General" apply to this construction. Standard minimum widths follow: 7 ft. 3 ins., 9 ft., 10 ft. 9 ins.

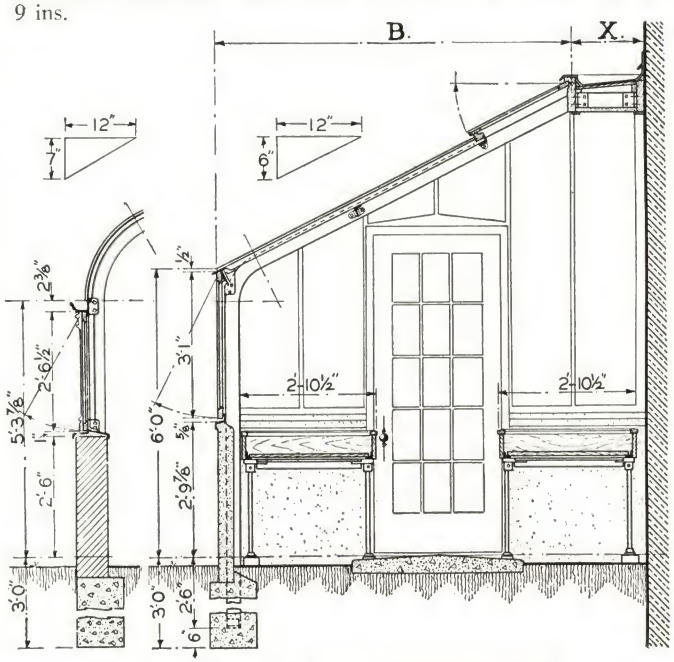


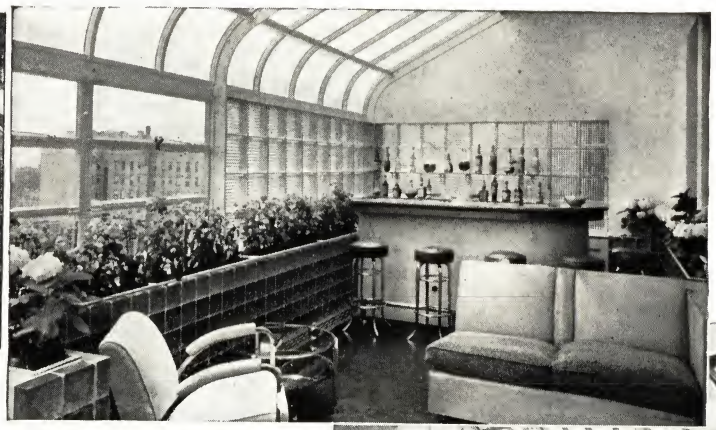

**Fig. Nos. 12 and 13. Lean-to Greenhouse Details**

*For Steel U-Bar detail, see Fig. 24, page 4.*

*See preceding page and next two pages for further information*



*No. 14—Curved Eave Lean-to Greenhouse. Built for Charles P. Stokes, Narbeth, Pa.*



*No. 16—Glass Enclosed Cocktail Lounge on the fourteenth floor of a mid-town Chicago apartment Pent house*

*Sides are of horizontal metal sash with a glass brick section at the bar. Plant tables are of colored glass brick with illumination behind them. Roof is of drip-proof construction.*



*Donald Deskey, New York, designer*



*No. 15—Straight Eave Lean-to with drip-proof roof construction and casement sash sides. Built for Mrs. Otto Meyer, Scarsdale, N. Y.*



*No. 17—Spanish Sunshine Room executed with circular construction for W. A. Golden, Larchmont, N. Y.*



*No. 18—Interior of Flower Room in Standard greenhouse construction for J. H. Van Alstyne, Larchmont, N. Y.*



*No. 19—Italian Patio with glass roof of hipped construction in the home of Hubert Burnham, Evanston, Ill.*

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Hubert Burnham, Chicago, Ill.

*See two preceding and following page for further information*

## ADAPTIVE FEATURES

Greenhouses, Conservatories, Sunshine Rooms, etc., are primarily practical structures of glass and are readily adaptable to a wide variety of treatments. The numerous forms of glass that are available and practical for use with other materials, make it possible to style the structures in harmony with the architecture of any building or setting. The subjects and descriptions on this and the three preceding pages will give you an idea of what has been done. Write to us for further information applicable to your own conceptions.

### Roof Pitches

Roof pitches can be made to suit existing requirements and be guaranteed drip-proof. With the use of arched glass (see Fig. No. 19 (page 3) and No. 23) the pitch can vary from 2 to 4 in. to the foot. Pitches of 4 in. or more to the foot are built with flat glass.




**Fig. No. 20. Arched Glass Construction for Flat Roof Pitches**

### Roof Arrangements

Hips and valleys can be constructed to suit existing conditions as shown in No. 7 and No. 19, or circular, as in No. 17 (page 3). Ridge and eaves can be at various heights as in Nos. 5 and 7 (page 1).

### Eaves

(a) Curved Eave with smooth sides as shown in Fig. No. 8, right side (page 2) or with gutters as shown on the left side.

(b) Straight Eave with standard greenhouse eave plate, Fig. No. 9 (page 2), or with a gutter.

(c) Gutters can be our standard cast iron moulded face, or of a structural shape, such as a channel or H-section, or they can be moulded to match other designs.

### Side Constructions

(a) Smooth side fixed glazing as in No. 14 (page 3).

(b) Regular hinged greenhouse sash as shown in Nos. 8, 9, and others.

(c) Metal sash, large horizontal as shown in No. 16 (page 3).

(d) Casement sash, cypress or metal, with large lights as in No. 17, or small lights as in No. 15 (page 3).

(e) Large plate glass solid or adjustable lowering into a pocket as in Fig. No. 21.

(f) To match any adjoining construction.

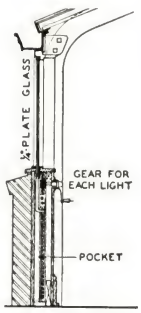



**Fig. No. 21. Adjustable Plate Glass Side Construction**

### Walls

Walls can be of any material from shingle or clapboard to cut stone. While greenhouse walls are usually as shown in Figs. No. 8 and No. 9, they are often as shown in Nos. 17, and 19, or built to match the walls of adjoining buildings.

### Ventilation

Ample ventilation is absolutely necessary. Conventional ventilating sash is shown in Figs. No. 8 and 9. For drip-proof construction, louvres, with top hinged outswinging sash are used (see Fig. 22). This ventilation can easily be screened. When sash in the sides are fixed closed, panel wall vents, as shown in Fig. 8 (page 2) (right side) are recommended.

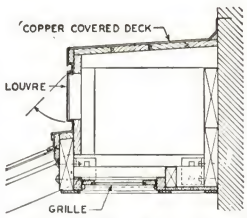



**Fig. No. 22. Example of Louvre Type**

### Glass

The usual type of glass used in roof construction is double strength, clear glass in widths up to 24 in., supported on two sides with glazing bars. For wider widths, $\frac{3}{16}$-in. crystal sheet glass, and ¼-in. plate glass is used. Wired glass is required by some building codes. Where great strength is required with unobscured visibility, Tuf-flex glass is used, giving six times the strength of the ¼-in. plate glass. Tinted and frosted glass can be used for both roof and side construction to obscure visability and produce color effects. Glass that transmits the sun's ultra violet rays is also used extensively in enclosures used for sun bathing.



**No. 23. Glassed-over Terrace**
Built with Arched Glass for G. Washington, Mendham, N. J. See Fig. No. 20

### Drip-proof Roof Construction

In greenhouse glazing the glass overlaps slightly like shingles. This is satisfactory for plant culture, but when the interior is to be furnished with draperies, furniture and floor coverings, which might be damaged by water, Drip-proof Construction is needed, and each light of glass in the roof is joined with an H-shaped copper strip or came, cushioned between each light of glass. Copper drip conductors are suspended under these as shown in Fig. 25 and eliminate drip in the glass enclosure. For further protection the roof bars are covered with waterproof fabric and copper cap (see Fig. 24).

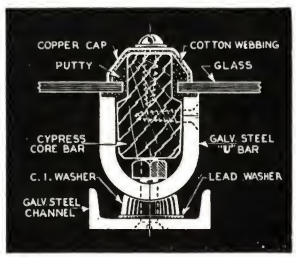



**Fig. No. 24. U-Bar for Drip-proof Glass Enclosures**
Used when the finest of glass structures is wanted. Channel drip gutter may be eliminated for greenhouse or garden room

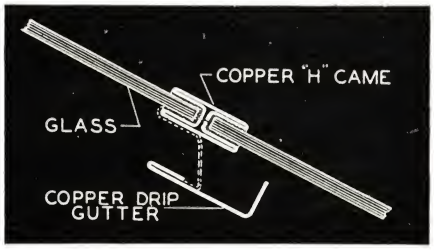



**Fig. No. 25. Detail of Patented Method of Glazing for Drip-proof Conservatories, Cocktail Lounges, Play Places and Sunshine Rooms**

# METROPOLITAN GREENHOUSE MFG. CORP.

SINCE 1871

MAIN OFFICES AND PLANT

1855 Flushing Avenue, BROOKLYN, N. Y.

DISTRICT SALES REPRESENTATIVES

CENTRAL STATES: Chicago, Ill., 1313 West Randolph Street

SOUTHWEST: Oklahoma City, Okla., 401 Southwest Ninth Street

## PRODUCTS

GREENHOUSES and CONSERVATORIES for private estates, parks, public institutions, etc.; GLASS ENCLOSURES for solariums, cocktail lounges, swimming pools, tennis courts, and sewage treatment plants.

## CONSTRUCTION

Metro Greenhouses are built in 85 standard types and sizes, and also in specially designed units for any purpose and to harmonize with any surroundings. The curved eave construction with single-span steel truss roof or interior-column-supported iron roof frame is the most ornate and is practically indestructible; the semi-iron roof construction affords the greater area under glass at lower cost; combined with excellent durability. The standard types with galvanized angle-steel eave plates, although built primarily for commercial growing, are intensely practical for public or private conservatories, and with embellishments that can be added at low cost, can be made into superattractive structures where both fine appearance and general utility are important considerations. Lean-to types are specially designed to meet all existing requirements.





**Conservatory and Lounge Erected for Rudolph Maichin, Kew Gardens, L. I., N.Y.**

All structural steel work for the larger units is designed for extreme rigidity under wind and snow load, with liberally spaced angle steel purlins which have a special high-carbon content to prevent roof sag. Truss frames are riveted, and in other construction all joints are made with non-rusting connecting fittings. Corosion is further prevented by the use of galzanized parts, cadmium-plated bolts, brass nails, etc., at exposed locations.

The wooden roof parts of all Metro Greenhouses are made from the finest long-fibre, sap-free, clear-heart Tidewater red cypress, air-dried for two years in its native climate and milled to smooth finish in our main plant.

All woodwork and all metal parts, except those which are galvanized are primed one coat at the factory, and all are given two finishing coats of paint made from Dutch Boy white lead and the finest linseed oil. Aluminum primer or finish optional.

The benches, supported upon pipe frames, are furnished with tile or slate bottom and slate sides or angle-iron edge, or at less expense, with cypress bottoms and dressed cypress sides.

Heating system may be steam or hot water, the former either with boiler set in a pit, or with boiler set on grade and equipped wih electrically operated automatic condensation return pump. Small standard or lean-to structures may be served by extra coils or piping from the house heating system.

## ENGINEERING ASSISTANCE

This company co-operates to the fullest extent with architect and owner, and will either contract for the structure including complete erection, or will furnish all material factory trimmed and fitted to the greatest practical extent. Our Service Engineers will assist the architect in special design, furnish tentative layouts together with material specifications, and will make such suggestions as will best combine the architect's ideas with greatest utility and durability of the finished structure. No charge is made for this co-operation.



**Metro Curved-eave Steel-frame Greenhouse Erected Upon Roof of Wing 3 of the U. S. Department of Agriculture Extensible Building, Washington, D. C.**

Interior divided lengthwise and crosswise into center corridor and 8 separate compartments. Contract included all material and erection complete. Special design throughout



**Erected in Eden Park, Cincinnati, and Intended by the Cincinnati Park Commission to Be the Finest Public Conservatory in the Country**

Group includes a central 60x159 ft. palm house, two 42x100 ft. show-house wings, a 25x51 ft. propagating house and an 8 ft. 6 in. x 8 ft. 4 in. passageway. Entrances have elaborate modernistic marquees and doors of glass set in aluminum. Our contract also included heating system with exception of boiler.

Two years after delivery of this conservatory, not a single light of glass had been replaced. The thorough satisfaction given by this installation is convincing proof of the ability of Metropolitan to build superattractive as well as highly practical greenhouses of any size.

# SERVICISED PRODUCTS CORPORATION

Greenhouses, Window or Porch Boxes and Flower Pots

6051 West 65th Street, CHICAGO, ILL.

For Servicised Roofing, Rubber Tile Flooring and Industrial Flooring, see File Index

## GREENHOUSES WITH SERVICISED ASPHALT SIDING

Servicised greenhouses have been developed as units for the individual home owner and to eliminate the ever present rotting which attends wood constructions in the moisture-laden air which is necessitated in the fostering of plant life.

All greenhouses are constructed of Servicised Asphalt Siding and Servicised Asphalt Planking is used throughout the interior—for benches, walls and for rot-proof and non-slip floors or walkways. These Servicised products have long been recognized for enduring qualities which at last have been applied to greenhouse use providing a construction which is non-decaying and vermin-proof.

The entire glass covering unit can be operated by a rocker arm in a single, easy movement so as to provide direct rays of the sun, ventilation and warm rains as weather conditions demand for the proper propagation of plant life. Note in the illustration the minimum of interference with direct sun light.

Benches within the greenhouses can be furnished not only in the standard widths and divisions but special arrangements can also be made.

Window or porch boxes can be supplied with or without Servicised fertilized lining as described below.

While the following table shows the standard sizes and dimensions of Servicised greenhouses, they may be arranged in multiples of any size so that limitless bench space is obtainable.

| No. | Length | Width | Height | Sq. ft. glass | Width of bench | Sq. ft. of bench |
|---|---|---|---|---|---|---|
| 1A | 10 ft. | 6 ft. | 5 ft. 2 in. | 62.5 | 2 ft. both sides | 44 |





## SERVICISED BENCHES FOR GREENHOUSES, PORCH OR WINDOW BOXES

Benches for the greenhouses described above as well as window and porch boxes are constructed of non-decaying vermin-proof Servicised Asphalt Planking. The asphalt plank being non-rotting, permits boxes to be made self-irrigating, allowing minimum attention.

They do not rot or stain any stand or bracket on which they may rest. Servicised boxes are constructed with a special lining which contains all necessary nutriments for plant growth.

The standard sizes are 36 x 14 x 8 in.

The Servicised Asphalt Flower Pot is also available in sizes of 4, 5 and 6 in.



Greenhouse Interior Showing Benches



Servicised Fertilized Window or Porch Boxes

# AMERICAN FENCE CONSTRUCTION CO.

Guaranty Trust Co. Bldg., Corner Fifth Avenue and 44th Street
NEW YORK, N. Y.
TELEPHONE
MUrray Hill 2-4470
SALES AND ERECTING OFFICES IN PRINCIPAL EASTERN CITIES

## Products

AFCO CHAIN LINK WIRE FENCES; AFCO COPPERWELD CHAIN LINK FABRIC; AFCO STANDARD IRON FENCES. Also Afco Ornamental and Plain Picket Fences and Gates; Afco Rustic Wood Fences; Window Guards and General Wire Work; Chain Link Fences of Bethanized Wire.

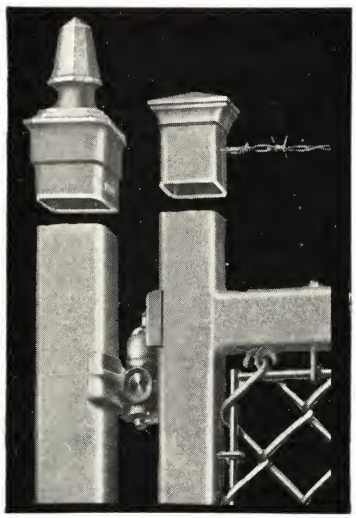
AFCO TRADE-MARK

## Afco Sales and Erection Service

Afco maintains a complete fencing service department. The Afco salesman is thoroughly trained in fence engineering, to give invaluable assistance in solving the buyer's fencing problems. This advisory service is furnished without cost and does not entail any obligation.

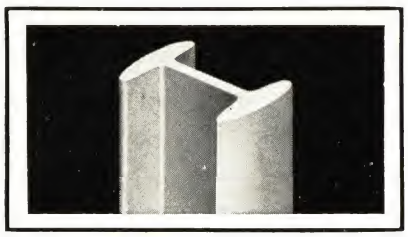
Afco maintains a permanent organization of fence erection crews. You may have your Afco Fence delivered *erected in place* by men who work with the skill and speed that comes with specialization. Or, if you prefer, we will be equally glad to deliver you the fencing materials with complete setting plans and instructions.

## AFCO CHAIN LINK WIRE FENCES



**Square Frame Gate**

All Afco gates have square tubular frames, in sizes and weights suitable to the requirements. Corners are welded to form a solid panel. Wire work panelled in center and fastened at top and bottom as well as on each side. A special feature not found in ordinary gate construction



**Special Beam Section Line Post**

The Afco special beam section post is furnished with all fences of heavy construction. Weight 4.45 lbs. per foot. The heaviest and strongest line post used in standard fence construction



**Square Terminal Posts**

All terminal posts are square tubular members, in sizes and weights to suit the requirements. No outside bands or straps required for attaching the chain link fabric. Fabric cannot be detached from posts from outside

**Styles** — AMERICAN FENCE CONSTRUCTION CO. manufactures Chain Link Fences in eight standard heights. Fabric is hot galvanized after weaving, or of Bethanized wire. All posts are set in concrete.

**"Bulwark"**—Fence, made in heights 5, 6, 7, 8, 9 and 10 ft., is similar to "Guardian," except that intermediate line posts are 2¼ in. special oval back I-beam, and double gates are made up to 24 ft. wide.

**"Suburban"**—Fence is a light weight lawn fence type made only in 3, 3½ and 4-ft. heights. Fabric is 11 or 9-gauge wire in 2-in. mesh. Intermediate line posts are 1⅝-in. o.d. spaced 8 or 10 ft. apart. Top rails 1⅜-in. o.d. Single gate widths are 3½ and 4 ft. Double gate widths are 8 and 10 ft.

**"Guardian"**—Fence is a heavier fence type in 4 to 6-ft. heights suitable for school and playground boundaries and residential property lines. Fabric is 9 or 6-gauge wire in 2-in. mesh. Intermediate posts are 2-in. o.d. spaced 10 ft. Top rail 1⅝-in. o.d. Gate opening single 3½ and 4 ft. Double 8, 10, 12, 14 ft.

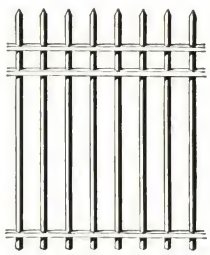
**Style 1103**—The same as our "Bulwark" fence but with the addition of three strands of barbed wire at the top.

**Style 1003**—Similar to No. 1103, except the top rail is omitted. Coil spring tension wires are placed at top and bottom of fabric.

**Style 913**—This style is similar to "Bulwark" type fence with barbed wire overhang but with lighter framework. Heights are 5 and 6 ft.

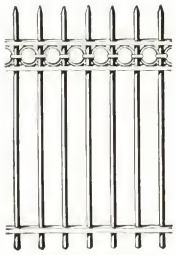


**Style 20**



**Style 30**

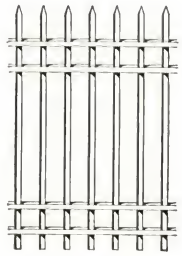
## AFCO IRON PICKET FENCES AND GATES



**Style 35**

Afco Iron Picket Fences and Gates are built in several designs, a few of which are illustrated. Posts are built in oval back beam section and are set in concrete. No back bracing required. Posts may have sheared or ornamental tops. Terminal posts are square tubular construction with ornamental tops. Rails are constructed with a center rib channel section to provide extra metal where pickets pass through and are designed for caulking with flexibility to meet ground contour. Pickets go through to set square with rails or diagonally as preferred. Standard panel lengths are 8 ft., each having an adjustable center support set in concrete.

Afco also builds Iron Picket Fences and Gates to fit special architectural requirements. Inquiries are solicited.



**Style 40**

*Catalogue mailed upon request.*

# ATLAS FENCE CO.

DIVISION OF MANGANESE STEEL FORGE CO.

Castor Avenue, Bath and Allen Streets, PHILADELPHIA, PA.

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NEWARK, N. J., 1060 Broad St.—Mitchell 2-4412
CHICAGO, ILL., 547 W. Lake St.—Randolph 2699
PITTSBURGH, PA., 3117 Jenkins Arcade—Atlantic 0155
BALTIMORE, MD., 404 St. Paul St.—Vernon 1262
GREENSBORO, N. C.—2-3141

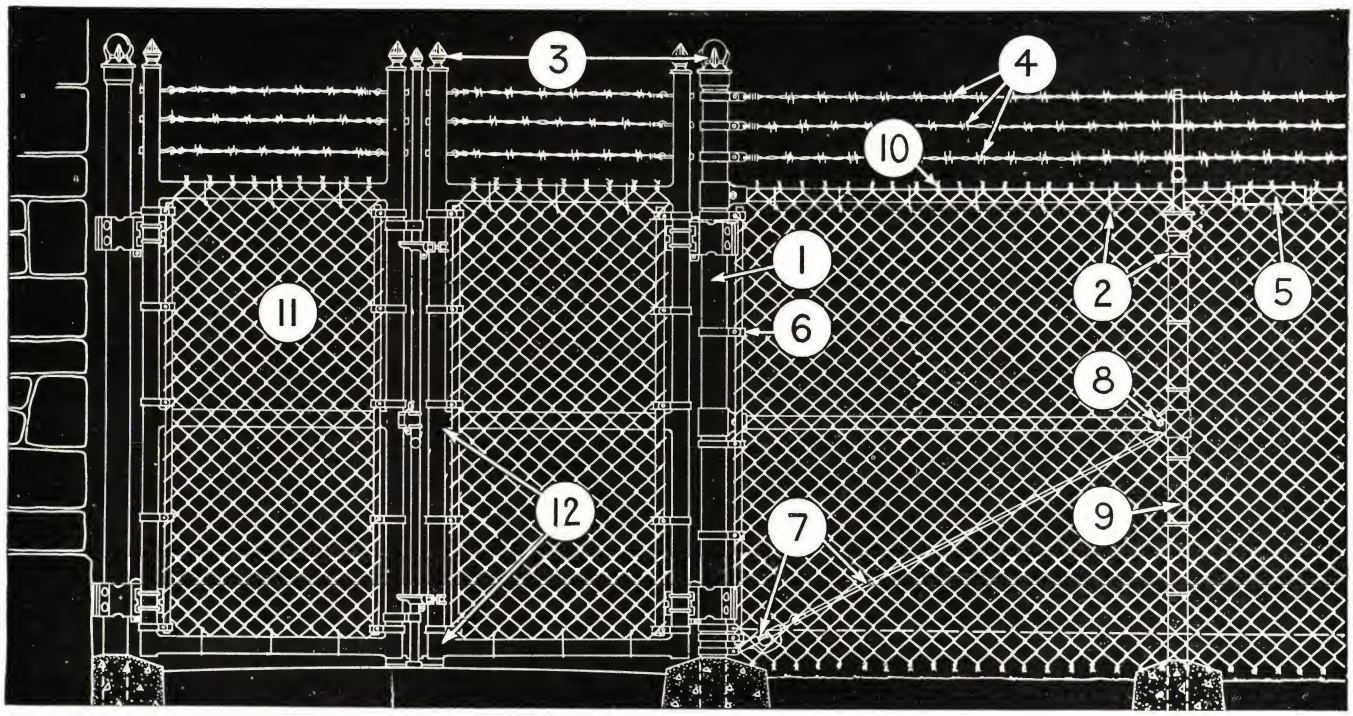
## Service

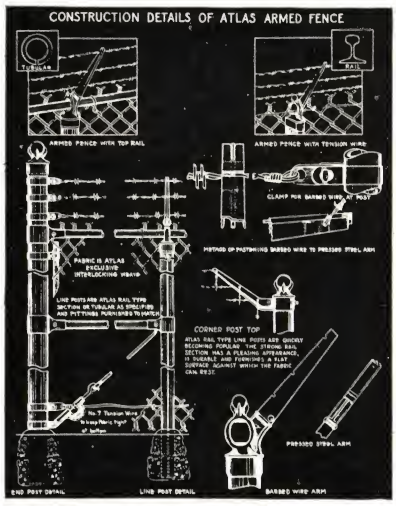
Atlas Engineers will call to determine your requirements and then submit plans and estimates without cost or obligation.

Our manufacturing facilities insure prompt shipment upon receipt of order, and we will erect the fencing if desired.

## Catalog

Our 32-page Catalog No. 524 (size 8½x11 in. suitable for filing) will be sent on request. It covers our complete line of Armed Industrial Fence, Estate and Institutional Fence, Residential Fence, Wrought Picket Fence, Road Fence and Rustic Wood Fence. Also Factory Partitions and Tennis Court Fence.




## Rust-Resisting Chain Link Wire Fence

1. All Terminal Posts filled with concrete, increasing the strength 100%.
2. Aluminum (Non-corrosive) Fabric Ties and Bands for securing fabric to framework.
3. Extra Heavy Malleable Iron Post Tops and Fittings galvanized after fabrication.
4. Non-corrosive Bethanized Barb Wire closely twisted with sharp points.
5. Galvanized Expansion Top Rail Couplings (allowing for expansion and contraction of top rail).
6. Atlas Tamperproof Boltless Bands for securing fabric to end, gate and corner posts. (No threads to rust.)
7. Adjustable Solid Steel Brace Rods equipped with galvanized malleable iron truss rod fitting. Threaded parts Everdur bronze.
8. Non-corrosive Everdur Bronze Bolts and Nuts in all tension fitting members.
9. Atlas open seam rail steel tubular Line Posts and Top Rail, which prevent the accumulation of moisture on the inside of these sections, or Atlas Special "H" Column Line Posts made of highest quality rail steel (High Carbon).
10. Long Lock Extra Twist Barb Selvage for Chain Link Fabric.
11. Choice of Atlas Chain Link Fabrics for special conditions:
    (1) Atlas Galvanized after Weaving Fabric.
    (2) Atlas Bethanized Fabric.
    (3) Atlas Leadkote Fabric.
    (4) Atlas Aluminum Fabric.
    (5) Atlas Stainless Steel Fabric.
12. Gates furnished with Welded or Heavy Malleable Corners as desired with tubular internal bracing.

## Wrought Picket Fence

Fabricated to meet the requirements of each individual job to assure rigid construction in following contours of the ground, curves, angles, etc. Numerous standardized designs in Fences and Gateways assist in choosing the most suitable type. Ornamental Gateways built to follow special design or specifications.




## BETHANIZED

*99.9999% Pure, Uniform Zinc Coating Assures Longer Life and Lasting Lustre*
(Shaded Areas represent steel wire—White, Zinc Coating)

*Right:* Bethanized Wire; Dotted area around shaded core indicates penetration of zinc into pores of steel structure, securely bonding the coating to the wire. Zinc can not flake off even with hairpin bends in wire. Note uniform thickness of protective zinc.

*Left:* Hot Dip galvanized Wire; Coating of zinc adheres to core by immersion, thus the drip or under side, robs the top side of protective zinc. No molecular bonding of zinc to steel.

***Bethanized wire is available in a grade comparable to galvanized wire and in three other grades with heavier zinc coating than can be obtained in galvanized wire.***



# ANCHOR POST FENCE COMPANY

## Manufacturers of Iron Fences, Wire Fences and Rustic Wood Fences

GENERAL OFFICES
Eastern Avenue and Kane Street, BALTIMORE, MD.

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ALBANY, N. Y., 612 Home Savings Bank Building
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FACTORIES: BALTIMORE, MD., CLEVELAND, OHIO, and SAN FRANCISCO, CAL.
For Oil Burners and Air Conditioners, see File Index

### Products

ANCHOR CHAIN LINK and ORNAMENTAL IRON FENCES, including: Ornamental Iron Entrance Gates; Electrically Welded Iron Fences, Gates and Bridge Railings; Wire and Iron Fences of all kinds for country places, residences, parks, playgrounds, institutions, factories, mills, railroads, airports, reservoirs, highway guards, etc.; Tennis Court and Athletic Field Enclosures; Kennel, Poultry and Stock Paddock Fences; designing and construction of Special Enclosures for game, birds, etc.; Iron and Wire Arbors, Arches and Trellises.

ANCHOR RUSTIC WOOD FENCES.



TRADE-MARK

### Nation-wide Sales and Erecting Service

A chain of Factory Branch Offices located in the principal cities of the United States insures immediate attention to the Architects' requirements.

Trained crews are maintained for erecting fences under supervision of our main office and branches, insuring good workmanship and an economical job.

If desired, we will make surveys for grades and measurements and take entire charge of the work.

When a customer prefers to do the erecting, tools and necessary information are furnished.

## ANCHOR CHAIN LINK FENCES

It is our contention that a chain link fence should be not only enduring in construction, but attractive in appearance as well, Anchor Chain Link Fences have been designed with these points in mind. Their four exclusive features—(1) *High carbon steel U-bar Line Posts;* (2) *Square Terminal Posts;* (3) *Drive-anchorage;* (4) *Anchor-Weld Wire Gates*—contribute materially to their exceptional strength and distinction.

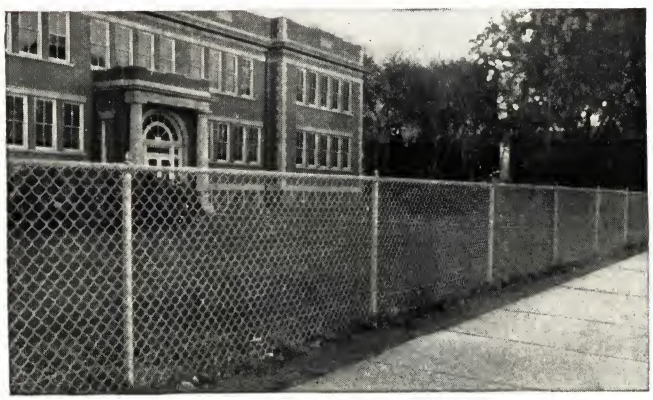
Anchor Chain Link Fabric is of best quality copper-bearing wire, *galvanized after weaving,* or electroplated wire. Made of Nos. 9 and 6 gauge wire, 2-in. mesh, in heights from 3 to 10 ft. The small mesh affords no foothold for climbers and when three strands of barbed wire are placed above the fence fabric an additional safeguard is provided.

Both top rail of galvanized pipe and barbed wire topping are optional.

All parts are heavily galvanized by the hot-dip spelter process.



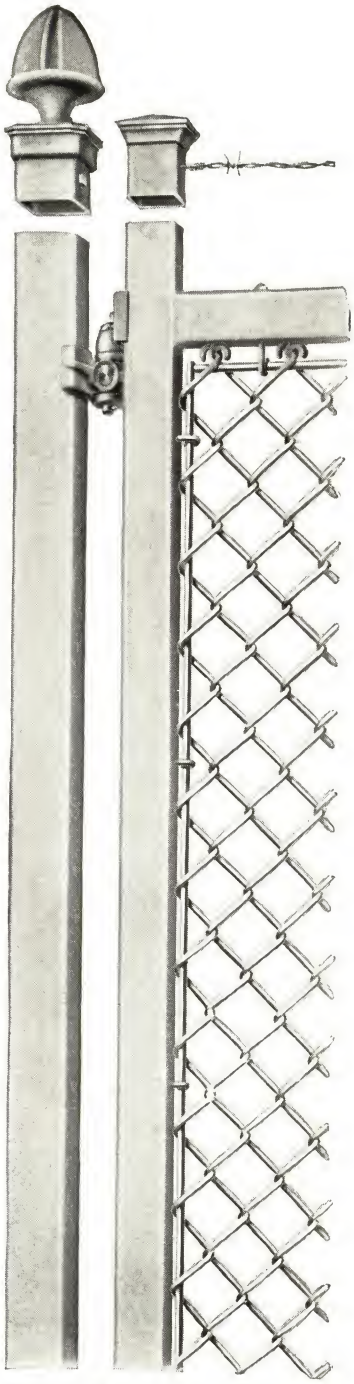
*Type AT-1—This Anchor Chain Link Fence is suitable for use on the property lines of city and suburban homes. Heights 3 ft., 3 ft. 6 in., and 4 ft.*



*Type CT-1—Schoolyards and playgrounds are effectively protected by this Anchor Chain Link Fence which is made in heights of 4, 5 and 6 ft. Can be supplied without top rail in Anchor Type CO-1.*



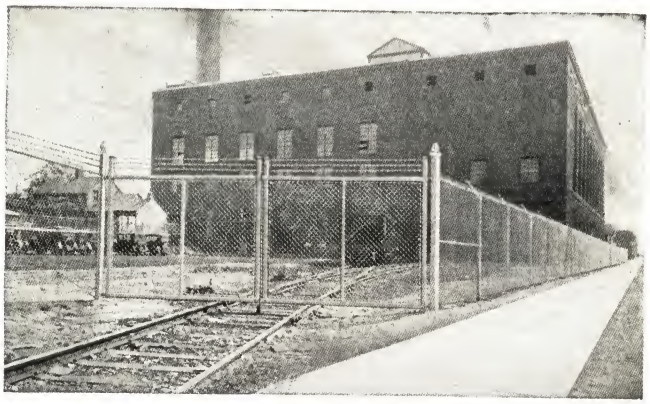
*Type DTA-1—Maximum protection for industrial plants, estates, etc., is provided by this Anchor Chain Link Fence. Heights 7, 8, 9 and 10 ft. including three strands of barbed wire. With top rail omitted this is Type DOA-1.*



Section of Anchor-Weld Wire Gate With Anchor Square Terminal Post

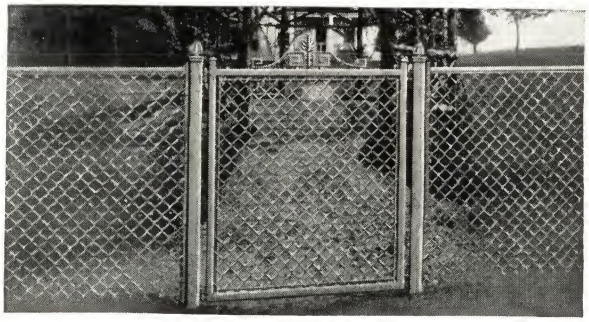


Anchor Drive-Anchorage



**Anchor Chain Link Fence**

An installation of Anchor Chain Link Fence, including Double Anchor-Weld Wire Gate



**Anchor Chain Link Fence**

A lawn gate of fence with Anchor-Weld Single Wire Walk Gate

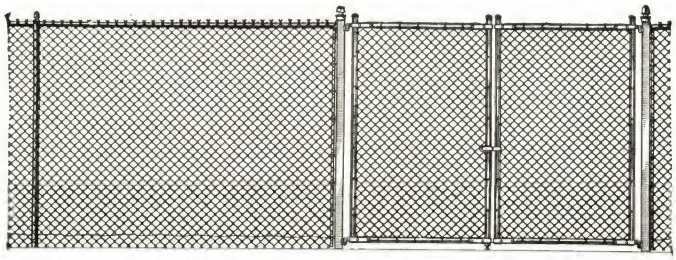
**Chain Link Steel Fence**




Line Post Type C | Line Post Type D | End & Corner Post No. 25-S | Gate Post No. 30-S

**Fabric**—2-in. mesh in Nos. 9 and 6 gauge. Galvanized after weaving or Bethanized wire.
**Line Posts**—Type "C"—2⅛-in. U-bar weighing 2.65 lbs. per ft. Type "D"—2½-in. U-bar weighing 4.20 lbs. per ft.
**End and Corner Posts**—No. 25-S—2½-in. square tubing weighing 6.5 lbs. per ft.
**Gate Posts**—No. 30-S—3-in. square tubing weighing 9.7 lbs. per ft.





**Anchor Square Terminal Post**—An exclusive Anchor feature developed for Anchor Fences. Stronger—because of its square shape; unclimbable—no bands or footholds for trespassers to use as a stepladder; more protective—fabric can not be detached from post from outside; better looking—has no fabric-holding bands.

**Anchor U-bar Intermediate Posts**—Because they are U-shaped and are made of high carbon rail steel, these posts are exceptionally strong and rigid. They are heavily galvanized by the hot-dip process.

**Anchor Drive-Anchorage**—To insure permanent alignment of Anchor Fences we set the posts by our *drive-anchor* method. Neither frosts, thaws nor the heavy strains to which a fence is subjected can disturb a fence anchored by this method.

**Anchor-Weld Wire Gate**—The Anchor-Weld Wire Gate is the latest Anchor development. It marks an important improvement in gate construction.

For the frame of this gate we use square tubular steel, which contributes materially to the attractive appearance, strength and rigidity of the entire gate structure. The horizontal and vertical members of the frame are inseparably *arc-welded* together at the corners. So strong is this construction that no diagonal braces are needed.

Anchor-Weld Wire Gates are made in both single and double types, in a variety of widths.

# ANCHOR ELECTRIC FLANGE-WELDED FENCE AND GATES

The ANCHOR POST FENCE COMPANY has been manufacturing iron fences for nearly half a century. Several years ago we adopted the electric weld process for manufacturing this product due to its great superiority. We use grooved square bars: ½, ⅝ and ¾ in. square. The rails consist of these bars in horizontal pairs the length of a panel. Welded between these pairs and at right angles to them, are the pickets. All welding is done on the flanged sides of rails and pickets.

The strength of this type of construction is enormous. Not only does it permit making of panels as long as 10 ft., but center support is unnecessary.

Even when supporting an additional weight of several hundred pounds at the center, the rails show little or no deflection and no permanent set. Pickets can not loosen and fall. Gates made in the same manner as the railing, require no diagonal braces to maintain rigidity.

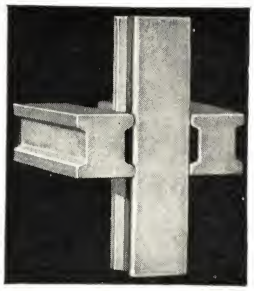
Elaboration is possible; circles, scrolls, ellipses, and other special features may be introduced, double top or bottom rails may be used, and highly ornamental iron posts—or brick, stone, concrete, or cast iron columns—may be employed.

Anchor-Weld Iron Fences and Gates are peculiarly appropriate for use on fine residences and estates. Their simple beauty, rugged strength and permanence lend added attractiveness and dignity to the property they protect.

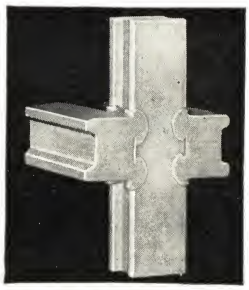
The tremendous strength of their electric weld construction, the unique grooving of their graceful pickets and rails, their simple lines unmarred by braces, lugs or re-inforcements —these are the principal features that have contributed to Anchor-Weld popularity as demonstrated by the thousands of installations on fine properties throughout the country.

For schools and playground enclosures, Anchor-Weld Fences possess every desirable quality. They provide real protection, are strong enough to stand unusual abuse, resist the action of the elements and, in design and workmanship, are fit companions for the really fine architecture they are often called upon to set off.

In fact, whether it be for country estate, an institution, church, cemetery, public building, park, industrial plant, railroad or public utility, Anchor-Weld Fence will not only effectively enclose but will faithfully reflect the character of the property it protects.



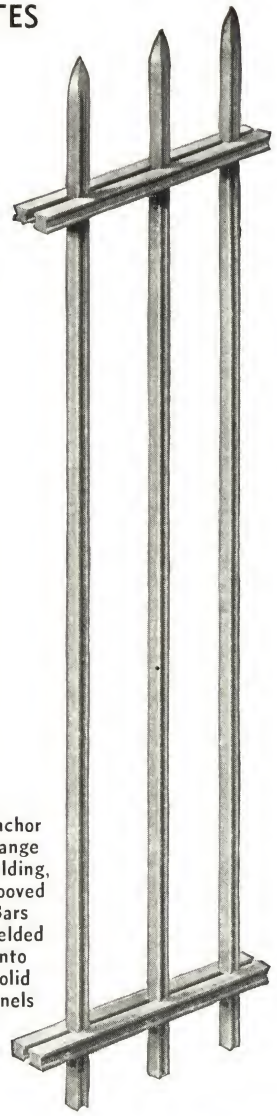
**Grooved Square Bars of Open Hearth Steel**



**Electrically Welded Under Tons of Pressure**



**Forming One Solid Piece at Each Intersection**



**Anchor Flange Welding, Grooved Bars Welded into Solid Panels**



*Spanish architectural motif in the beautiful home of W. F. Markham, Glendale, Cal., is made more attractive by an Anchor Weld Iron Fence*



*This special Anchor Weld Iron Gate stands at the entrance to the estate of Asa G. Candler, Jr., near Atlanta, Ga.*

# ANCHOR RUSTIC WOOD FENCES

Anchor Wood Fences can be supplied in several different styles. In Anchor Hurdle and Picket types northern white cedar is the wood selected. Another Anchor Hurdle with rails split instead of round, and Anchor Post and Rail Fence, is constructed of mountain grown chestnut.

**Hardware**—The hardware used with Anchor Cedar Fences is old-fashioned wrought iron. Gate fastenings are wrought iron or wood bolt type to match the gate itself.

Hardware harmonizes perfectly with the rustic appearance of the wood.

## Specification Manual No. 89

This manual contains complete specifications on our different types of chain link and iron picket fencing. A free copy will be gladly sent from Baltimore or supplied by any of our offices.

# CINCINNATI IRON FENCE COMPANY, INC.

Manufacturers and Erectors of Plain and Ornamental Iron Work

3336 Spring Grove Avenue, CINCINNATI, OHIO

## IRON FENCES, IRON GATES, BALCONY AND STEP RAILINGS AND GATES FOR INTERIORS AND EXTERIORS, FOLDING GATES FOR EVERY PURPOSE, WIRE AND IRON WINDOW GUARDS, GRILLES, CHAIN LINK FENCE

**Iron Fence**—"Cincinnati Fence" embraces a complete line of designs with pointed, malleable or bowed picket tops suitable for residences, private estates and cemeteries. Single and double bowed tops for schools and orphanages, non-climbable tops for institutions and factories.

**Wire Fence**—Copper bearing chain link fence, selvages barbed and knuckled, with or without extension arms with three or five strand barbed wire, suitable for residences, parks or factories.

**Gates**—Swinging, sliding, or folding for entrances of every description. Folding gates for the rear of trucks.

**Railings**—Balcony and step railing suitable for porches, also for the interior. Also suitable enclosures for window boxes.

**Window Guards**—Designs suitable for residences, banks or institutions made of wire or iron, or steelcrete.

Exceptional quality for the most exacting architectural requirements.

### Fence Construction

"Cincinnati Fence" made of the best open hearth steel or common wrought iron, refined iron or genuine puddled iron.

**Rails**—Channel, angle or flat sections.

**Pickets**—Round, square, flat, or angle, suitable thickness according to height required. Milled or forged points, straight or bent in or out, or tipped with malleable or cast iron heads.

**Posts**—Made in a large variety of sizes and styles to harmonize with architectural surroundings of solid iron, tubing, I-beam or cast iron.

**Finish**—Priming coat of black, red lead, or red oxide for fence and exterior railing. Flat black or a finished coat in Swedish or polychrome.

### Estimates and Engineering Service

Blue prints and illustrations of our many and varying standard designs gladly furnished upon request. It is always advisable to know for what purpose the material is wanted and measurements of the enclosure embracing the quantity involved.

As nearly every project presents somewhat varying problems, our staff offers helpful design-engineering to architects, engineers and their contractors. Our capability to act in a consulting capacity for architects is the result of many years of co-operating with the profession in design, construction and erection of fence and railings of every description, also plain and ornamental iron and wire work.

Execution of your special designs will be reliably handled in our shop by thoroughly trained and experienced craftsmen. Our service, while exceptionally satisfactory on "rush jobs," never is without the accuracy guaranteed sturdy construction and the rugged strength that endures the test of time. We welcome the opportunity of furnishing estimates.



No. 800. Entrance Grille



No. 715. Railing with Every Other Picket Twisted
Note the attractive ornament in platform railing



No. 701. Balcony and Step Railing
Also attractive without scroll ornaments



No. 708. Step Railing
Notice hand rail on opposite wall

# CYCLONE FENCE COMPANY

## WAUKEGAN, ILL.

WORKS AND OFFICES

NORTH CHICAGO, ILL. DE KALB, ILL. CLEVELAND, OHIO FORT WORTH, TEX. OAKLAND, CALIF.
GREENSBURG, IND. NEWARK, N. J. TECUMSEH, MICH. PORTLAND, ORE.

DIRECT FACTORY BRANCHES

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| CHICAGO, ILL. | INDIANAPOLIS, IND. | | PROVIDENCE, R. I. | WHITE PLAINS, N. Y. |

PACIFIC COAST DIVISION

STANDARD FENCE COMPANY, OAKLAND, LOS ANGELES and SAN FRANCISCO, CALIF., PORTLAND, ORE., SEATTLE, WASH.

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## SPECIFICATIONS, CYCLONE SAFEGUARD CHAIN LINK FENCE

Built in heights from 4 ft. up to and including 10 ft. Chain Link fabric is full height of fence.

**Fabric**—"Galv-After" Chain Link copper-steel wire heavily zinc-coated by hot-dip process after weaving. No. 9 or No. 6 gauge wire woven in a 2-in. mesh. On heights 5 ft. and over, both edges of fabric have twisted and barbed finish. On heights 4 ft. and lower, one edge has twisted and barbed finish, the other has knuckled finish and it is recommended that the knuckled edge be placed at top of fence dressed below top rail with the barbed edge at the bottom.

*The famous Cyclone chain link fabric which bears the "12m" label has an extra heavy coat of galvanizing that stands a minimum of 12 one-minute immersions by the Preece Test. And that means it will last longer.*




**Posts**—*Line Posts*—2.25 H-column section for fence 6 ft. and over in height. Where fence is less than 6 ft. high, Line Posts are 1.875 H-column section. *Note:* 6 ft. high fence may be furnished with 1.875 section. Both sections have carbon content of .35%.

***End, Corner, Angle and Pull Posts***—3-in. outside diameter, weight 5.79 lb. per lin. ft. when fence is 6 ft. and over in height. When fence is less than 6 ft. in height, these posts are 2½-in. outside diameter, weight 3.65 lb. per lin. ft.

***Gate Posts***—Size and strength of gate posts for swinging and sliding gates have been carefully determined by our Engineering Department. Details upon request.

***Post Spacing***—Posts are spaced in line of fence not farther apart than 10-ft. centers.

***Depth of Posts***—Line posts for fence 4 ft. or lower are set 24 in. in concrete base; terminal posts 30 in. In 5-ft. fence, line posts are set 30 in., terminal posts 36 in. In Cyclone Safeguard Fence 6 ft. in height and over, all posts are set 36 in.

***Post Setting***—Concrete post bases are of proper mixture, size and shape to furnish sufficient foundation.

***Post Tops***—Hot-dip galvanized. All posts fitted with heavy ornamental post tops of malleable iron.

**Top Rail**—Hot-dip galvanized. Tubular copper-steel 1⅝-in. outside diameter, weight 2.27 lb. per lin. ft. when fence is 5 ft. or over in height. When fence is 4 ft. or lower, top rail is 1⅜ in. outside diameter. Provided with expansion rail couplings. Top rail passes through post tops and forms a continuous brace from end to end of each stretch of fence.

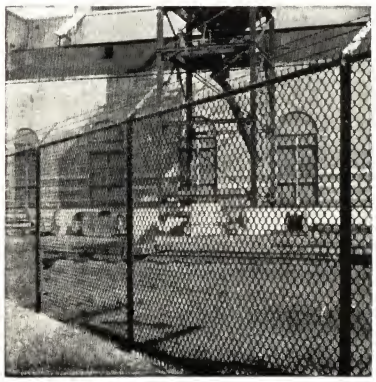
**Braces**—Hot-dip galvanized, furnished only on fences 6 ft. and over in height. End, gate and corner posts are braced by tubular copper-steel braces 1⅝-in. outside diameter, weight 2.27 lb. per lin. ft. Braces are spaced midway between the top rail and ground and extend to the first line post, fastened by malleable iron or pressed steel connections, then trussed from line post back to end, gate or corner post.

**Fittings**—All fittings used with Cyclone Safeguard fencing and gates are malleable iron, pressed steel or aluminum.

**Fabric Bands**—Fasten the fabric to line posts and top rail.



**Cyclone Safeguard Fence**
Beautiful and dignified property protection for country estates and homes—also golf grounds and clubs



**Cyclone Invincible Chain Link Fence**

Standard height, 7 ft. Built in heights up to and including 11 ft. Extension arms carry 3 rows of 4-point barb wire 12 in. in or out from fence line.

All other specifications same as Safeguard Fence 6 ft. or higher

**Cyclone Tennis Court Enclosure and Backstop**

Standard height, 10 ft. Special heights furnished if required. Fabric is No. 11 gauge copper-steel wire woven into a 1¾-in. mesh galvanized after weaving.

All other specifications same as Safeguard Fence 6 ft. or higher

# U.S.S. CYCLONE FENCE

USS
UNITED STATES STEEL



**Cyclone—Not a "Type"**

*Cyclone is not a "type" of fence but fence made exclusively by Cyclone Fence Company and identified by this trade-mark.*

## SPECIFICATIONS, CYCLONE SWINGING GATES

**Standard Sizes**—Single swing walk gates built standard for 4-ft. opening. Double swing gates for driveways built standard for 8 to 18-ft. openings. Where conditions are such that standard sizes cannot be used, gates are built to meet requirements.

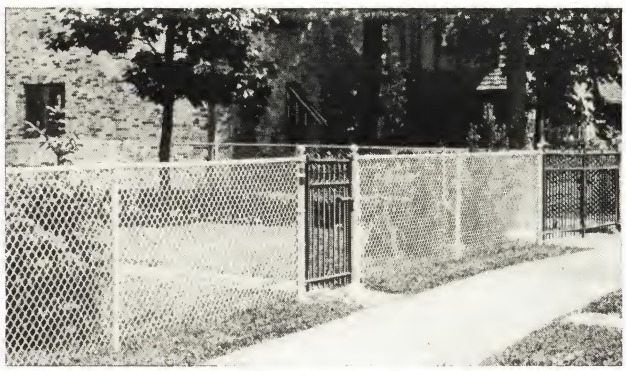
**Frames**—Hot-dip galvanized, tubular copper-steel. In heights 6 ft. or over, frames are 2-in. outside diameter. Gates 5 ft. high have 1⅝-in. outside diameter frames; under 5 ft. high have 1⅜-in. outside diameter frames. Corner fittings are extra heavy malleable iron.

**Stays**—Hot-dip galvanized, tubular copper-steel. Stays, together with ⅜-in. adjustable truss rods, keep gate absolutely rigid; prevent sagging, buckling and side weave.

**Fabric**—Cyclone "Galv-After" Chain Link to match fabric used in fence.

**Hinges**—Hot-dip galvanized. Made of malleable iron. Exceptionally large bearing surface for clamping hinge on gate post. Bottom hinge is ball and socket pivot type. Cyclone hinge equipment will carry 100% overload.

**Latch and Lock**—Hot-dip galvanized. Plunger bar type with positive latch; arranged for padlock locking. Double drive gates equipped with catch posts to hold gates in open position.



**Safeguard Fence with Wrought Iron Gate**

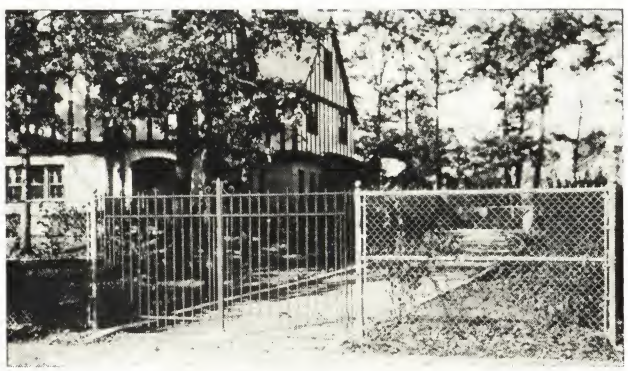
Standard heights: 36, 42 and 48 in. Framework, tubular copper-steel hot-dip galvanized. Fabric "Galv-After" Chain Link copper-steel No. 9 gauge, 2-in. mesh

## CYCLONE IRON FENCE AND GATES

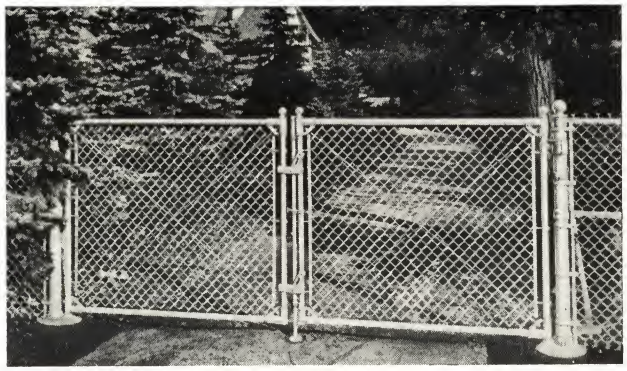
**Fence**—Cyclone Iron Fence, built by artisans with years of training, can be fabricated from special designs from architect's drawings, or from designs developed in Cyclone Art Department. Also made in several standard patterns. Made in any height and of any size materials.

**Gates**—Entrance gates fabricated from architect's special designs and also furnished in several standard designs.

Gate in illustration below has been especially designed to harmonize with Safeguard Chain Link Fence.



**Cyclone Wrought Iron Double Gate**



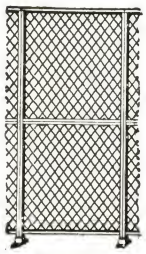
**Cyclone Swinging Gates**

Either single or double, for Safeguard Fence

## WIRE WORK OF ALL KINDS

**Partitions (Built-in-Sections)**—Standard size sections 4 ft. wide, 8 ft. high. Frames are 1-in. channel iron. Fabric is No. 10 gauge wire woven in 1½-in. diamond mesh. Furnished with either swinging or sliding gates. Handholes or wickets provided where needed. Floor flanges furnished for either wood or concrete floors. Sections are interchangeable, movable; can be taken out and used elsewhere—no refitting—no loss.

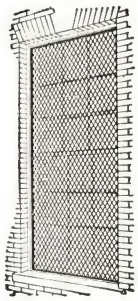
Send blue print or layout of partition work wanted.



**Partition Section**

**Window and Skylight Guards**—Frames are 1-in. or ¾-in. channel, or ⅜-in. round iron. Fabric is usually No. 10 gauge wire woven in 1½-in. diamond mesh. Channel iron frames fit into openings. Round iron frames usually allow ¾ in. on all sides for lap.

Special guards built with either channel or round iron frames, using size of wire and mesh desired.



**Window Guard**



**Cyclone Iron Entrance Gates**

A dignified entrance is sure to cause much favorable comment

## COMPLETE RESPONSIBILITY—NATION-WIDE FENCING SERVICE

**Engineering Counsel**—Cyclone Engineers will make a complete study of your fence requirements and submit recommendations, layouts, and estimates of cost.

**Cyclone Erection Crews**—There are many erection crews constantly at work installing Cyclone Fence. One of these crews is available for your installation. However, if you prefer to have your own workmen install the fence, a Cyclone erection superintendent will be furnished at nominal charge, to direct them.

**Diagram, Prices, etc.**—When writing for information, prices, etc., send simple diagram of proposed fencing. Give measurements of each stretch and total measurements. State whether single or double swing, or sliding gates are wanted and give size of opening.

U.S.S. CYCLONE FENCE

USS

UNITED STATES STEEL

# PAGE FENCE ASSOCIATION

BRIDGEPORT, CONN.

From 95 Offices and Warehouses scattered throughout the United States and Canada you can secure all Fence Products of the Page Steel & Wire Division of the American Chain & Cable Company, Inc., Monessen, Pa.

For catalog, prices, etc., write the Page Fence Association at the nearest District Office shown below:

PITTSBURGH, PA. BRIDGEPORT, CONN. NEW YORK, N. Y. CHICAGO, ILL.
ATLANTA, GA. SAN FRANCISCO, CALIF. NIAGARA FALLS, CANADA

## PAGE FENCE—AMERICA'S FIRST WIRE FENCE SINCE 1883

### Important—When Considering Fencing

All fencing looks much alike. Therefore, careful consideration should be given to—(1) Fabric Metals, (2) Galvanizing, (3) Construction and Design, (4) Responsibility for Erection.

### 1. Fabric Metals

Because no one metal is suitable for all atmospheric conditions, Page has pioneered in offering a selection of superior fence metals.

**Page Copper-Bearing Steel Fabric**—Is heavily galvanized after weaving by a special process that assures a uniform coat of zinc. Tests in laboratory and actual service prove it the most durable galvanized type of fence.

**Page Armco Ingot Iron Fabric**—Is made of wire drawn from the well-known Armco Ingot Iron, the purest and most uniform of commercial ferrous metals. Wherever atmospheric conditions exist that would be harmful to even the finest copper-bearing steel protected by galvanizing, Page Armco Fence has given exceptional service. The fabric is galvanized after weaving.

**Page "Alcoa" Aluminum Fabric**—Embodies all the atmospheric corrosion-resisting properties of the metal aluminum—consequently does not rust. Evidence of this is the immense popularity of aluminum for architectural work that must stand weathering. It requires no painting, no resurfacing of any kind so that its cost per year of service should be considered where permanent fencing is required.

**Page Allegheny Stainless Steel Fabric**—Is the newest addition to the Page Line. This new metal possesses every desirable quality for fence purposes, most notable of which is its immunity to rust, long life in service and a tensile strength four times as great as low carbon steel, resulting in maximum strength with minimum weight. Page Stainless Steel Tennis Court Nets are made from this rust-defying wire.

*The "Time Tested" Stainless Steel*

**Page Genuine Wrought Iron**—A.S.T.M., Spec. A-41-30, is the most enduring of all ferrous metals. It is made up in a variety of fence designs under Page supervision and in accordance with the high standards of Page craftsmanship.

These well-known Trade-Marks identified with Page, are your assurance of the best possible in Fence Protection.

### 2. Galvanizing

The Page P-12 label identifies Page Galvanizing which is guaranteed to withstand a minimum of 12 one-minute dips by the Preece Test. Page P-12 galvanizing applies not only to fence fabric but also to posts, top rail and fittings as well.

### 3. Construction and Design

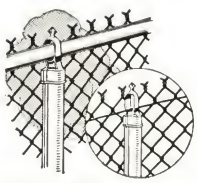
Page has pioneered in fence construction—witness the new Wing Channel Line Posts providing greater strength, a far neater, more serviceable installation.

### 4. Nation-Wide Erection Service

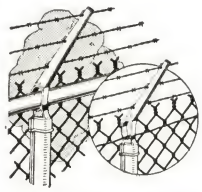
In 95 districts throughout the United States and Canada there is a responsible firm of Page Fence Engineers that carries a complete stock of fence products and specializes in fence construction. This assures expert performance of the work all the way through and gives the advantage of consultation with men of long experience in the erection of fences.

Estimates will be furnished gladly on receipt of rough sketch of proposed work, or complete detailed designs will be drawn up, if desired, and estimates furnished.

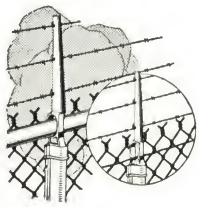
Get in touch with the nearest district office listed above for a copy of latest catalog and any additional information you may desire for your files.



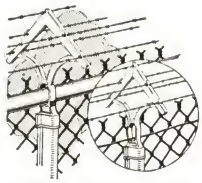
OTR Without Barbed Wire with Top Rail.
OW Without Barbed Wire or Top Rail



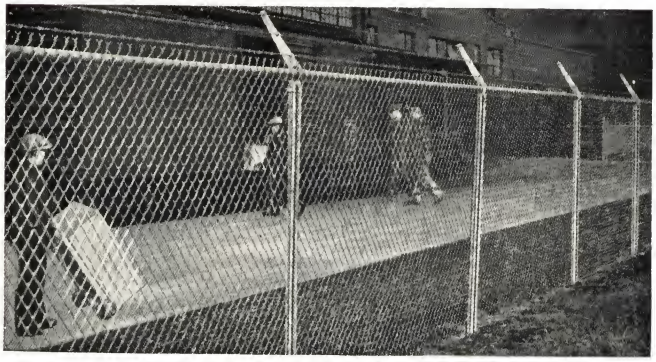
3TR 3 Strands Barbed Wire with Top Rail.
3W 3 Strands Barbed Wire without Top Rail



3TR-V 3 Strands Barbed Wire on Vertical Arm with Top Rail.
3W-V 3 Strands Barbed Wire on Vertical Arm without Top Rail



5TR 5 Strands Barbed Wire with Top Rail.
5W 5 Strands Barbed Wire without Top Rail



**Style 3TR Page P-12 Fence**

For fence installations requiring the maximum in protection, Style 3TR which has three strands of barbed wire is recommended. The increased strength of the P-12 Wing Channel Post and reduced maintenance due to the durability of the parts and fabric makes this fence most desirable where these items are a factor



**Style B-1 Page Reliable Fence**

Page Reliable Fence for residential use keeps property owners' children and dogs *in*, keeps neighbors' children and dogs *out*, establishes boundary lines. It can be erected to follow any irregular contour on the ground and set in any soil conditions



**Page Tennis Court Enclosures**

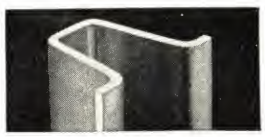
Standard heights 8, 10, 12 ft. Gates are welded construction. Illustration shows full enclosure. Half enclosures are available

## Super Standard Specifications Page (Chain Link) Fence

Page P-12 (Chain Link) Fence shall conform in every respect with Standard Specifications for Page Protection (Chain Link) Fence with exceptions and refinements as follows:

**Galvanizing**—All fabric, line posts, top rail, gates and miscellaneous fittings other than those made from aluminum, zinc or brass, shall be galvanized by the hot dip method and shall withstand an average of *twelve (12) one (1) minute dips* by the Standard Preece Test.

**Fabric**—Fabric shall be as specified in standard specifications as to weave and chemical and physical qualities of the wire used. Method and quality of the galvanizing shall be as specified in the standard specifications. Weight of coating, however, per square foot of actual bare wire surface shall be not less than 2.4 oz.



**Line Posts**—Shall be of wing channel design approximately 2⅞ in. wide x 2¼ in. deep, weighing 3.65 lbs. per ft. and made of High Carbon steel, furnished as specified in the standard specifications to conform to depth of setting and spacing.

**Top Rail**—Shall be 1⅝ in. outside diameter High Carbon electrically welded steel tubing weighing 1.79 lbs. per ft. and shall be furnished in random lengths averaging not less than 15 ft.

**Gates**—Frames shall be of 2 in. outside diameter High Carbon electrically welded steel tubing weighing 2.14 lbs. per ft. with intermediate bracing of 1⅝ in. outside diameter tubing weighing 1.79 lbs. per ft. All joints shall be welded making a rigid and water tight frame.

**Miscellaneous Fittings**—All material entering into the fence necessary to make a complete enclosure, such as terminal posts, ballcaps, railtops, barbwire arms, expansion sleeves, brace, tension and fabric bands, hinges and locking devices, etc., shall be construed as to be in accordance with standard specifications as to design and quality of material employed.

These specifications as outlined above shall form and be a part of the standard specifications for Page Protection (Chain Link) Fence, but when designated shall be specified as Page P-12 (Chain Link) Fence. When specified as Page P-12 (Chain Link) Fence it shall be so construed to mean that the galvanized coating on any part taken from the fence shall withstand an average of *twelve (12) one (1) minute dips* by the Preece Test.

## Standard Specifications Page Protection (Chain Link) Fence

**Fabric**—The fabric shall be composed of individual wire pickets which are helically wound and interwoven in the form of a continuous chain link fabric having a square mesh. The top edge of the fabric shall be barbed and the bottom knuckled.

The fabric shall be woven of steel wire, containing not less than twenty-hundredths of one per cent (0.20%) copper by ladle analysis, nor less than 0.18% copper by check analysis. The fabric shall be zinc coated by the hot dipping (hot galvanizing) process after weaving. The zinc coating shall be smooth, of reasonably uniform thickness, free from dross, uncoated spots and adhering particles of foreign material.

The weight of the coating per square foot of actual wire surface shall be not less than 1.2 oz. and shall withstand an average minimum of five (5) one (1) minute dips by the Preece Test.



**Style B-1 Page Reliable Fence**

Page Reliable Fence may be installed with either single gate or double gates for driveway use. Gates are welded construction

**Line Posts**—2½ in. outside diameter Copper Bearing steel pipe at 3.65 lbs. per foot or 1⅞x2¼ in. High Carbon steel H-beams at 4.10 lbs. per foot.

**Top Rail**—1⅝ in. outside diameter Copper Bearing steel pipe at 2.27 lbs. per foot.

**End and Corner Posts**—3 in. outside diameter Copper Bearing steel pipe at 5.79 lbs. per foot.

**Gate Posts**—3 in. outside diameter at 5.79 lbs.; 4 in. outside diameter at 9.11 lbs.; 6⅝ in. outside diameter at 18.97 lbs. and 8⅝ in. outside diameter at 25 lbs. per foot—Copper Bearing steel pipe.

**Gate Frames**—2 in. outside diameter Copper Bearing steel pipe at 2.72 lbs. per foot.

**Miscellaneous Fittings**—Malleable Iron, Steel, Aluminum, Brass, Bronze or Zinc.

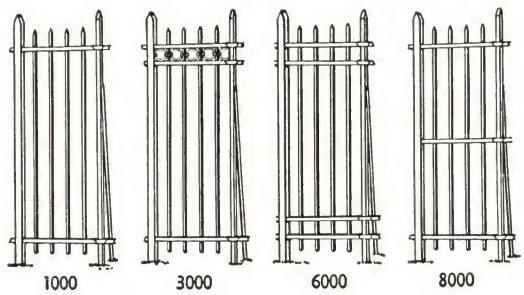
**Galvanizing**—Hot galvanizing of the best commercial grade and quality but not equal to the P-12.

*Note:* For detailed specifications write to nearest District Sales Office.



## Page Genuine Wrought Iron Fence

Below is shown a direct comparison of a few of the various standard styles of Page Wrought Iron Fence. By using different types of line, terminal and newel posts, a wide assortment of different fences is made available. Should your plans require some other design, prices and details will be furnished on receipt of complete drawings.



1000 3000 6000 8000

## Page Panel Partitions

For inside protection in warehouses, stores, garages, shop superintendents' offices, etc., Page Panel Partitions are unsurpassed in the provision of stock control, light, ventilation or full vision.

Page Panel Partition fabric is of 1½ in. square mesh, 10-gauge. Frames are of channel iron (½x1x⅛ in.) braced crosswise with ⅜-in. diameter rods. Panels come complete with fittings, and painted black. Interchangeability permits removal or relocation with 100% salvage value.

Units 4x8 ft. finishing 8 ft. 3 in. high. Additional stock widths: 3, 2 and 1 ft. Doors, sliding or swinging, as specified, are in two widths, 4 and 8 ft.

# THE STEWART IRON WORKS COMPANY, INC.

(ESTABLISHED 1886)

## Manufacturers of Iron and Wire Fence, Grilles, Railing, Window Guards, General Iron, Bronze, Brass and Wire Work

405 Stewart Block, CINCINNATI, OHIO

### Products

Plain and Ornamental Iron Fences and Gates; Chain Link Wire Fences and Gates; Iron Railings, Grilles, Bracket and Pier Lanterns, Window Guards, Wire Mesh Partitions, Folding Gates, Park Settees; General Iron, Bronze, Brass and Wire Work. For our page on Jail and Prison construction, see File Index.

Stewart IRON and WIRE FENCES

*"World's Greatest Fence Builders Since 1886"*

Stewart Designing and Drafting Service is available to aid in the adaptation of Stewart Products to architects' designs. We manufacture a wide range of standard designs, or create specific patterns to meet exacting requirements. Catalogs listed at bottom of next page will be sent on request. Sales and Erection Service in principal cities.

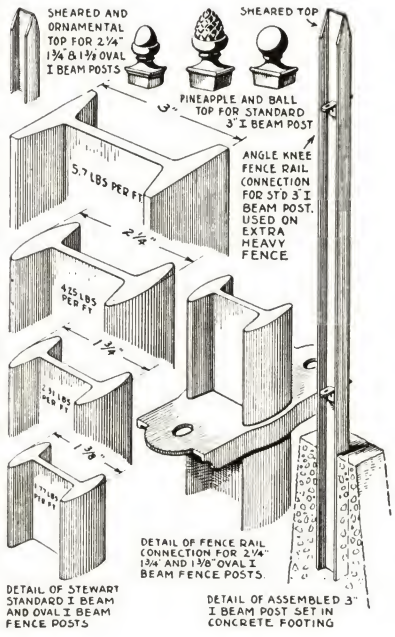
### Plain and Ornamental Iron Fences and Gates

Stewart line of fence posts are built of I-beam sections and, except for the heaviest fences, with the Stewart Oval-Back-I-Beam. These sections offer maximum strength per pound of material, are open and easily painted and require *no* back bracing.

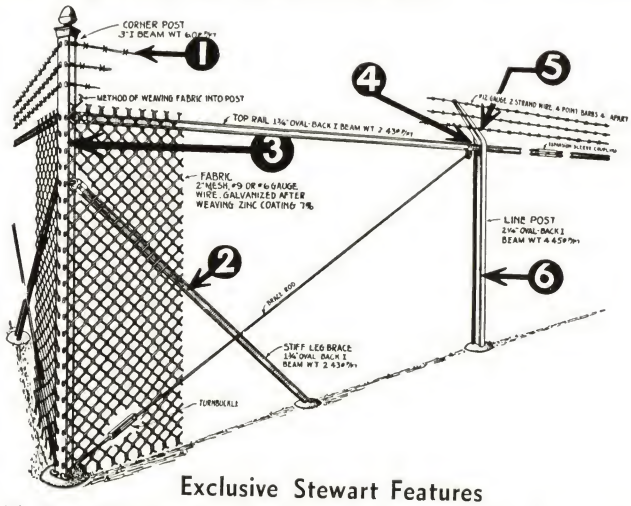
As will be noted in illustration to right, Stewart Oval-Back-I-Beam fence posts are available in three sizes. Note particularly the weight of each of these sections.

Further note slip-over type of rail connection which provides for lengthwise adjustment as well as for expansion and contraction. A set screw arrangement allows the connection to be raised or lowered for adjustment.

Standard designs of post caps are shown above. For practical economy, posts with sheared tops can be used.




Chain Link Fence is available in heights and sizes to meet any known requirement for property protection.




### Exclusive Stewart Features

(1) 12-gauge double galvanized copper bearing steel barbed wire with 14-gauge aluminum barbs spaced 4 in. apart. Securely fastened to flange of beam post.

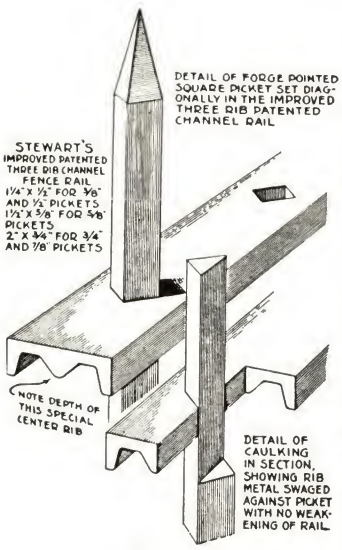
(2) Stiff leg bracing as used for fences 6 ft. high or higher. Set into concrete footing with an auxiliary ⅝-in. round truss rod.

(3) Fabric spirals through slots in terminal posts. Such construction eliminates need for bolts, bands, tension bars.

(4) Beam top rail passes through line posts and forms brace the full length of fence line. Adjustable expansion sleeves used to connect sections of top rail.

(5) Beam line posts with integral extension arm. Obviously superior to posts requiring separate pressed steel extension arms.

(6) Oval-Back-I-Beam section takes its shape from rolls owned by this company. Designed primarily for fence use; strongest at points of strain.




### Improved Patented Channel Rails

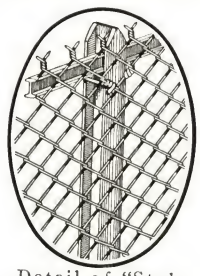
Recently redesigned and now furnished with deeper flanges and a heavier center rib. Obviously stronger than a commercial channel or flat bar for the center rib affords extra material at the point of caulking.

Pickets are round or square in ⅜, ½, ⅝, ¾ or ⅞-in. sizes, or heavier if required.

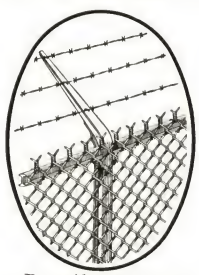
Stewart recommends caulked picket construction, but for installations requiring it, welded picket construction can be furnished with each picket electrically welded in place. Adjustable center supports for the panels of iron fence are furnished as a part of standard construction.

### Chain Link Wire Fences and Gates

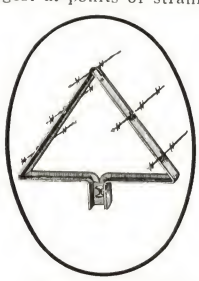
Stewart is the only manufacturer offering a *beam* type of framework throughout in Chain Link Fence construction. Our



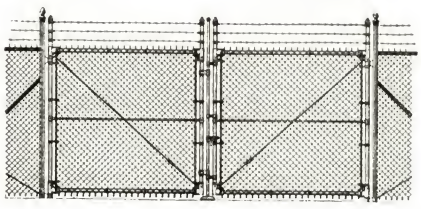
Detail of "Style 0TH." Also furnished in Medium Weight Construction known as "Style OTM"



Detail of "Style 3TH." Also furnished in Medium Weight Construction known as "Style 3TM"



Detail of "Style 5TH Extension Arm." Also furnished in Medium Weight Construction "Style 5TM"



### Swing Gates

Swing gates, single or double, are furnished in two specifications. "H.W." with 2-in. o.d. pipe. "M.W." with 1⅝-in. o.d. pipe. Assembled with pressed steel fittings. Securely braced and trussed. Slide gate specifications upon request.



Standard Iron Fence Design No. 116-S. Three rails, square pickets with ring ornamentation between upper rails

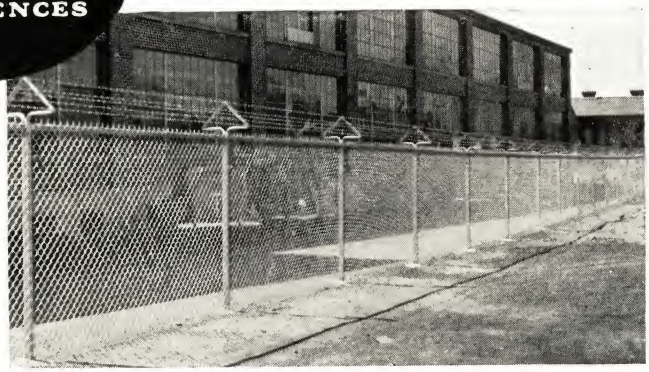
Stewart Iron and Wire Fences



Stewart installation Style 3TH at the plant of Hiram Walker & Sons, Inc., Peoria, Illinois



Special design ornamental entrance gates at the estate of H. Lutcher Brown, San Antonio, Tex.



Another Stewart industrial installation. This shows Style 5TH erected at Springfield, Mass.

## STEWART PLAIN AND ORNAMENTAL IRON AND WIRE WORK

*Co-operative Designing Service to Architects*



Design M-305

### Balcony and Stair Railings

*Interior and Exterior*

Stewart furnishes plain or highly ornate railings. Available in a variety of finishes including dull black, Swedish iron, polished Swedish iron, antique rust, etc. Railing catalog upon request.

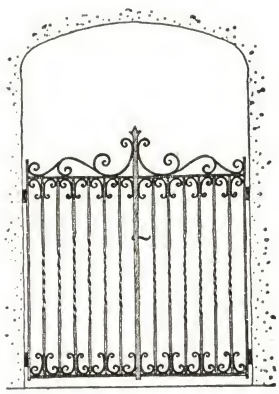


### Ornamental Lanterns

*Bracket and Pier*

Lanterns available in Iron, a combination of Copper and Iron and a combination of Copper and Bronze. Furnished in a variety of attractive finishes. Write for literature. At left Design No. M-317: over-all width 18 in., over-all height 39 in. At right Design No. M-319: over-all width 17 in., over-all height 36 in. Extension 15 in. from wall to center of lantern.





### Wrought Iron Gates

*Interior*

Decorative Wrought Iron Gates are available in period or modernistic designs as preference dictates. Illustration shows one standard design. Please state size of door openings and furnish sketch showing conditions. Illustration shows design L-961.

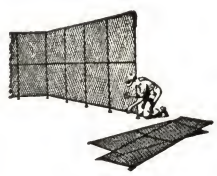


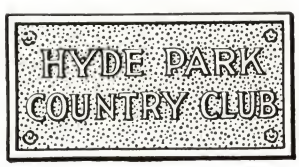
### Window Guards, Grilles, etc.

Available with or without ornamentation. Made from ⅜ to ¾-in. round or square pickets. When requesting prices, indicate width and height of opening. Design shown is No. 241.

### Wire Mesh Partitions

Stewart Sectional Wire Partitions are complete with standard panels and may be interchanged or rearranged at any time. Standard partitions are made of 1½-in. diamond mesh 10 W.&M. gauge wire of best open hearth steel. Other wire and mesh can be furnished. Write for Bulletin W-35.






### Bronze Tablets

Stewart Bronze Tablets, of hand-chased cast bronze, are imperishable. Made of genuine virgin-bronze castings and positively free from imperfections. Sketches and estimates upon request. When requesting prices, furnish all details possible.

## SCHEDULE OF CATALOGS AVAILABLE

If interested in Iron Fence, Iron Entrance Gates, Gateway Arches, etc., ask for Catalog No. 76.
If interested in highly ornamental Iron Fence, or Gates, ask for "Book of Design C."
If interested in Chain Link Wire Fence or Gates, ask for Catalog No. 79.
If interested in Railings, Lanterns, Interior Gates, etc., ask for Catalog R-36.
If interested in Window Guards, Wire Mesh Partitions, etc., ask for Catalog W-35.

# WICKWIRE SPENCER STEEL COMPANY

## Manufacturers of Chain Link, Wire and Iron Fences and Gates

GENERAL OFFICES
41 East 42nd Street
NEW YORK, N. Y.

OFFICES AND WAREHOUSES

WORCESTER, MASS., 80 Webster Street
CHICAGO, ILL., 221 No. La Salle Street
LOS ANGELES, CAL., 1070 No. Alameda Street
BUFFALO, N. Y., 70 Niagara Street
SAN FRANCISCO, CAL., 101 Townsend Street
PORTLAND, ORE., 733 Northwest 16th Ave.

### Products

CHAIN LINK FENCES and GATES.

Also Ornamental Iron Fences and Gates.

For our pages on Electrically Welded Wire Fabric for concrete reinforcement, Woven Wire Lath, Metal Grilles, and Radiator Enclosures, see File Index.

### Advisory and Erection Service, Estimates, etc.

Engineers, architects and contractors are invited to write our service department for any assistance in helping to solve their fence problems. We will be glad to furnish estimates in accordance with all standard specifications, engineer's or architect's designs or any special design. Complete fence catalogue and specifications for standard designs will be gladly mailed on request.

### Chain Link Wire Fences

The pioneer chain link wire fence, hot galvanized after weaving, woven from special drawn wire of extra high tensile strength. Framework made from standard full weight copper bearing galvanized steel pipe.

Specifications—

*Types*—300, 310 and 320.

*Heights*—Type 300—3, 3½, 4, 5 and 6 ft.; Type 310—3, 3½ and 4 ft.; Type 320—3, 3½, 4, 5 and 6 ft.

*Fabric*—Woven in 2-in. mesh of No. 11, No. 9 or No. 6 (W&M) gage special drawn copper bearing steel wire, heavily hot galvanized after weaving. Both selvages of fabric on fencing 5 ft. and higher, barbed finish. Fabric 4 ft. or less in height, one edge barbed finish and the other edge knuckled.

*Line Posts*—2-in. outside diameter pipe, weight 2.72 lb. per lineal ft. (For spacing 10 ft. apart.)

*Top Rail*—Type 300* none; Type 310 1⅜-in. outside diameter, weight 1.68 lb. per lineal ft.; Type 320 1⅝-in. outside diameter, weight 2.27 lb. per lineal ft.

*End Posts*—2½-in. outside diameter, weight 3.65 lb. per lineal ft.

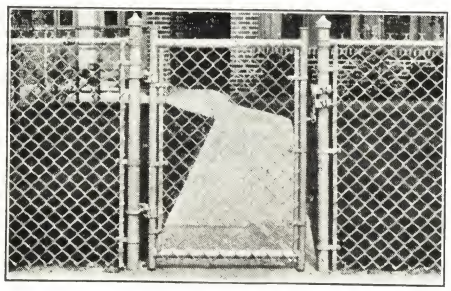
*Corner Posts*—2½-in. outside diameter, weight 3.65 lb. per lineal ft.

*Gate Posts*—2½-in. outside diameter, weight 3.65 lb. per lineal ft.

*Brace*—Type 300* 1⅜-in. outside diameter, weight 1.68 lb. per lineal foot; Type 310 none; Type 320 1⅝-in. outside diameter, weight 2.27 lb. per lineal ft., on 5 and 6-ft. fence only.

*On Type 300 Friendly Fence (no top rail) a No. 7 gage heavily galvanized coiled spring tension wire is furnished in place of top rail.

*Gates*—Constructed of 1⅝-in. outside diameter welded pipe frames and so designed to give continued service under heavy duty, filled with fabric to match fence, strongly braced and equipped with strong fittings and ornamental scroll when specified. All parts heavily hot galvanized.



WISSCO PRODUCTS

### Friendly Fence—36, 42 and 48 In. High

Type 210—

*Fabric*—Woven in 2-in. mesh of No. 11, 9 or 6 gauge (W&M) special drawn copper bearing steel wire, heavily hot galvanized after weaving.

*Frame*—Constructed throughout from full weight copper bearing steel pipe.

*Line Posts*—1⅝-in. outside diameter, weight 2.27 lb. per lineal ft.

*Top Rail*—1⅜-in. outside diameter, weight 1.68 lb. per lineal ft.

*End, Corner and Gate Posts*—2-in. outside diameter, weight 2.72 lb. per lineal ft.

*Gates*—Constructed of 1⅛ or 1⅜ in. outside diameter pipe frame, filled with fabric to match fence and equipped with ornamental scroll on top. All parts heavily hot galvanized.

### Other Types

We are prepared to furnish all types of industrial and institutional fences, as well as tennis court enclosures, and backstops, and will be glad to forward complete specifications on request.

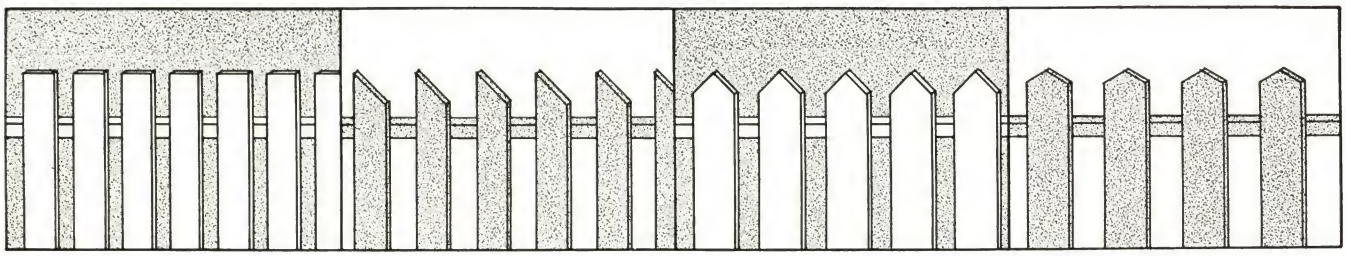
# CALIFORNIA REDWOOD ASSOCIATION

405 Montgomery Street, SAN FRANCISCO, CAL.

For Member Companies, see Lumber Section

For Pages on Lumber, See File Index

## REDWOOD "Picket Pack" FENCES

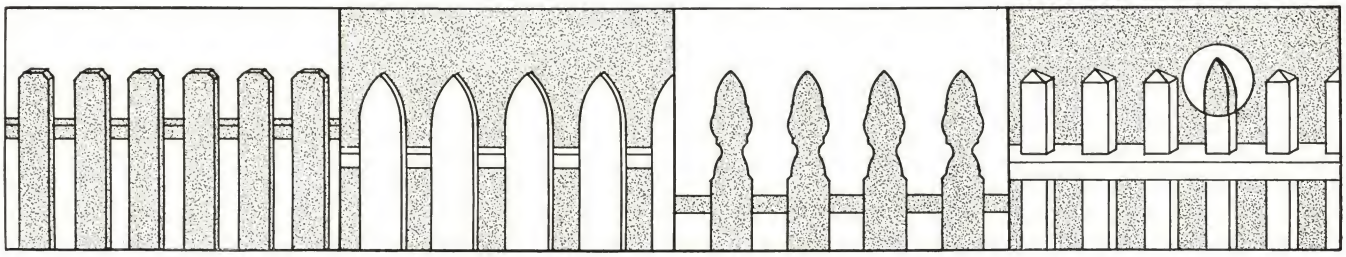


**Garden:** 2½" and 3½" widths furnished in all five heights. Five-foot height not available in 1¾" picket. Two-foot height omitted in 5½" width.

**Cape Cod:** 2½" and 3½" widths furnished in all five heights. Five-foot height not available in 1¾" picket. Two-foot height omitted in 5½" width.

**Colonial:** Like Cape Cod is particularly suited for use with the types of architecture from which they take their names. Same range of sizes.

**Modern:** For use with simpler, more strongly horizontal architectural styles. Same range of sizes.



**Village:** A more versatile style, may be used with almost any type of building. Same range of sizes.

**Gothic:** Same sizes available as foregoing except 5½" width.

**Concord:** Fancy points, available in two widths only, 2½", and 3½". Five heights.

**Westchester:** Furnished in two top styles, chamfered and Gothic. Both 1-5/16" square. Four heights only (omits 59").

Redwood Picket Pack is packaged fencing. Eight styles are available, as shown above. All pickets are ¾ in. thick, surfaced four sides. There are five heights; 23, 35, 41, 47, and 59 in. Four widths: 1¾, 2½, 3½, and 5½ in., with exceptions noted above. There are two 1 5/16-in. square pickets (Westchester).

### Combination Designs

Picket Pack may be used in one style only as illustrated above, or in combination designs, using two or more styles with a variety of spacings.

### Instruction Sheets

Full instruction sheets are included in Picket Pack bundles, giving necessary information about posts, rails, nailing and painting, as well as construction hints on gates, how to set posts, etc.

NUMBERS IN SQUARES INDICATE NUMBER OF FEET OF FENCE IN ONE PICKET PACK

| Picket Width | SPACE BETWEEN PICKETS | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1" | 1¾" | 2" | 2½" | 3" | 3½" | 4" | 4½" | 5" | 5½" |
| 1¾" | 7' | 9' | 9' | 10½' | 12' | 13' | 14' | 15½' | 17' | 18' |
| | | 1½" Spc. | | | | | | | | |
| 2½" | 7' | 8' | 9' | 10' | 11' | 12' | 13' | 14' | 15' | 16' |
| 3½" | 7½' | 8' | 9' | 10' | 11' | 12' | 12½' | 13½' | 14' | 15' |
| 5½" | 6½' | 7' | 7½' | 8' | 8½' | 9' | 9½' | 10' | 10½' | 11' |
| | | 1 5/16" Spc. | | | | | | | | |
| 1 5/16" x 1 5/16" | 6' | 6½' | 8' | 9½' | 11' | 12' | 13' | 14½' | 16' | 17' |

Example: Using 3½-in. pickets (side of chart) spaced 3 in. apart (top of chart) one bundle of any style picket will make 10 ft., 10 in. of fence. Dividing total distance to be fenced by this number will tell the number of Picket Packs needed.

Number of pickets per package: 1¾ in.—30; 2½ in.—24; 3½ in.—20; 5½ in.—12; 1 5/16 in.—30.

"Extend Your Home to All You Own", a handsomely illustrated book, full of fencing ideas, with a "planning-the-home-as-a-unit" section by Loy Chamberlain, will be mailed free to architects. Regular price, 25c.

# DUBOIS FENCE & GARDEN CO., INC.

TELEPHONE
AShland 4-7151

101 Park Avenue
NEW YORK, N. Y.

CABLE ADDRESS
"Duboifence—New York"

## DUBOIS WOVEN WOOD FENCE

*Made in France*

DUBOIS

Trade-Mark Reg. U. S. Pat. Off.

### The Fence

No other fence is quite like Dubois Chestnut Woven Wood Fence. It is made in France of split, live young chestnut saplings, pointed at the top and woven together with copperwelded, rustproof wire to horizontal braces into sections 5 ft. in length. So closely are the saplings bound together that they form a perfect screen, through which outsiders cannot see.

Only pickets of the first selection are used in the manufacture of this unique fence. They are carefully heat-treated to prevent warping and are bound by skilled craftsmen into 5-ft. panels. This work is done entirely by hand.

**Uses** — Dubois affords absolute privacy, prevents trespass, shuts out unsightly views, and is equally suited to country estate or penthouse terrace.



Dubois Chestnut Woven Wood Fence

### Gates

Gates to match all Dubois Fences are furnished with attractive iron hinges and latches. These gates are available in single and double sizes (for driveways); with straight or curved tops.

### Easy To Install

Dubois framework is made of long lived red cedar (Juniperus Virginiana). The posts and cross rails are ready cut for quick and easy erection; no labor is required beyond setting the posts and nailing in the cross rails. Dubois Red Cedar Framework imparts to the rear of the fence the same natural charm that the slender palings give to the front.

**Six Heights**—Dubois comes in six heights: 18 in., 3 ft. 10 in., 4 ft. 11 in., 6 ft. 6 in., 8 ft. and 10 ft.

## DUBOIS CLEFT CHESTNUT FENCES



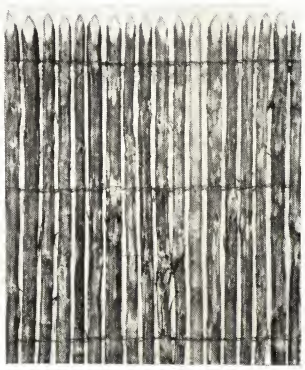
**Dubois Close Cleft Chestnut Fence**

Has pickets spaced approximately ¼ in. apart



**Dubois Open Cleft Chestnut Fence**

Has pickets spaced approximately ¾ in. apart



Dubois Chestnut Cleft Fence is also made of half round, heat-treated, hand split saplings, the same as those used in Dubois Chestnut Woven Wood Fence, but is bound together by machine instead of by hand. The pickets are spaced slightly apart. It is therefore less costly than Dubois Chestnut Woven Wood Fence, but is equally attractive and durable. It is furnished in rolls 16 ft. in length in 3 ft. 10 in., 4 ft. 11 in., and 6 ft. 6 in. heights. There are two styles: one known as Close Cleft with pickets approximately ¼ in. apart, and the other known as Open Cleft, with pickets approximately ¾ in. apart.

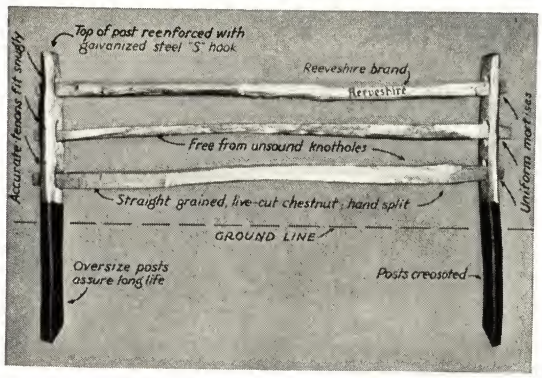
# REEVESHIRE* POST AND RAIL AND HURDLE FENCE

## Reeveshire Old-Fashioned Post and Rail Fence

*The ideal fence for the large estate*

Reeveshire
*"The Name of Famous Fences"*

This rugged fence of hand hewn chestnut is unsurpassed for beauty and permanence. It is furnished in two styles, 3 and 4 rail, both of which make a fence 4 ft. high when erected. The rails are 11 ft. in length, and the posts which are treated with creosote to withstand the ravages of weathering and insects, are spaced 10 ft. apart when the fence is erected. The top of each post is fitted with a steel "S" iron which prevents splitting. This fence is extensively used in the hunting field and for boundary and division fences. Gates to match furnished in all widths.




Reeveshire* Post and Rail Fence

### Specifications

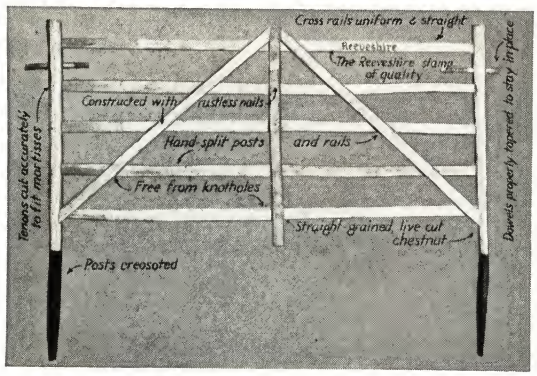
*Construction:* Sections 10 ft. long, from center to center of posts. Shipped knocked down. Posts accurately mortised for quick assembly of rails. Stands 4 ft. high when erected. Posts reinforced at top, and lower 3 ft. of posts creosoted for underground protection. Made with either 3 or 4 cross rails.

*Shipping Weight:* 3-rail sections, 150 lbs.; 4-rail sections, 180 lbs.

## Reeveshire English Hurdle Fence

The American adaptation of the hurdling which has been used in England for centuries, and meets the demand in this country for a fence suitable for fox hunting and steeplechasing. In the show ring these hurdles make attractive and practical wings for jumps. It is carefully hand split from chestnut timber, shipped in sections 8 ft. 3 in. long in 4, 5 and 6-bar styles, all of which make a fence 4 ft. high when erected. The ends of the posts are treated with creosote. Pins for locking the sections together are supplied with the hurdles.

Twelve hurdles make 100 ft. of fence—640 hurdles to the mile.




Reeveshire* Hurdle Fence

### Specifications

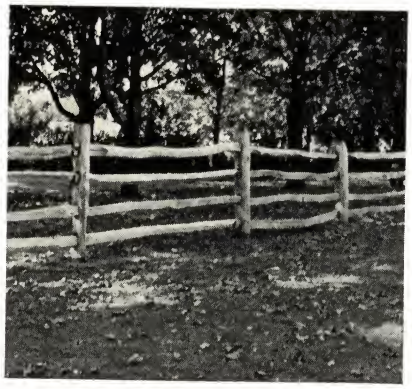
*Construction:* Sections 8 ft. 3 in. long. Stands 4 ft. from ground when erected. Posts 6 ft. high; pointed at bottom and lower 2 ft. of posts creosoted for underground protection.

Gates to match furnished in all widths.

*Shipping Weights:* 4-bar hurdle, 60 lbs.; 5-bar hurdle, 65 lbs.; 6-bar hurdle, 70 lbs.



Reeveshire 3-Rail Post and Rail Fence



Reeveshire 4-Rail Post and Rail Fence



Reeveshire Hurdle Fence

# REEVESHIRE SELF-CLOSING HORSEBACK GATE

(Patent applied for)



This gate is constructed so that the horseman may pass through without dismounting. Made in 4 ft. 6 in., 6 ft., 8 ft., 10 ft. and 12 ft. widths, and may be used with any type of fence, wood or wire. A touch on the handle lifts the latch, a light push opens the gate in either direction, it closes and latches itself automatically. Gates are bolted together with galvanized bolts, no nails are used. All metal parts are heavily galvanized. There are no springs or other mechanism to get out of order. Handle is provided with a guard so that horses or cattle in the enclosure cannot open the gate. Hanging and latching posts are supplied with each gate. Once installed, years of satisfactory service are assured.





*Trade Mark Reg. U. S. Pat. Off.

MEMORANDA

JOHN C. RUNKLE, President

# THE ELHIDE COMPANY

## Makers of Elhide Hand-Split Cedar Shingles

130 Sixth Street, CAMBRIDGE, MASS.

TELEPHONE: Kirkland 5100

PLANTS: HATZIC, B. C.; CAMBRIDGE, MASS.

### Products

ELHIDE WOVEN RUSTIC FENCING.
Also Elhide Monson Maine Roofing Slate.
For Elhide Hand-split Cedar Shingles, see File Index.

### Elhide Woven Rustic Fencing

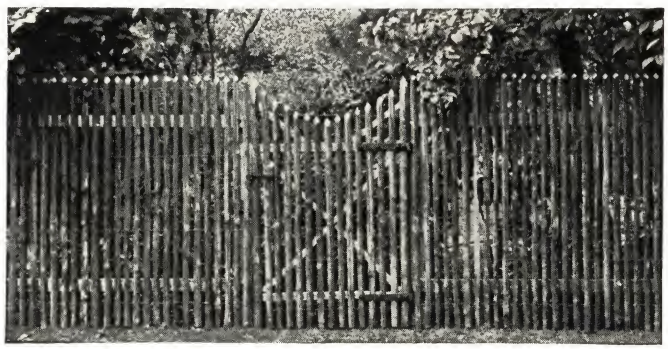
This fencing is manufactured in our Cambridge plant. It is made in various types using French Split Chestnut Sapling Pickets, Round Cedar Sapling Pickets with bark on, or Hand-split Pickets from Pacific Coast big Red Cedars. All are woven with non-rusting Copperweld wire into a sturdy, attractive, long-life fencing, and can be had in any of the following standard heights: 3 ft. 10 in., 4 ft. 11 in., 6 ft. 6 in. Also in special heights upon request. Gates can be furnished to match any of the fencings. If required, special shapes can be made from sketch to fit any particular conditions such as ramps, changes in heights, etc. Estimates and suggestions furnished for the asking.

*Write us for full description and detailed information with pictures, prices, etc., on all our woven rustic fencings.*

### French Chestnut Picket Fencing



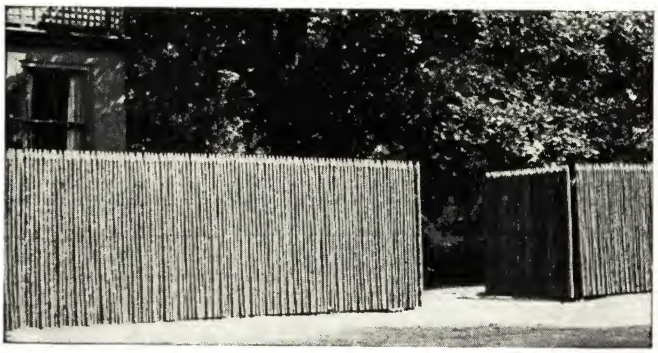
**French Chestnut Picket Fencing, Closely Woven**



**French Chestnut Picket Fencing, ¾-in. Cleft Woven**

The pickets in this fencing are made in France and are hand-split from live chestnut saplings, straightened and heat-treated. The outer bark has been removed and the pickets are woven closely together, or spaced as desired.

### Cedar Sapling Fencing



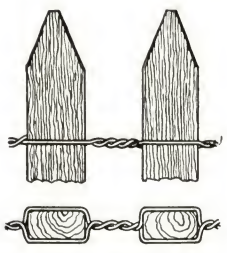
**Elhide Woven Cedar Sapling Fencing**
Showing double driveway entrance gates



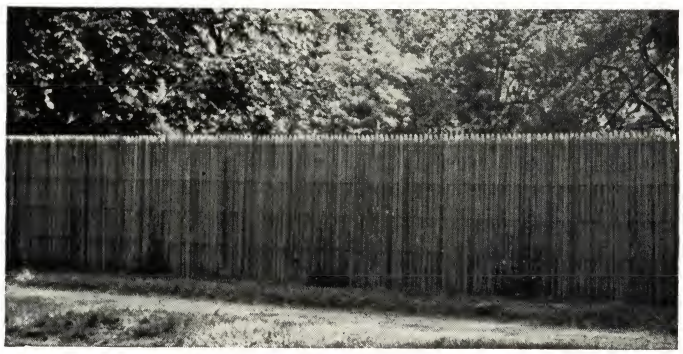
**Elhide Woven Cedar Sapling Fencing**
Special fencing wrapped around iron posts

Elhide Cedar Sapling Fencing is woven with pickets cut from small live trees. The saplings are not split but are left round with bark on. Their natural roughness, with the dark, rich color of the bark is very decorative bordering a garden or estate.

### Hand-split Red Cedar Fencing



**Section of Flat Hand-split Pickets Open Style Weaving**



**Elhide Woven Hand-split Cedar Fencing**



**Section of Three-cornered Hand-split Pickets Close Style Weaving**

The Pickets in this fencing are split by hand from the heartwood of the Pacific Coast red cedars, and the natural split grain surface of the cedar is most atractive. The pickets are either flat or three-cornered as desired.

ESTABLISHED 1918

# RUSTICRAFT FENCE CO., INC.

DAVID TENDLER, President

TELEPHONE
Malvern 2200

## Manufacturers of Wooden Fences and Wooden Gates

3 King Road, MALVERN, PA.

---

These hand-hewn wooden fences are distinctive in their naturalness and wonderfully durable. They last for many years without painting or any attention and improve in beauty as they age under exposure to the weather.

**Full Information and Prices**—Owing to the continual change in lumber prices, no set price can be established on fences. However, we publish periodical price lists consistently based on the fluctuating cost of materials and labor. They are yours for the asking.

Rusticraft FENCES

TRADE-MARK
(Registered)

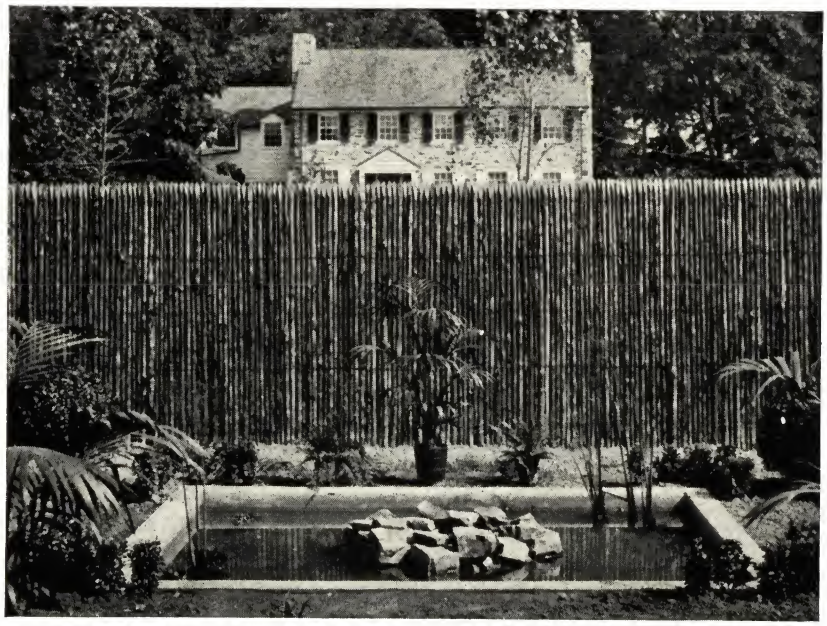
*Over 19 years specializing in Quality Wood Fences and Gates.*

You may specify and buy any Rusticraft product with complete confidence. Let us know the type of fence that interests you (and approximate footage) and we will give full details and cost delivered by freight or motor truck. Prompt delivery is available at all times.

## IMPORTED FRENCH "WOVEN" PICKET FENCE

Made in France from carefully selected, straight chestnut saplings, pointed at the tops and *woven closely together* with heavy copper wire—all in accordance with Rusticraft specifications. This fence, with its weathered beauty and natural charm, creates an atmosphere of refinement and restfulness wherever used. It harmonizes perfectly in any setting and is widely used to shut out objectionable views and to secure privacy. At the same time, it provides friendly though formidable protection to property.

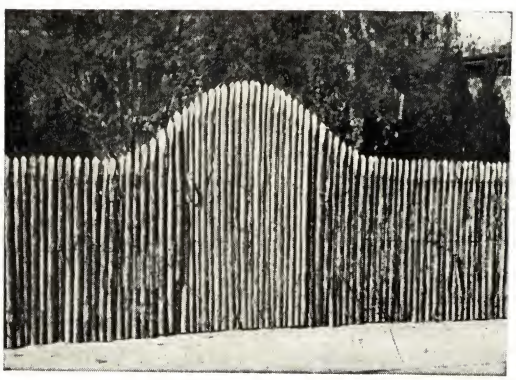
Practically indestructible, this all-purpose fence insures many years of satisfactory service—with no upkeep cost whatever. Made in 4, 5, 6½, 8 and 10-ft. heights. Framework and gates also supplied.



## FRENCH "CLOSE CLEFT" PICKET FENCE

Made of the same strong, live chestnut saplings as the closely woven type—*pickets spaced ¼ in. apart.* This feature gives this fence many more widely diversified uses as it allows air and sunshine to pass through.

Priced considerably less than the closely woven type, it can be advantageously used where absolute privacy is not desired. This fence comes in rolls, and in the same heights as the closely woven fence. We import direct from France.



## SUGGESTED USES

(*1*) closely fitted pickets insure privacy against passing traffic; (*2*) screens service yards and entrances; (*3*) shuts out objectionable views; (*4*) marks driveways and garden boundaries; (*5*) discourages trespassing, either *through* or *over*.

## TENNESSEE AROMATIC RED CEDAR PICKET FENCE

Outstanding for its natural beauty, rustic charm and long life. It is made in two heights—5 and 7 ft.—and is shipped in sections 4 ft. wide. No wire is used in this fence.

Rusticraft Tennessee Aromatic Red Cedar Fence is easily erected on framework supplied by us or secured from local sources.



# RUSTICRAFT POST AND RAIL FENCES



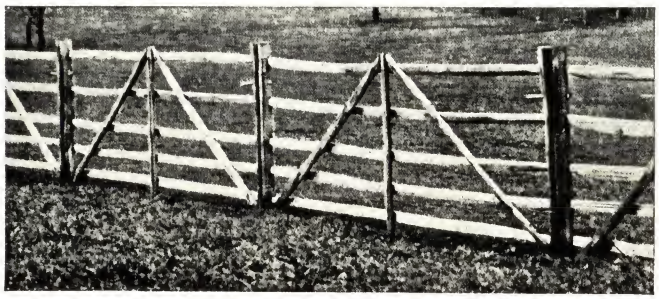
**No. 107. Rusticraft Redwood Post and Cedar Rail Fence**

Rails are half-round of Southern cedar, each 11 ft. long and 4½ to 6 in. in diameter at center. The redwood posts are 7 ft. long with mortised holes. Top measurement of post is 3x5 in., tapering to 5x5 in. at base. A graceful fence, strong and durable; good for 30 to 40 years without maintenance expense. (Also supplied in 4 rails)



**No. 104. Chestnut Colonial Post and Rail Fence**

Made in De Luxe and Standard types. De Luxe has extra heavy chestnut posts and rails. The 2½ ft. of post entering the ground is treated with special wood preservative. Standard Post and Rail Fence has medium size posts and rails but posts are not treated with wood preservatives. Posts are 7 ft. long and rails 11 ft. long. (Also supplied in 4 rails.)



**No. 108. Split Chestnut Hurdle Fence**

This entire fence is made of split chestnut timber, bottoms of posts are treated with special wood preservatives. Shipped assembled in 8 ft. 2-in. sections. Easily erected and easily moved if desired. In both types of Hurdle Fence the two bottom spaces are so close together that small animals cannot get through. Gates supplied to match fence



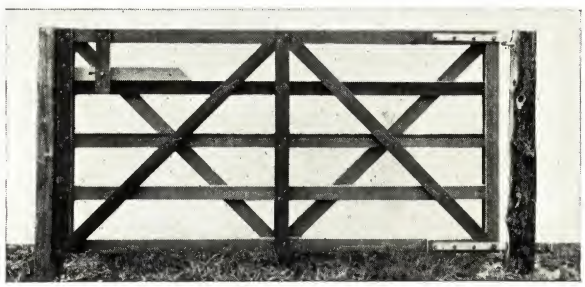
**No. 51. California Redwood English Hurdle Fence**

Sawed from all heart redwood. A practical and conservatively beautiful fence, 4 ft. high when erected, 2 ft. of posts entering the ground. Posts are specially made from heartwood of California redwood with cross braces and rails of sawed redwood timber. Shipped assembled in 8-ft. sections. This fence will last 20 to 30 years. An ideal fence for Suburban and Country Estates, Farms, and Hunt Clubs



**No. 79. California Redwood Board Fence**

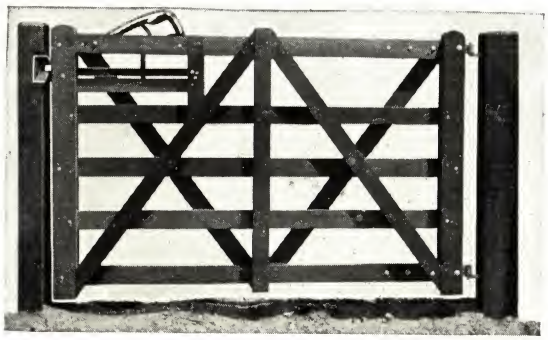
This popular, rugged fence is made with either three or four boards. Has a beautiful, natural reddish hue and requires no painting. Available in 3 to 6-ft. heights. Size of boards 1 in. thick, 6 in. wide, 10 ft. long. Posts are 3x5 in. at top; 5x5 in. at base, and 7 ft. long. No nails used in this mortised type fence. Will last approximately 30 years.



**No. 45. Rusticraft "Wont Sag" Farm Gate**

*Above:*

Made entirely of California redwood timber which is naturally reddish in color and never requires paint. Supplied in widths from 4 to 16 ft. strongly braced on both sides with heavy wooden braces. No iron used anywhere—nothing to rust, to stain or mar the appearance of the gate. Rails are heavy No. 1 redwood 1x3 timber. Height of gate, 4 ft.



**No. 54. Rusticraft "E-Z-opn" Self-locking Horseback and Farm Gate**

Made entirely of California redwood—*"The Longest Living Wood for Outdoor Use"*—and is double-braced to prevent sag. Will open forward from either side and always locks itself when pushed shut. The lock and handle are of solid bronze. A light lift of the handle opens the gate. Furnished in 4, 6, 8, 10 and 12-ft. widths. A good general farm gate but particularly useful for horseback. Horses or cattle cannot open the gate

*Right:*

**Improved Hitchcock Automatic Horseback Gates**

With the new improved Hitchcock Automatic Horseback Gate you just ride or drive up to the gate—a pull on the rope and the gate opens—another pull on the other side and the gate closes. When the gate is closed, a special safety device makes it impossible to open by pushing or leaning against it. Sturdily constructed with no intricate mechanism to get out of order. Hitchcock Automatic Gates are shipped as a complete unit and are 4 and 6 ft. wide



# CLAY EQUIPMENT CORPORATION

1000 S Street
CEDAR FALLS, IOWA
EASTERN BRANCH—BINGHAMTON, N. Y.

*Dairy Barn and Horse Barn Equipment*

CLAY

*Hog House and Poultry House Equipment*

*Complete Ventilating Systems*

## Products

Horse Stable Equipment
Saddle and Bridle Racks
Stanchions and Stalls
Lever Stalls
Automatic Drinking Cups
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## Architectural Service

We cooperate with architects everywhere with plans and Engineering Service. Over 30 years' experience in building equipment for barns, horse stables, hog houses, and poultry houses is at your disposal. The following new catalogs are available. Write for your copy.

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**(1) Plans**—Proper building positively depends upon proper plans. The Clay Equipment Corporation Planning and Engineering Department, gives expert advice and up-to-the-minute data on all farm building plans and equipment.

**(2) Horse Stable**—Clay equipped stable owned by Jack Kimberley, Neenah, Wis.

**(3) Dairy Barn Equipment**—Clay equipment gives greatest service, longer life and more economy. Clay equipment means greater profits.

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**(5) Poultry House**—Get Clay recommendations for better poultry houses. Use Clay Agricultural Vita Glass for health.

**(6) Barns**—Here is one of the many types of barns planned and equipped by Clay.

# JAMES MFG. CO.

## Manufacturers of Cow, Poultry, Hog and Horse Equipment, Ventilating and Warming Systems, Crop and Ensilage Keepers and Iron Cladding

ELMIRA, N. Y. FORT ATKINSON, WIS. MASON CITY, IOWA OAKLAND, CAL.



**Livestock Housing Group, Alleghany County Home, Pittsburgh, Pa., J. Lawrence Hopp, Architect**
Equipment, Ventilation and Engineering Service by JAMES MFG. CO.

### PRODUCTS

World's largest manufacturer of modern sanitary, all-metal, hot dip galvanized equipment for Cow and Horse Barns, Hog and Poultry Houses, together with engineered Warming and Ventilating Systems for all types of farm buildings. Jamesway is preferred equipment and is to be found in the leading livestock breeding establishments and country estates everywhere.

Important new developments in the Jamesway Line are the Jamesway Iron Clad Crop Keepers for the safer storage of chopped hay, straw, silage and grain feeds. Used in connection with Jamesway Iron Clad One-story Stables, the hazardous, combustible hay loft is done away with and greater protection given to valuable livestock, crops and machinery. Jamesway Iron Clad Stables and Keepers qualify for reduced fire and lightning insurance rates in the leading livestock States.

Investigate this new way of safely housing livestock in Iron Clad One-story Stables with crops protected in detached Iron Clad Crop Keepers. Costs no more, often less, than conventional construction, where sound building practices are followed.

### SERVICE TO ARCHITECTS

Jamesway maintains an Engineering Department for the express purpose of co-operating with architects on layouts covering equipment, warming and ventilating systems for every kind of livestock housing. In the field we have a staff of highly trained men thoroughly grounded in farm building methods and practices. Regardless of what type of building problem you have in mind, these men are at your command to assist in the preparation of plans for any farm building project, whether it be a single building or a complete farmstead layout.

There is no obligation on your part. These trained field men are ready and eager to serve you and they are backed up by competent engineers in our drafting departments.

Jamesway's world-wide experience in planning and equipping all types of farm structures is at your disposal. We invite you to avail yourself of these services which have been used by the architectural profession for years with the utmost satisfaction to the architect and his client.

If you have a problem in Cow, Horse, Hog, Sheep or Poultry housing, communicate with our nearest office and your requirements will have our prompt and careful attention.

References of nearby large installations gladly supplied.

### JAMESWAY—LARGEST IN THE WORLD



**Typical Jamesway Ironclad One-story Farmstead Group for Adelmer Farm, Barrington, Ill.**
Jamesway Crop Keepers in the background. Fire resisting, attractive, moderate in cost

ESTABLISHED 1867

# THE LOUDEN MACHINERY COMPANY

## Modern Barn Equipment and Ventilating Systems

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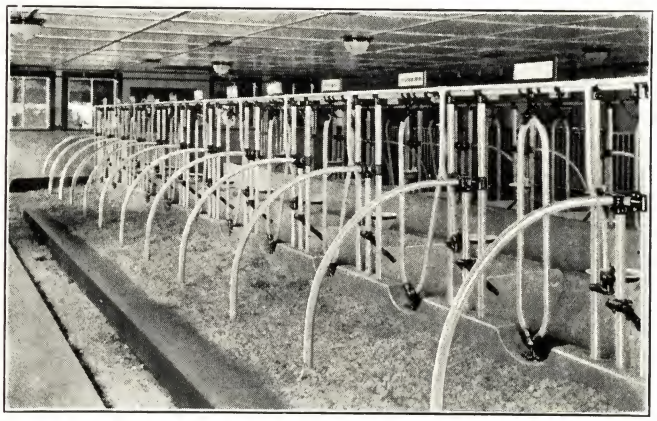
### Products

Complete EQUIPMENT for COW BARNS, HORSE BARNS and HOG HOUSES, including:

- Stalls and Stanchions
- Milking Parlor Stalls
- Steel Pens for Cow, Calf and Bull
- Water Bowls
- Manger Divisions
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- Swinging Cranes
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- Horse Stable Equipment
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- Cupolas
- Hay Unloading Tools
- Barn Door Hangers
- Garage Door Hangers

VENTILATING SYSTEMS:

For barns, hog and poultry houses. Two types—gravity and electric. Fully described in new Ventilation Book.



Stall Section of Louden Equipped Dairy Barn at Masonic Home Farm, Charlton, Mass.



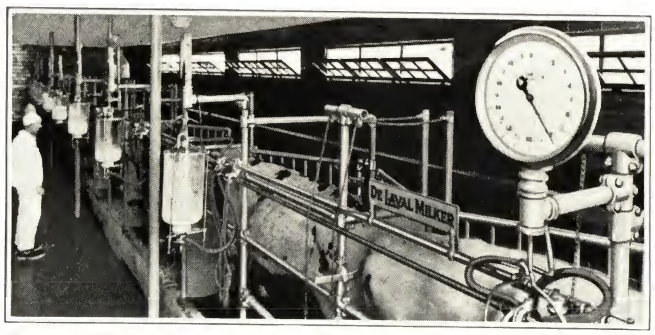
Louden Equipped Horse Stable of H. V. Foster, Bartlesville, Okla.

### Service

Louden Field Engineers are at your call for consultation on arrangement, ventilation, or equipment. If desired, they can render immediate service by preparing suggestive plans.

Our Engineering Department will work in conjunction with architects, to any extent, or will assume entire responsibility for the preparation of complete plans and specifications.

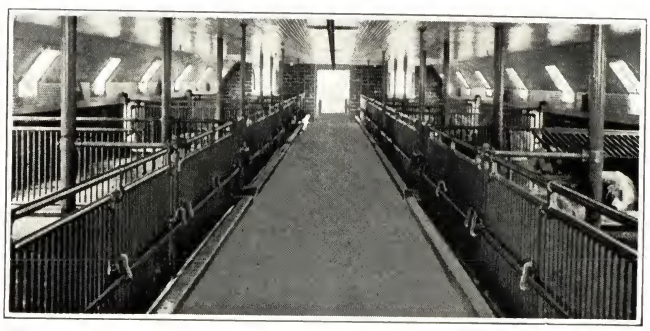
Send for 160-page catalogue, giving specifications and full information on Louden equipment.




Louden Milking Parlor Stalls at Hampshire Hills Dairy of Whiting Milk Co., Wilton, N. H.



Louden Pens in Calf Barn at Eliada Home Farm, Asheville, N. C.



Sanitary Louden Equipped Hog House at the Allen County Farm, Ft. Wayne, Ind.

# CAPITOL MAIL CHUTE CORPORATION

525 Union Avenue, BROOKLYN, N. Y.

AGENCIES IN PRINCIPAL CITIES

CAPITOL MAIL CHUTE MODEL C




Approved by U. S. Post Office Dept. Pat. Nos. 1,785,867; 1,953,485

CAPITOL MAIL CHUTE CORPORATION, is part of an organization of bronze manufacturers who have been doing distinctive bronze and metal work since its inception in 1905.

## Products and Service

Manufacture and installation of the CAPITOL MAIL CHUTE and LETTER BOXES for post office collection service throughout the United States and foreign countries. We have facilities for manufacturing special letter boxes to architects' designs.

## Post Office Approval

Capitol Mail Chute bears the approval of the Post Office Department, and this company is under $10,000 Surety Bond to strictly carry out the postal rules and regulations.

## U. S. Post Office Requirements

Subject to the approval of the postmaster, collections may be made from mail chutes placed in public buildings, railroad stations, hotels, business and office buildings not less than 4 stories high, and apartment houses comprising at least 40 residential apartments. Boxes must be within 100 ft. of the street entrance.

## Specifications for the Capitol Mailing System

Furnish and install where shown on the drawings and as hereinafter specified, the Capitol Mailing System as manufactured by the CAPITOL MAIL CHUTE CORPORATION, of 525 Union Avenue, Brooklyn, N. Y.

**Preparatory Work**—This contractor shall prepare the building to receive the mail chute equipment by furnishing and erecting (.....) frame of 2x2x$\frac{3}{16}$-in. steel angles, securely fastened to wall and through rough openings provided by others. Frame shall extend from the top of the mail box in the (first) story to a point of 4 ft. 9 in. above finished floor in (top) story. At this point the angles shall be neatly mitred and returned across the top. Frame shall be left flush and plumb throughout and sufficiently rigid to properly support the mail chute. Attach thimbles to frames in concrete openings between floors. Frames and thimbles shall be finished with two coats of lead and oil in a dead black.

**Mail Chute Erection**—Erect on this steel frame the Capitol Mailing System, consisting of—Model "C" Mail Chute and No. (.....) Standard U. S. Mail Box. The mail chute shall be adequately supported by, and fastened to the angle frame, and shall be properly connected with the mail box. Chute shall extend from top of box through . . . . floors and to a point 4 ft. 8 in. above finished floor of (top) story. Opening for mail shall be provided in each story.

**Mail Chute Construction**—Mail chute to be constructed of No. 20 U. S. gauge cold rolled steel formed in channels with removable panels of ¼-in. plate glass, set in frames of bronze and secured in place with Standard U. S. Mail Chute locks with keys in the hands of the Post Office authorities. Such panels and other parts of the Mail Chute to be so constructed that panels can be removed, and quickly and easily replaced by authorized persons only, without use of tools and without injury to the chute structure or finish. Locks to be so constructed that the key cannot be removed until the panels are properly in place and locked in position. Sub-base of steel, base neck moulding and crown moulding of extruded bronze. Collar and mailing pocket of cast bronze.

**Channels**—Channels to have inwardly projecting rib, formed in the metal to give lateral strength, prevent distortion, and to support panel in proper position, leaving the joint removed from the corner and so protected that mail matter cannot enter, and flange extending forward to cover joint between channel and panel.

**Panel Mouldings**—Panel mouldings to be designed to fit entirely inside of channels with no lateral projection beyond channel sides and to be drawn in one piece, of proper temper to insure permanent, dependable contact with inside glass surface.

**Penalty Card Holders**—Penalty card holders with dust-tight bronze frame and glass front—to be provided in every story.

**Mail Pockets**—Mail Pockets to have openings for mail 4¾x½ in. Also a second opening of the same size 2½ in. below the first, with serrate edges to prevent introduction of newspapers, folded pamphlets or other improper matter. These openings to have a convenient means of opening and closing by authorized persons only.

**Mail Box**—Mail Box shall be CAPITOL MAIL CHUTE CORPORATION design No....., size ..... in. wide, ..... in. deep and ..... in. high and constructed of (*see description below*).

**Finish**—All bronze surfaces shall be finished slightly oxidized or statuary bronze color and lacquered as directed. All steel shall be finished in dead black.

**Approval**—The entire work to be done to the satisfaction and acceptance of the architect in strict accordance with the regulations of the Post Office Department.

**Guarantee**—The CAPITOL MAIL CHUTE CORPORATION shall furnish a Surety Bond in the sum of Three Thousand Dollars guaranteeing the faithful execution of this contract, and against defects of workmanship and material for a period of 3 years in full compliance with order No. 3282 and No. 3283 of the Post Master General.

STANDARD CAPITOL LETTER BOXES

| Box No. | Dimensions in. | | | Description |
|---|---|---|---|---|
| | Width | Depth | Height | |
| 402 | 24 | 13 | 40 | Box made of extruded metal. Door and frame cast bronze. Usually finished semi-oxidized. |
| 403 | 21 | 11 | 36 | Box of No. 14 gauge sheet bronze. Doors of cast bronze. No. 403 has vertical mouldings as shown which can be supplied in contrasting metals. |
| 404 | 18 | 11 | 30 | |
| 312 | 21½ | 12 | 37 | Boxes made of No. 14 gauge sheet bronze. Door and frame cast bronze and mouldings of extruded bronze. Usually finished semi-oxidized. |

CAPITOL STANDARD LETTER BOXES




Capitol Box No. 402




Capitol Box No. 403




Capitol Box No. 404



Capitol Box No. 312

ESTABLISHED 1883

# CUTLER MAIL CHUTE COMPANY

INCORPORATED 1909

NEW YORK OFFICE
101 Park Avenue

GENERAL OFFICES AND FACTORY
76 Anderson Avenue, ROCHESTER, N. Y.
(Where All Correspondence Should Be Addressed)
AGENCIES IN PRINCIPAL CITIES

CABLE ADDRESS
"Chutler Rochester"

Copyright 1938 by Cutler Mail Chute Company

## CUTLER MAIL CHUTES AND BOXES FOR OLD AND NEW BUILDINGS

### Buildings May Be Modernized by Installing Cutler Mail Chutes




Model F
Full Story

The Cutler Mail Chute Company specializes in modernizing buildings through the installation of Cutler Mail Chutes. A large number of installations throughout the country in buildings not previously so equipped have been made in the last few months.

Prompt and safe dispatch of the U. S. Mail is a matter of such importance that no single improvement of comparable cost does so much to bring an old building up to modern standards as the installation of a mail chute. The installation is comparatively simple, and does not involve any considerable amount of noise, dirt, or other inconvenience. Less than one square foot of floor space is required and a satisfactory location can almost always be found. There is, in most cases, an actual saving to owners through the reduced use of elevators for the purpose of mailing letters, and a fine bronze Mail Box and Chute is a most attractive feature in any entrance lobby.

### Over 53 Years Mail Chute Experience

The Cutler Mail Chute Company since its organization in 1883 by J. G. and J. W. Cutler has been engaged exclusively in the manufacture of the U. S. Mail Chutes and Boxes which constitute the Cutler Mailing System.

### Cutler Quality

The highest standards in workmanship, materials and service have been maintained for more than 53 years and the resulting reputation is this Company's most valued asset. Constant progress has been made and is being made in the design and construction of the Chute and in manufacturing methods. Within the last year or two a number of important developments and improvements have been perfected and patented.

The Cutler factory, built and equipped expressly for the manufacture of Mail Chutes, contains every conceivable device for improving quality and reducing cost, and every phase of factory activity is in charge of men with many years of experience in their particular line of work.

Our draftsmen and engineers, too, have had a wide experience in meeting architects' requirements as to the arrangement of our work and difficult problems of installation.

### Complete Installation and Service

In all cases the contract for a Cutler Mail Chute covers the work completely installed in the building and the work of installation is done by our own men, trained at the factory and instructed to be satisfied with nothing short of a perfect result.

This well rounded and complete organization is at the disposal of every purchaser of a Cutler Mail Chute from the start of the negotiations until the commencement of the Collection Service by the Post Office Authorities.

### United States Post Office Regulations

Every U. S. Mail Chute, after the Collection Service has been commenced, is in the "Care and Custody" of the Postmaster. The Postmaster alone has authority to establish Collection Stations and every Mail Chute Contract must be written on a prescribed form with the Post Office Regulations printed thereon and made a part of the contract. Such contracts are, in all cases, written to cover the work complete, except rough floor openings, which are otherwise provided for.

The Regulations of the Post Office Department, under which we operate, are rigidly enforced and we are under bond to observe these Regulations in every particular. A copy of them will be sent on request, or may be obtained upon application to the Department, but we suggest that architects not thoroughly familiar with the rules, consult us as early as possible when there is any question as to the arrangement of the work.

### Cutler Mail Boxes

Range from our stock boxes of simple but tasteful design, such as the Nos. 4038 and 4550 as illustrated on the following page, to the most elaborate cast boxes from Architect's special design. We have a large collection of models and patterns and can often suggest semi-special designs in harmony with the Architectural style employed, without the expense of making entirely new patterns.

The Mail Box is a part of the complete Mail Chute installation and must, in all cases, be included under the Mail Chute Contract. We suggest that the Cutler Mail Chute be specified by name in all cases. Estimates will be furnished in advance when desired and, if preferred, a stated sum may be set aside to cover this item.

### Cutler Mail Chutes

#### Model F

The Standard Cutler Mail Chute is known as Model F.

The materials used in its manufacture and the finish may be varied, but the construction remains the same in all cases. The "All Black" finish is the least expensive, but Standard Finish costs but little more and is more generally used.

**"All Black" Finish**—The entire Chute and Box finished in dead black baked enamel.

**Standard Finish**—Steel Chute channels (sides and back of Chute) and sub-bases in dead black baked enamel; caps, duplex electro-bronze plated; bases, mailing pockets and panel moulding of glass fronts are of bronze, slightly oxidized, of statuary bronze color.

**Special Finishes**—We are prepared to furnish equipment in a great variety of special finishes when required.

Aluminum and Benedict Nickel materials are carried in stock for this purpose and we have excellent facilities for producing special Baked Enamel finishes of all kinds.

#### Twin Model F

The Cutler Mail Chute in twin form is the ideal type for large structures.

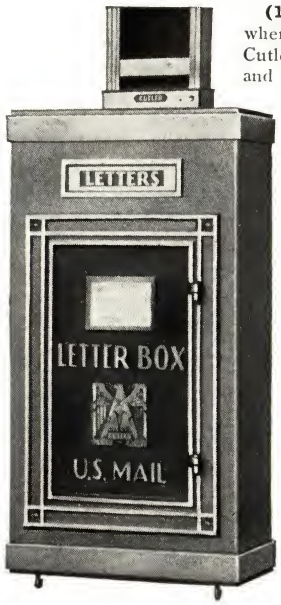
While the bases, ceiling-collars, etc., are common to both Chutes, producing the effect of a single unit, the fronts may be removed separately.

It is possible to put one Chute entirely out of commission in an emergency, leaving the other in operation. To avoid congestion, it is usual to close the mailing openings on each Chute in alternate stories so as to divide the Mail equally between the two Chutes.

Correspondence as to any feature of Mail Chute practice is invited, and our representatives and agencies in the principal cities will be glad to assist in any way.

# MAIL CHUTE SPECIFICATIONS

The following specification is written to cover a single Mail Chute, but in buildings of large area or more than twelve stories in height, two or more Chutes should be installed.




Standard Design No. 4038—Bronze

**(1) Mail Chute Equipment**—Mail chutes where indicated on drawings shall be the Cutler Mail Chute Equipment. Manufactured and installed complete by the Cutler Mail Chute Company, Rochester, N. Y., as follows:

**(2) Labor and Material**—Provide all labor and material required to furnish, deliver and install a Mailing System as indicated on drawings and as hereafter specified.

**(3) Rough Openings**—Rough openings through floors are not included in the Mail Chute contract, and are otherwise provided for, together with the items of general cutting, and patching and repairing of plaster.

**(4) Finish of Floor Openings**—Finish the rough floor openings provided by others, to thimbles or sleeves of No. 22 U. S. Gauge cold rolled steel, suitably protected against rust, and furnish and erect a frame of 2x2x$\frac{3}{16}$-in. steel angles, without twists, bends or waves, securely fastened, extending from the top of the Mail Box to a point four feet eight inches (4 ft. 8 in.) above the finished floor in the topmost story to be served, and there finished by neatly mitering and returning the angle across the top. This frame to be plumb and flush in all stories, sufficiently rigid to form a suitable support for the Mail Chute, and painted two coats lead and oil, final finish to be applied by others.

**(5) Installation**—Furnish and erect on the steel frame described above ..... Mail Chute(s), and ..... U. S. Mail Box(es) to be located in the ..... story; the Mail Chute to be properly connected with and extend from the top of the Mail Box through ..... stories and four feet seven inches (4 ft. 7 in.) into the ..... story, with openings for mail in each of these stories.

**(6) Construction**—Mail Chute to be constructed of No. 20 U. S. Gauge cold rolled "full finished" steel, formed in channels, with removable panels of $\frac{3}{16}$-in. Rolled Crystal Glass, set in frames of bronze and secured in place by standard U. S. Mail Chute locks with keys in the hands of the Post Office Authorities. Such panels and other parts of the Mail Chute to be so constructed that the panels can be removed and quickly and easily replaced by authorized persons only, without the use of tools or the exercise of mechanical skill, and without injury to the chute structure or finish. Locks to be so constructed that the key can not be removed until the panels are properly replaced and locked in position. Sub-bases of cast iron, or die cast. Other fittings of bronze.

**(7) Channels**—Channels to have inwardly projecting rib, formed in the metal, to give lateral strength, prevent distortion, and to support panel in proper position, leaving the joint removed from the corner and so protected that mail matter can not enter, and flange extending forward to cover joint between channel and panel. All mailing pockets to have openings for mail 4¾x½ in. with convenient means of opening and closing by authorized persons only, and a second opening of the same size 2½ in. below the first with serrate edges to prevent the introduction of newspapers, folded pamphlets or other improper matter.

**(8) Panel Mouldings**—Panel mouldings to be designed to fit entirely inside of channels with no lateral projection beyond channel sides and to be drawn or rolled in one piece, of proper temper to insure permanent, dependable contact with inside glass surface.

**(9) Penalty Card Holders**—Penalty card holders with dust-tight case—bronze frame and glass front—to be provided in every story.

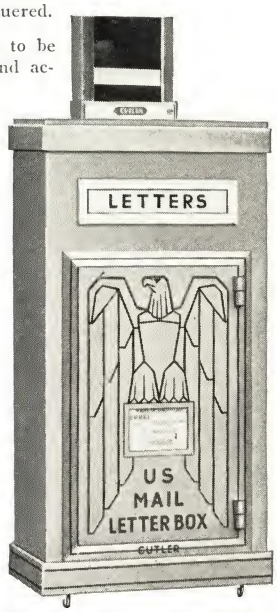
**(10) Stadardization of Parts**—All fitted parts shall be machine made so as to insure standardization in size and form, perfect fit and interchangeability. Floor connection, ceiling extension linings, etc., shall be formed in press and lapped seams rolled tight.

**(11) Mail Box**—Mail Box to be 37x19x10 in., of No. 16 B. & S. Gauge sheet bronze, with door and frame and Letter Drop and Frame of cast bronze. Door to have inscription Letter Box—U. S. Mail cast on, and adjustable frame for bulletin card. Door opening 20x12½ in. Letter Drop to have the inscription Letters in flush lettering. Opening 11x1¼ in. Hinges exposed, with pins riveted and removable in emergency. Bases, cap and neck mouldings of drawn bronze. Design to be in proper Architectural Style, subject to Architect's approval.

**(12) Finish of Mail Chute Channels and Sub-bases**—Finish of Mail Chute channels and sub-bases to be dull black enamel, baked on at 400° F. Bronze of Mail Box and Mail Chute fittings to be slightly oxidized and lacquered.

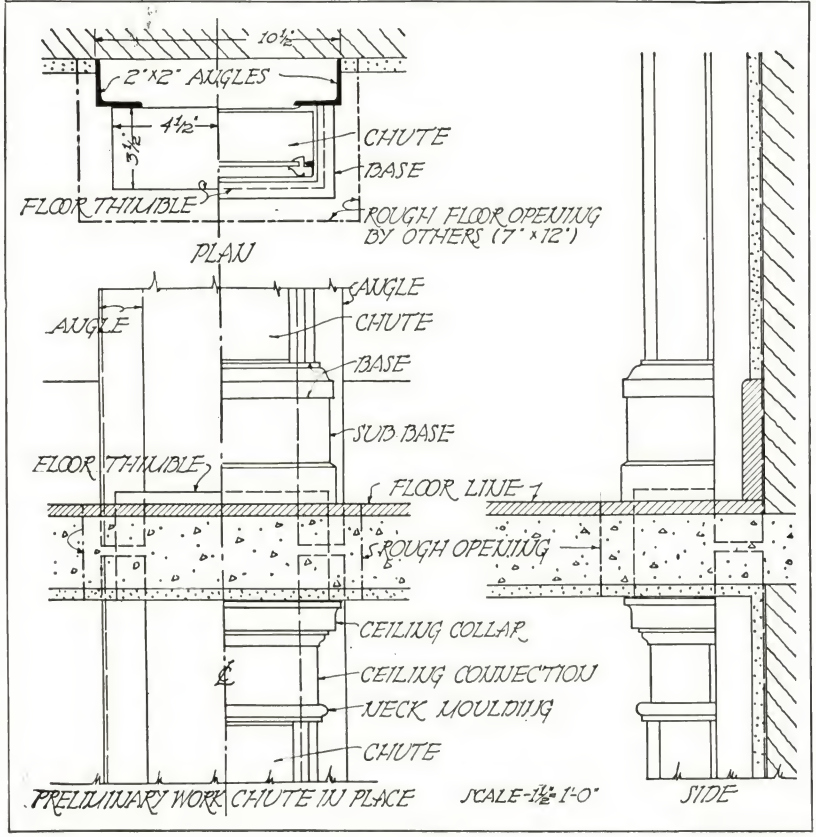
**(13) Approval**—Work to be done to the satisfaction and acceptance of the Architects; in strict accordance with the Regulations of the Post Office Department, and installed with the approval of the Postmaster of .....

**(14) Guarantee**—Any and all defects in workmanship or material developing within two years from date of completion to be made good without charge. The contractor shall furnish a Surety Bond in the amount of $3,000.00, guaranteeing the faithful execution of this contract within the time specified, in full compliance with Order No. 3282 of the Post Master General.




Standard Design No. 4550—Aluminum

## GENERAL INSTALLATION DETAILS OF CUTLER MAIL CHUTE



# KOLSTAD MAIL BOX COMPANY, INC.

Manufacturers of Residence and Apartment Mail Boxes

210 Garfield Avenue

DULUTH, MINN.

## A MAIL BOX OR CHUTE FOR EVERY TYPE OF HOUSE, DUPLEX OR FLAT, BRICK, STUCCO, MASONRY AND FRAME CONSTRUCTION

For frame or stucco construction we recommend our No. 50 series of boxes. These are adjustable for walls from 5 to 9 in. thick, and their unusual depth is a sure protection for the mail. They are large enough to hold newspapers and magazines, and the inside door is hinged to open under the weight of excessive mail. A similar box, made for brick or masonry walls, is adjustable from 9 to 13 in.

For duplexes or flats we make a sidewall box (see No. 60) that delivers mail through a cross wall. The receptacle will fit in a 2 x 4 partition.

Other lines are the straight wide chutes (No. 40), the vertical chutes where space is limited (No. 75), and the least expensive chutes (No. 30), which are large enough to take small magazines and folded papers.

All types are made for both frame and masonry walls, and offer a choice of front finishes (see illustrations).

### Exclusive Features of Kolstad Boxes and Chutes

**Weather Proof**—The boxes and chutes absolutely exclude wind, rain or snow and are non-corrosive.

**All Metal Construction**—Heavy cast bronze outside door with no springs or parts to get out of order closes by its own weight. Deep flanges insure tight fit around frame. All galvanized iron interior receptacle. Neat metal inside door will not warp, twist or swell.

**Attractive Face Plates**—All fronts made of heavy cast bronze. Standard finishes—sanded statuary or hand-hammered Swedish gray iron. Special finishes at small additional cost.

**Easy Installation**—Fully assembled, telescoping construction fits any wall. Lower section has ¼-in. flange which acts as plaster bead insuring smooth plaster opening. Inside door unit comes complete ready to install after plastering. No cutting or flanging required on job nor fitting of false frames or wood doors.

### BOXES AND CHUTES FOR MASONRY CONSTRUCTION



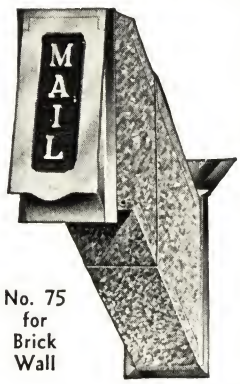

No. 56—Front



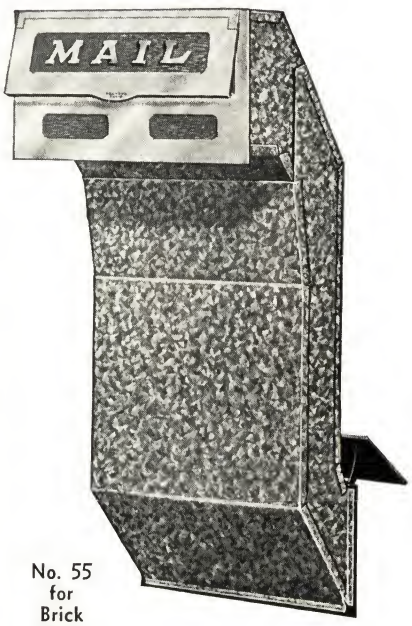

No. 57—Front




No. 58—Front




No. 75 for Brick Wall




No. 55 for Brick Wall



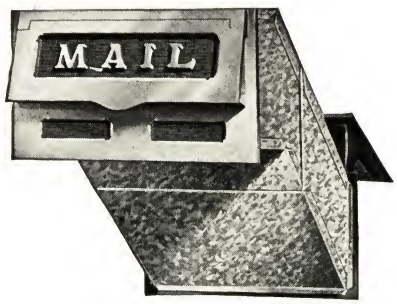

No. 66 Front



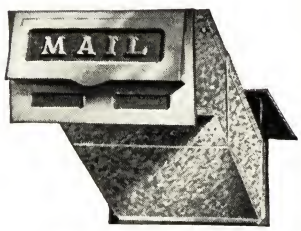

No. 67 Front




No. 68 Front



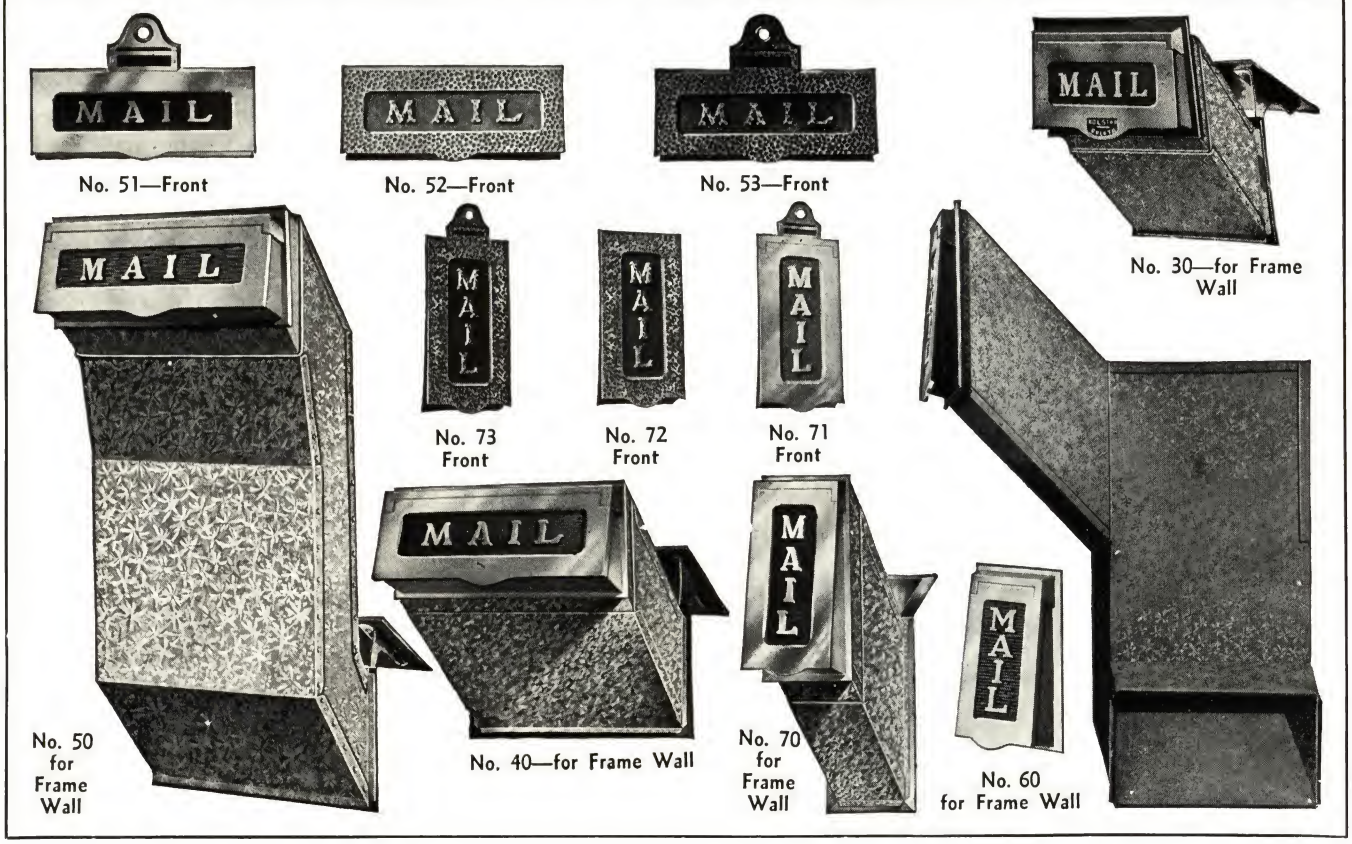

No. 45—for Brick Wall




No. 35—for Brick Wall

*Write for complete catalog*

## BOXES AND CHUTES FOR FRAME CONSTRUCTION




# APPROVED APARTMENT HOUSE MAIL BOXES

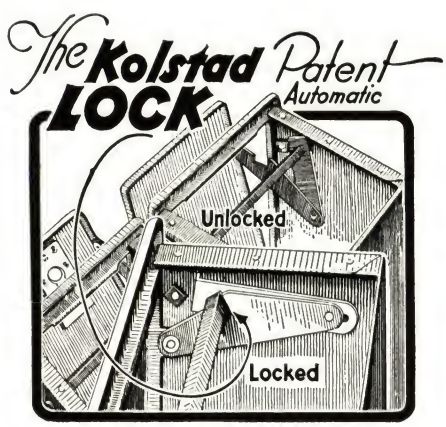
### Exceptionally Large Capacity

One of the most common complaints against apartment house equipment is that mail boxes are inadequate. Kolstad Apartment House Mail Boxes overcome this fault entirely. Receiving and delivery doors are especially designed for maximum capacity and easy delivery. It will accommodate even the largest magazines.

### Automatic Locking Device

The exclusive, patented locking device of Kolstad Apartment House Mail Boxes insures absolute safety for tenants' mail. On each individual receiving door, operating in connection with the master door, is an individual locking device, or hinge. Its operation is simple, entirely automatic and always positive.

When the master lock is opened, this automatically opens all receiving doors. Closing of the master door automatically locks them. In no way does this affect ease of opening boxes simultaneously with the master lock. It is absolutely impossible for any door to be pried open.




### Description

**Exterior**—Fronts of Kolstad Apartment House Mail Boxes come either in solid brass or lead-coated auto body steel. Our standard finish is matted gold.

**Interior**—Linings of our apartment house boxes are galvanized sheet steel throughout.

**Locks**—Master lock is a government lock, furnished and installed without charge by the United States Post Office—key retained by them. The individual tenants' locks are flat cylinder type Eagle locks. Each tenant's key is different.

**Card Holder and Slots**—Delivery doors are equipped with flush type card holders, accessible from inside. There is also a telegram or calling card slot. Other perforations are provided that make it easy to tell if there is any mail.



View with Carrier's Doors Open

# VOGEL PETERSON CO., Inc.

## Manufacturers of Peterson Checkroom and Wardrobe Equipment

1801 North Wolcott Avenue, CHICAGO, ILL.

### Products

PETERSON ALL-STEEL CHECKROOM and WARDROBE EQUIPMENT for clubs, hotels, auditoriums, theaters, museums, churches, schools, banks, stores, offices, hospitals, etc., consisting of Stationary and Portable Floor and Wall Racks; Overshoe, Umbrella and Baggage Racks; Racks for Bathhouse Checkrooms; and Costumers.

T. M. Reg. U. S. Pat. Office

### The Peterson One-check Checking System

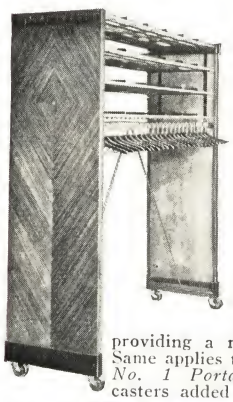
**Advantages**—Unlike any other checking system the Peterson One-check Checking System increases speed, eliminates errors and utilizes any given space to provide the greatest capacity. Coats, hats, packages, umbrellas, canes, overshoes are taken care of quickly and accurately with the least possible expenditure of space or effort.

**Operation**—Each coat goes on its own hanger where it is held in shape; it is not subjected to the damaging results of sagging on an ordinary hook. Each hat has its correspondingly numbered section above the hanger. Canes, umbrellas, rubbers, overshoes or luggage are disposed of with equal care by means of systematically numbered umbrella, overshoe and baggage racks.

Regardless whether one or all of the above items are checked, it is only necessary for the guest or patron to be given one check which identifies every item. Only the Peterson One-check System offers this remarkable service.

### Service

Our long experience in solving checkroom problems fits us to plan arrangements which will insure the greatest all-round efficiency. We will gladly submit to architects, gratis, blue prints indicating the most practical checkroom arrangements. Complete catalogue describing the Peterson system and equipment sent on request.



*Left:*

**Portable Rack No. 8**

Capacity 48 coats and hats. Length 6 ft.; width 2 ft.; height 6 ft. 7 in. Panel ends in walnut, mahogany, or oak. Panels can be furnished for stationary racks

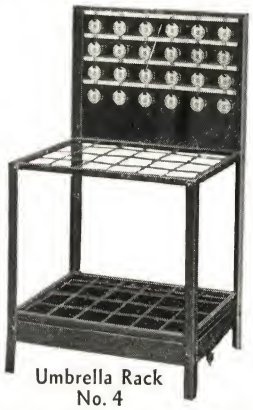


*Right:*

**Floor Rack No. 2**

Length 3, 4, 5 and 6-ft. sections; height 6 ft. 7 in.; width 2 ft. Sections interlock, thereby providing a rack of any required length. Same applies to all racks.

*No. 1 Portable*—Same as No. 2 with casters added



**Umbrella Rack No. 4**

Height, 34¼ in.; width, 1 ft.; length, 1 ft. and up. Capacity, 16 umbrellas to each 1 ft. length. Drip pan has pet cock for draining



**Overshoe Rack No. 7**

Compartments 6x6x13 in. Standard height 3 ft. 3 in. Any length required. Usually used as counter or placed under existing counter

### Specifications and Construction Details

**Frames**—End and intermediate frames are interchangeable. They are of two-post construction. Posts are No. 18 gauge 1½ in. square tubular steel. Cross arm shelf supports are No. 15 gauge channel-formed steel to receive ends of shelving. Bases—No. 14 gauge 2½ ins. x 1 in. x 2 ft. ¾ in. enclosed top and four sides, with reinforced welded corners. Bases also equipped with vacuum-cup rubber shoes, eliminating necessity for anchoring. All joints electrically welded.

**Shelving**—New style dust-free perforated and embossed one-piece steel shelving having ⅝x¾x⅛-in. hard steel angle reinforcement. Also to this is added a ½-in. steel channel for number strips. Hat dividers at 1-ft. intervals embossed into shelving. Hat spacers have rear as well as side divisions. Coat hanger rail supported independent of shelving, thereby causing no undue strain to that portion of rack.

**Wall Brackets**—Similar in construction to end frames except having No. 3 gauge back supporting member. All connections electrically welded.

Throughout entire construction of all parts, there are no welded joints that will receive a shearing strain.

**Capacity**—8 coats and 8 hats per lineal foot of floor type rack.
4 coats and 4 hats per lineal foot of wall type rack.

**Hangers**—One-piece hardwood hanger. No. 10 hard steel rustless wire. Auxiliary hook below.

**Numbering**—Large, clear, and legible numeral impressed into white fibreloid.

**Hardware**—All hardware cadmium plated.
Shakeproof washers for all bolted connections.

**Finish**—Two coats mahogany-walnut brown enamel. Any other color by request.
All equipment furnished complete ready for use.

*Peterson Checking System is fully protected by U. S. Patent.*



**Wall Rack No. 3**

Length 3, 4, 5 and 6-ft. sections. Width 12 in. Height installed 6 ft. 7 in. Sections interlock.

*No. 3F Wall Rack*—Same as above except attached to floor frames



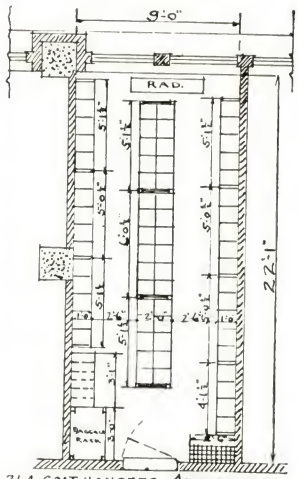
**Rack No. 3U**

Combines space for umbrellas and overshoes as well as coats and hats.

Splendid wardrobe for offices, stores, etc. Height 6 ft. 7 in.; depth 1 ft. 4 in.; length 4 ft. 2¾ in. Furnished with or without casters. Interlocking sections of any length can be supplied

### Leading Buildings Use Peterson Checkroom Equipment

Below are listed a few installations made during 1937:




Western Electric Co., St. Paul, Minn.
International Harvester Co., Chicago, Ill.
Felt Tarrant Co., Chicago, Ill.
Cluett, Peabody & Co., Troy, N. Y.
Masonic Temple, St. Paul, Minn.
Chicago Bar Association, Chicago, Ill.
First Church of Christ, Scientist, Cambridge, Mass.
Austin Presbyterian Church, Chicago, Ill.
St. Gregory's Church, Chicago, Ill.
Stanford University, Palo Alto, Cal.
University of Alabama, Tuscaloosa, Ala.
University of Iowa, Iowa City, Iowa
City Hall, San Francisco, Cal.
Supreme Court Building, New York, N. Y.
Middlebury Town Hall, Middlebury, Conn.
Mellon Institute, Pittsburgh, Pa.
Elgin State Hospital, Elgin, Ill.
Kankakee State Hospital, Kankakee, Ill.
Y. M. C. A., Columbus, Ohio
Chicago Arena, Chicago, Ill.
Howard University, Washington, D. C.
Occidental Hotel, Muskegon, Mich.
F.O.E. LaCrosse Aerie 1254, LaCrosse, Wis.

J. A. WEBER, Pres. & Treas.

# R. W. CLARK MFG. CO.

R. G. MOLITOR, V.P. & Secy.

TELEPHONE
Longbeach 2030

Building Directories and Bulletin Boards
5137 Lincoln Avenue, CHICAGO, ILL.

## Products

BUILDING DIRECTORIES for Lobby or Floors: Clark Liberty (Interchangeable Letter) and Clark Embossed Strip and Gummed Letter Strip.

Also Rosters, Bulletin and Announcement Boards, Desk and Teller Name Plates, and Cork Tack Boards.

## Clark Directories

**Clark Liberty Directory (Interchangeable Letter)**—Little or no up-keep cost; immediate service to tenant; letters and covered strips can be re-used many times; practically same wall space required as for gummed-strip using same size letter. Letters made of best white celluloid under Clark patent.

## Embossed Strip and Gummed Letter Strip

**Directories**—Also sold outright. Strips furnished at low cost. The saving to the owner is about 85% of the annual rental charge. Strips fit easily into groove and are held in position with felt covered back.

**Styles and Sizes**—All sizes, styles and finishes supplied—ornamental iron, plain or ornamental extruded bronze, wood filled bronze, and wood in either oak, walnut, mahogany or ebony finish.

Standard width of sections: for changeable strip (embossed strip), 7½ in.; for Clark Liberty (interchangeable letter) 7½ in. with ¼-in. letters and 12 in. with ⅜-in. letters. Sections also made 15 in. wide for ½-in. letters.

Any convenient heights can be made.

*Catalogue and additional information on request.*

## Estimates

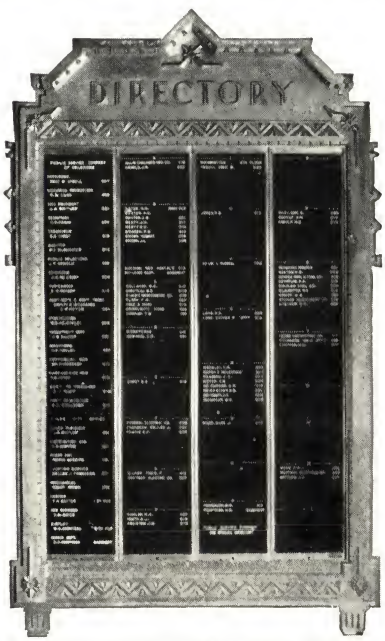
For all ordinary buildings two names to the room will be the approximate capacity of directory required. In the case of special buildings, more or less, according to purpose of the building.

In writing for estimates, state total number of names board should hold; material; style; finish; and, particularly, available wall space, if limited.

## Weber's Front-Change Directory

*(Patented)*

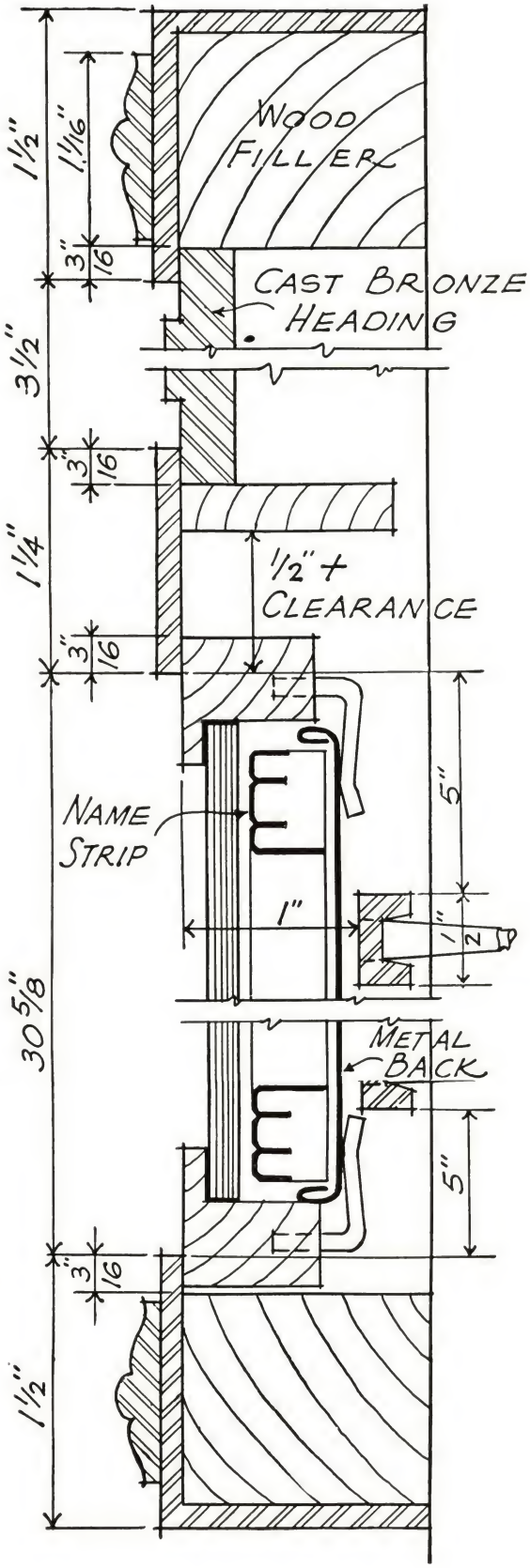
A new feature, combining the advantages of the Clark Liberty Directory with individual strips, and with a glass door, instead of the removable sections. Unit of one or more columns may be placed as such, into suitable frame with glass door. *Any strip may be removed without disturbing the others.* Unit width of columns—same as for Clark Liberty Directory sections. Write for detail information.




4-section Special Clark Liberty Directory




3-section Special Clark Liberty Directory



# THE TABLET & TICKET CO.

## Building Directories and Changeable Bulletin Boards

1021 West Adams Street, CHICAGO, ILL.

115 East 23rd Street
NEW YORK, N. Y.

120 Boylston Street
BOSTON, MASS.

607 South Hill Street
LOS ANGELES, CAL.

407 Sansome Street
SAN FRANCISCO, CAL.

SALES OFFICES

ATLANTA, GA.
BALTIMORE, MD.
BUFFALO, N. Y.
CINCINNATI, OHIO
CLEVELAND, OHIO
DALLAS, TEX.
DENVER, COLO.
INDIANAPOLIS, IND.
KANSAS CITY, MO.
MILWAUKEE, WIS.
MINNEAPOLIS, MINN.
NEW ORLEANS, LA.
PITTSBURGH, PA.
PORTLAND, ORE.
ST. LOUIS, MO.
ST. PAUL, MINN.
SEATTLE, WASH.
WASHINGTON, D. C.
TACOMA, WASH.

SALES REPRESENTATIVES IN ALL PRINCIPAL CITIES

### Products

BUILDING LOBBY DIRECTORIES; FLOOR DIRECTORIES; BUSINESS DIRECTORIES; CHURCH DIRECTORIES; STORE DIRECTORIES; CLUB MEMBERSHIP and HANDICAP BOARDS; CHANGEABLE LETTER SIGNS and BULLETIN BOARDS; "IN-AND-OUT" BOARDS; HOSPITAL REGISTER BOARDS.

SINCE 1870

### (A) Building Directories—Service or Sale

**(A-1) Service**—THE TABLET & TICKET CO. will install its standard directory equipment as specified, furnish name strips and keep the directory corrected, making name changes as ordered, and render complete maintenance service. The system will be installed under a contract at an agreed annual fee based upon the name capacity of the equipment.

**(A-2) Frames by Others**—When ornamental frames are furnished by others, we will supply sections only, with strip service and maintenance service, making proper allowance in the service charge for the frame.

**(A-3) Strip Service**—In cities where strip service stations are located, name changes are inserted in 24 hours; mail orders are invariably forwarded same day received.

**(A-4) Maintenance**—A staff of men visit our directories periodically to see that they are kept clean, in repair and in good working order. There is no additional charge for this service.

**(A-5) Sale**—THE TABLET & TICKET CO. directories may be purchased at a very reasonable cost; in this case regular Tablet & Ticket Directory service may be had at special rates, or strips purchased as required.

### (B) Description of Office Building Directory

**(B-1) The Directory**—Each directory consists of two or more units, the frame and one or more removable sections.

**(B-2) Frames**—Our frames can be furnished of ornamental cast metals; of any of six styles of extruded Benedict nickel, extruded bronze or extruded aluminum, three styles of kalamein moulding, or two styles of ornamental iron moulding.

These can be in various finishes as desired. Among these will be found a style to harmonize with any ornamental metal work.

Where special frames are included in the work of the ornamental iron or bronze contractor, Tablet & Ticket sections only are specified.

**(B-3) Headings**—Headings may be a cast tablet, or white letters on a black background under glass.

**(B-4) Sections**—Each section is a unit in itself. Frame is of bronze, steel, nickel, or special metals to match frames, with beveled plate glass front. The strips fit into grooves in each side of the section frame and are held flat and in perfect alignment against the plate glass front by the padded removable back piece.

Standard sections are 7½ inches wide. Special size sections with appropriate strips to fit special frames can be supplied.

**(B-5) Name Strips**—The strips are pliable black cardboard of special texture, with glazed white letters, providing sharp contrast and unusual legibility.

**(B-6) Name Capacities**—In estimating the size directory required, we advise allowing two names for every office to provide proper expansion margin. The following chart indicates the normal name listing capacity of various combinations of standard sections, after allowing for alphabetical headings and blanks necessary to insure proper appearance.

**(B-7) Specification**—*(1) Type*—A directory of removable section, changeable name strip type, as manufactured by THE TABLET & TICKET CO., shall be provided.

*(2) Capacity*—The directory shall be of a capacity to conveniently hold one hundred (or whatever required) names plus necessary alphabets.

*(3) Frame*—The master frame shall be of extruded (see B-2) Tablet & Ticket Co. Model (see mouldings on following page) with corners hand mitered and welded.

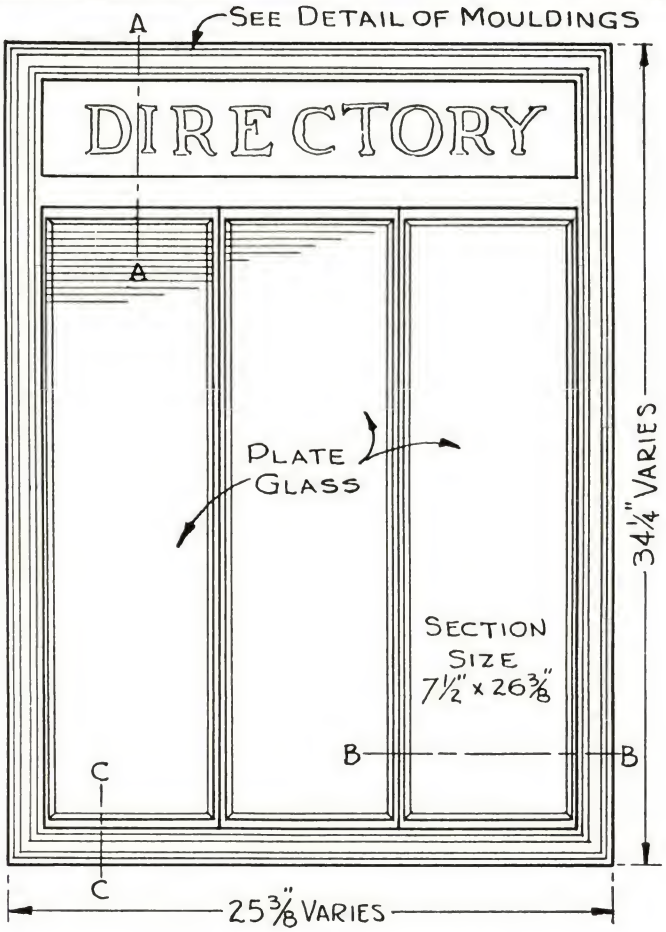
*(4) Sections*—Three removable sections (or whatever number selected) each 7½ in. x 26⅜ in. (or whatever size required) shall be furnished. The section frames shall be of metal to match the master frames.

*(5) Name Strips*—Name strips shall be of waterproofed, flexible cardboard, properly covered and machine lettered.

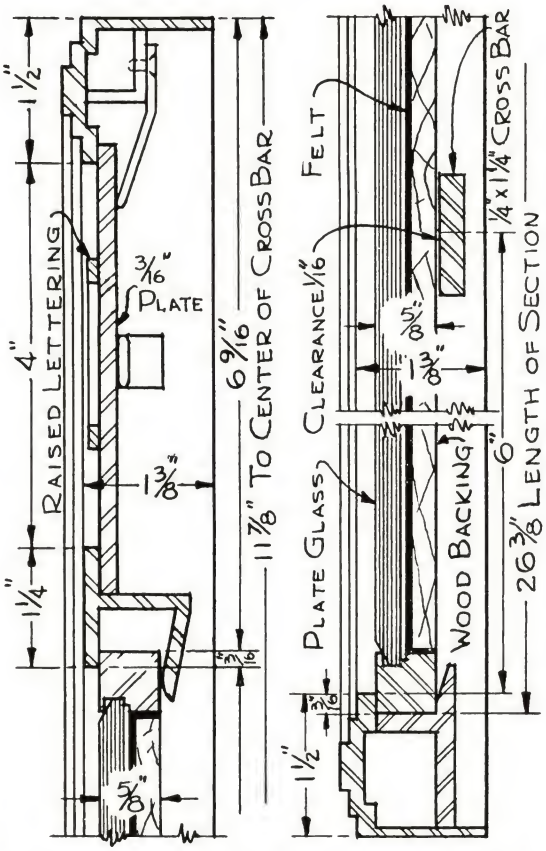
*(6) Service*—In New York, Chicago, San Francisco, Seattle or Los Angeles, name changes must be inserted in directory within twenty-four hours of notification by building manager. In all other cities, strips must be mailed same day order is received.

**NAME CAPACITIES OF STANDARD SECTIONS**

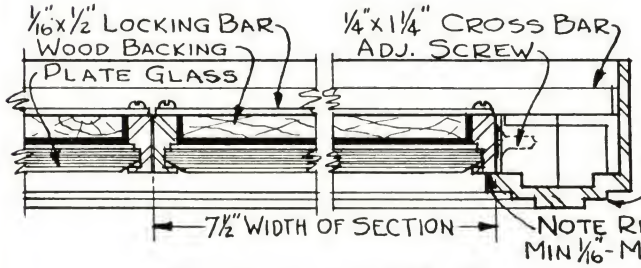
| Number of sections | Length of section, in. | | | |
|---|---|---|---|---|
| | 18½ | 26⅜ | 32⅞ | 40⅜ |
| 3 sections | 50 | 100 | 150 | 200 |
| 4 sections | 100 | 150 | 200 | 300 |
| 5 sections | 150 | 200 | 250 | 400 |
| 6 sections | 200 | 250 | 300 | 500 |
| 7 sections | ..... | 300 | 400 | 600 |
| 8 sections | ..... | 400 | 500 | 700 |
| 9 sections | ..... | 450 | 600 | 800 |
| 10 sections | ..... | 500 | 700 | 900 |
| (Total strips per section) | 45 | 64 | 80 | 100 |




ELEVATION
SCALE 1½" = 1'-0"

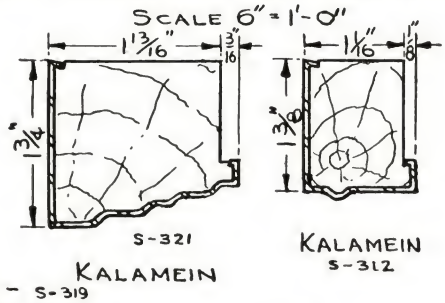


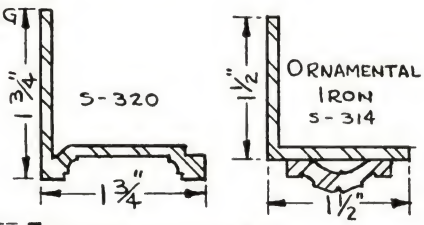

SECTION AT "A-A" • SECTION AT "C-C"

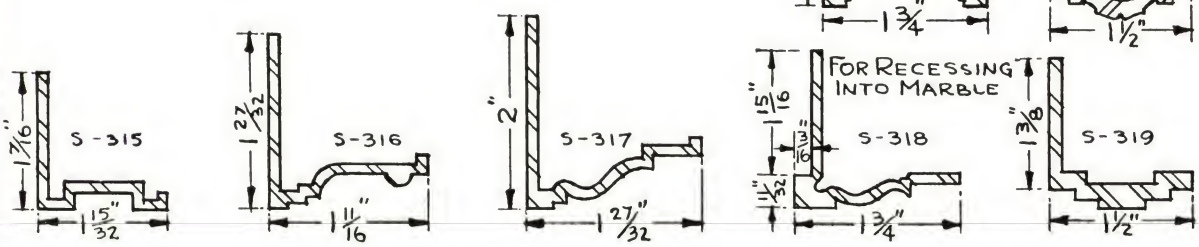



SECTION AT "B-B"
SCALE 6" = 1'-0"

SCALE 6" = 1'-0"




DETAILS OF BRONZE MOULDINGS
STOCK DESIGNS
SCALE 6" = 1'-0"

The TABLET & TICKET CO.
SINCE 1870
NEW YORK CHICAGO SAN FRANCISCO

# TYPICAL STANDARD THREE-SECTION DIRECTORY

MEMORANDA

# CLARK PNEUMATIC SERVICE CO.

534 West 30th Street
NEW YORK, N. Y.

For Turntables, Platform Elevators, Mechanical Displays, see Peter Clark, Inc., in File Index

## Products

Pneumatic Dispatch Tubes
Power Saving Controls
Stainless Steel Cash Carriers
New Style Metal Document Carriers
Transparent Message Carriers
Package and Correspondence Lifts
Conveyors

## Pneumatic Tube Uses

**Industrial Plants**—Use tubes between order and production departments, manufacturing and shipping departments, shipping and billing departments, etc.

**Office Buildings**—Multi-floor tenants use tubes for interfloor communication for speed, privacy, and to eliminate expensive messenger service.

**Banks**—For mail, telegrams, checks, etc., between departments.

**Newspaper Offices**—For classified adds to composing room, etc.

**Hotels**—From floor clerks and telephone switchboard to main offices.

**Retail Stores**—Used for cash and charge transactions and interdepartmental communication.

**Miscellaneous**—Tubes are also used in hospitals, libraries, insurance companies, government offices, and in any place where the speed and safety in the transmission of written records is required.

*Additional information on any of the above uses will be gladly furnished.*

## Controls, Carriers, Conveyors

**Power Saving Controls**—Simple in construction—positive in operation. No leather diaphragms to be affected by changes in atmospheric conditions. No complicated adjustments.

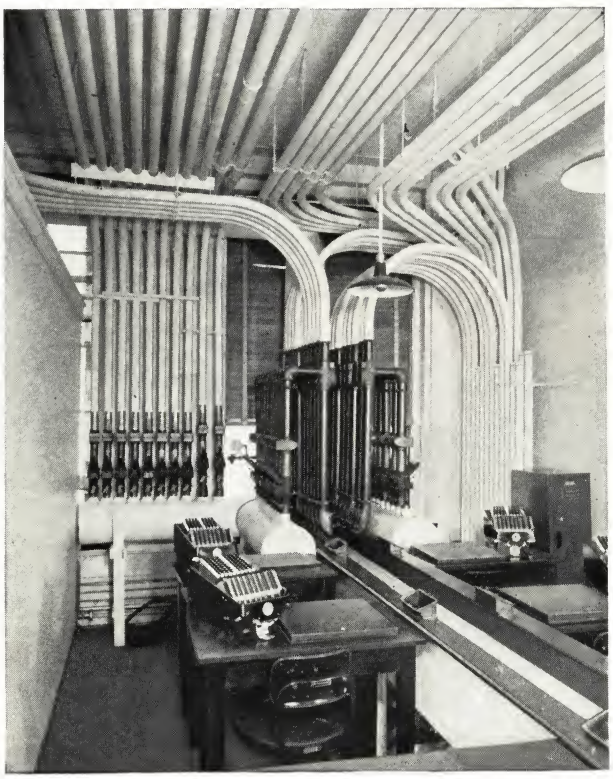
**Stainless Steel Cash Carriers**—Stronger than brass—will not dent or bind—no corrosive material—lighter than brass, therefore increasing carrying capacity of system.

**Metal Document Carriers**—Lighter than old style rubber or leather carriers—greater capacity—will not crush out of shape and block tube lines—indestructible.

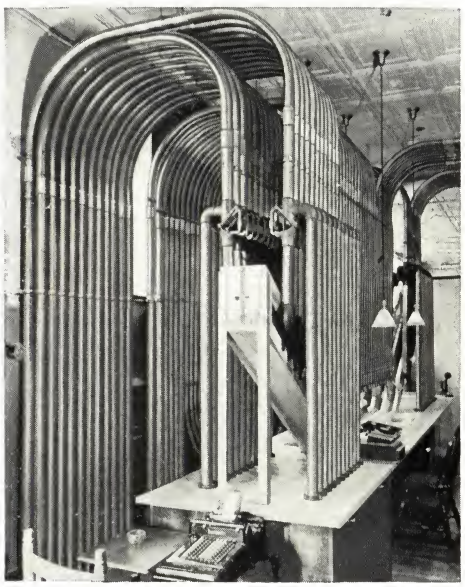
**Transparent Carriers**—For charge and credit slips, so name is visible through carrier body.

**Package and Correspondence Lifts**—Dumbwaiter type lift for light loads—hand or power driven.

**Conveyors**—Belt conveyors, special types designed to fit the job requirements.



**Lord & Taylor, New York, N. Y.**
Belt conveyor type desk—central tube room—for cash—charge carriers are redispatched to charge office—2¼-in. system



**A. B. Sutherland Co., Lawrence, Mass.**
Chute type desk—central tube room—for cash and charge transactions—2¼-in. system

## References

**New York, N. Y.**

R. H. Macy
Lord & Taylor
Bloomingdale Bros.
Arnold Constable
Goldsmith Bros.
Saks-Fifth Avenue
The Tailored Woman
Coty
Sinclair Valentine
Holland American Line
Waldorf-Astoria Hotel
Hotel New Yorker
Central Hanover Bank
Chase National Bank

**Other Cities**

A. B. Sutherland, Lawrence, Mass.
Nichols & Frost, Fitchburg, Mass.
The Sharon Store, Sharon, Pa.
R. H. White, Boston, Mass.
First National Bank, Bridgeport, Conn.



**First National Bank, Bridgeport, Conn.**
4 x 7-in. over-delivery type airtight terminal for checks and certificates in bu'k, and 2¼-in. over-delivery terminal for single check authorization

# THE LAMSON COMPANY

## Pneumatic Dispatch Tubes—Traveyors—Conveyors

SYRACUSE, N. Y.

REPRESENTATIVES

ATLANTA, GA.
BALTIMORE, MD.
BOSTON, MASS.
CHICAGO, ILL.
CINCINNATI, OHIO
CLEVELAND, OHIO
DALLAS, TEX.
DETROIT, MICH.
LOS ANGELES, CAL.
MINNEAPOLIS, MINN.
NEW YORK, N. Y.
PHILADELPHIA, PA.
PITTSBURGH, PA.
ST. LOUIS, MO.
SAN FRANCISCO, CAL.
SEATTLE, WASH.
WASHINGTON, D. C.

CANADA: TORONTO, ONT., MONTREAL, QUE., and VANCOUVER, B. C.

### PNEUMATIC DISPATCH TUBES

Dispatch Tubes are used by practically every type of business to speed the flow of all papers including messages, orders, memos, documents, and sometimes small items. Tubes link departments, offices, and buildings, saving time, steps, and money. Banks, hospitals, hotels, retail stores, garages, libraries, warehouses, public buildings, utilities, brokers, breweries, dairies, and manufacturers are a few of the business organizations that use tubes in the operation of their business.

Industries use tubes to carry messages and papers—to carry time tickets for production control. Many plants use tubes to send small samples for laboratory tests, such as: steel mills, chemical manufacturers, refineries, paint and most process industries. Industries save money by using tubes for control of process.

**Range of Sizes**—There is a size to meet the demands of any business. From the 1½, 2¼, 3 and 4-in. diameter carriers up to the 3 x 6 and 4 x 7-in. oval carriers—there is a capacity range to satisfy most load requirements.

**Terminals**—Tubes are easy to install in present buildings and the line material requires very little space. There are several types of terminals available to meet individual requirements. The Pneu-Art terminals made of metal in rectangular shape are exceedingly popular. These modern terminals are available in many colors to blend with present fixtures. They are quiet in operation and serve both up discharge and down discharge tube stations. There are also open type terminals, where the carriers merely discharge into a handy receptacle or onto a desk or counter.



*These Pneu-Art Terminals installed at each Executive's Desk blend harmoniously with the Office Interior and Fixtures*



*In Banks, unobserved by customers, Tellers dispatch Carriers to obtain a Bookkeeper's written Ok on the check itself*



*Hospitals use Tubes extensively for carrying History Cards and other Routine Papers*

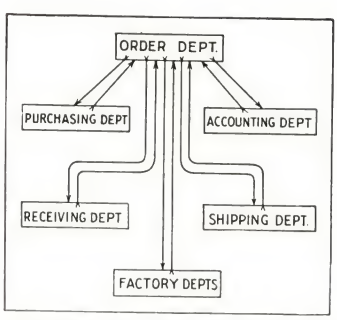
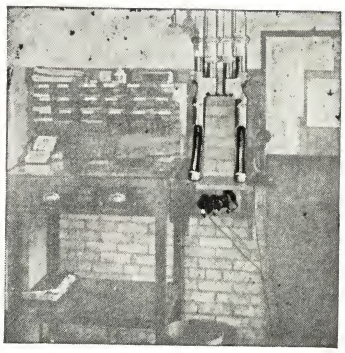


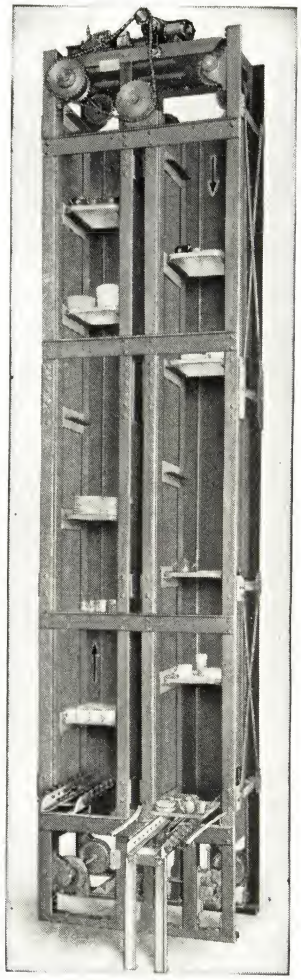

*Diagram shows how simple it is to provide two-way Service between Departments. Service between all points through the Central*



*A typical Factory Tube Installation at a Foreman's Desk. This Station provides direct Service between two other Points*



*Tubes are convenient to use and insure prompt, speedy Delivery of Office Papers to nearby or distant Departments*



*Model A Double Duty Trayveyor—also supplied in ascending, descending and reversible models to meet requirements*

# The TRAYVEYOR

Lamson Trayveyor is automatic and continuous in operation and fills a definite need in hotels, cafeterias, restaurants, clubs, hospitals, and institutions. Any place where trays of food, dishes or materials must be carried up or down, there is a need for a Trayveyor.

The Trayveyor contains a series of shelves attached to endless moving chains. Trays of food or dishes are carried between floors and can be unloaded automatically or manually, depending upon the service required. An electro-mechanical overload protector insures safety by halting the mechanism instantly if overloaded or jammed.

There is a range of models to meet all conditions, including: Model A, Double Duty, providing both up and down service simultaneously; Model B, descending; Model C, ascending; and Model E, reversible. The Trayveyor is a precision built, trouble-free machine designed to give years of hard daily usage. Trayveyors can be installed in small space. Shaft sizes vary from 27 x 38 to 33 x 55 in.



*Upper Floor Station of Model A fully equipped with limit switches and overload protector*



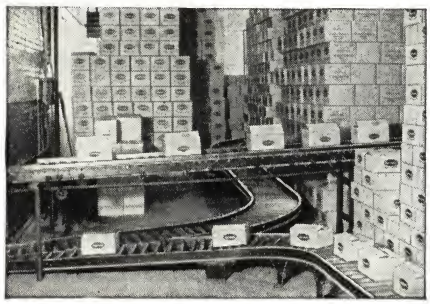
*Lower Terminal showing automatic Discharge of Loads directly to Work Table*

## LAMSON CONVEYORS

***Built in a Wide Range of Types to Meet the Needs of Industry***



*Roller Gravity—Standard 10-ft. sections, 45° and 90° curves—rugged construction in 1⅜, 1¾, 1.9, 2½, and 3-in. diameter rolls*



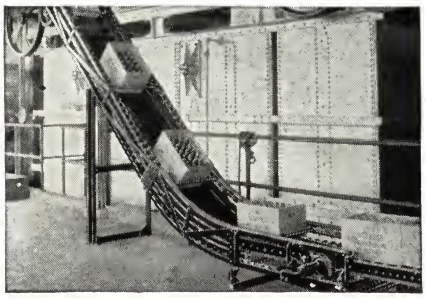
*Live Roll—Regular gravity rolls are turned by a Rubber Covered Chain making a "kiss touch" on the underside. Permits a complete system on one handy working level*



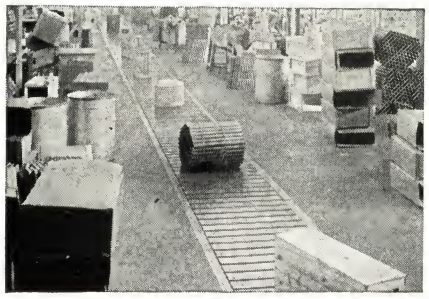
*Overhead Chain solves many handling problems. Carrier Attachments are available to permit the handling of most any type of load*



*Belt Conveyor for every application Roller Gravity or Slide Plate Bed Construction—in widths from 3 to 48 in. with woven cotton, rubber filled, rubber covered, sanitary, wax treated, oil treated or bituminous treated belting*



*Booster—for varying Degrees of Elevation—supplied in any height or width—positive loading*



*Slat Conveyor—May be horizontal or vertical with attached Platforms. Can be installed flush with floor to permit cross traffic*

# STANDARD CONVEYOR COMPANY

## Manufacturers of Conveying Machinery and Equipment

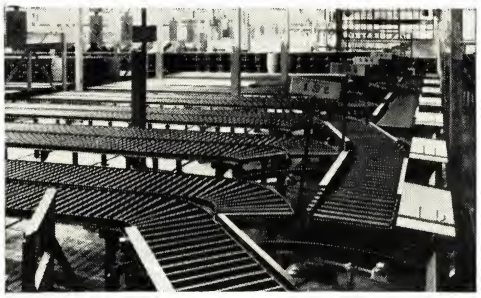
NORTH ST. PAUL, MINN.

Sales and Engineering Offices Located in 54 Principal Cities



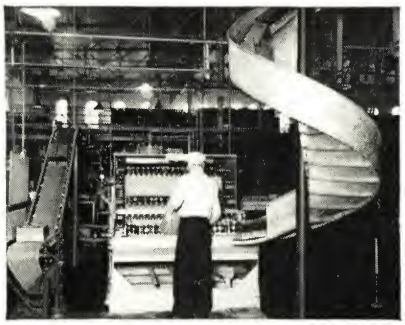
**The Lowerlift**

Elevates and lowers simultaneously, adapted for both restaurant and industrial uses



**Power Driven Live Roller Radial Switch**

Delivering oil drums to gravity storage lines



**Spiral Chute and Inclined Belt**

Lowers and elevates cartons of beer cans to and from washing machine



**2-Post Electric Tiering Machine**

Tiering heavy crates of stoves to ceiling

The Standard Conveyor Line of equipment is complete in that it is designed to handle practically every type of merchandise in package or container form (except bulk or loose materials).

| | | |
|---|---|---|
| *Gravity Roller* | *Apron Slat* | *Incline Elevator* |
| *Gravity Wheel* | *Live Roller* | *Vertical Elevator* |
| *Spiral Chute* | *Continuous Chain* | *Portable Piler* |
| *Continuous Belt* | *Continuous Trolley* | *Tiering Machine* |

The conveyor units listed are designed for individual operation or for continuous progressive systems as requirements may demand. Thus, a 10-ft. section of roller conveyor may be used individually or as part of a system involving other gravity or power conveyors.

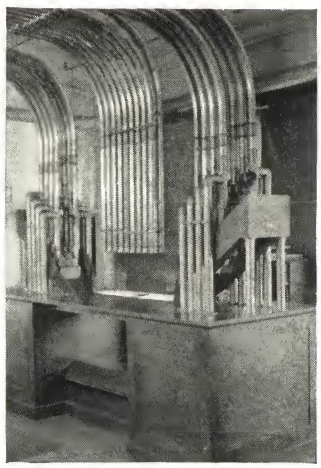
### Of Special Interest to Architects

| | |
|---|---|
| Vertical Lowerlift | Pneumatic Dispatch Systems |
| Vertical Recordlift | Spiral and Tubular Fire Escapes |

### Sales and Engineering Service

This organization has been studying the individual handling requirements of industries and business for *over thirty years.* Experienced engineers are prepared to give expert service and advice to architects, engineers, contractors, and prospective users of conveying equipment.

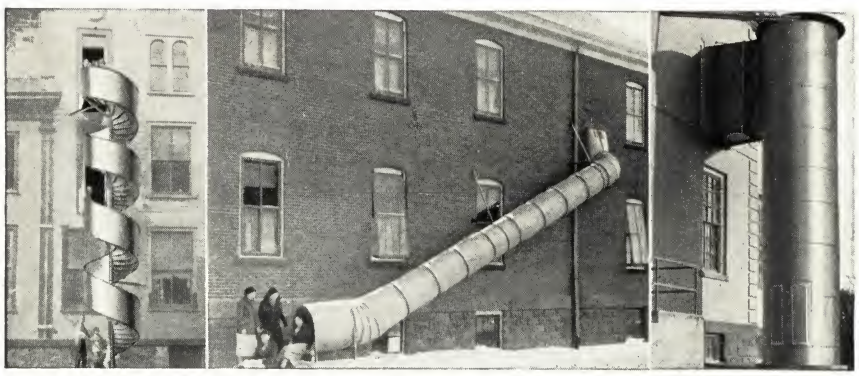
Standard Engineers are at your service. Catalog "O" sent on request as well as any other information that may be of assistance in solving your material handling problem.



**Pneumatic Tube System**

Carries correspondence orders, cash and small articles between departments and offices

STANDARD CONVEYOR COMPANY
NORTH ST. PAUL, MINNESOTA
INCORPORATED IN 1906



Open Spiral — Tubular — Enclosed Spiral

**Fire Escapes**

Designed to meet fire escape requirements of schools, hospitals, institutions and industry



**The Recordlift**

Designed to elevate and lower records, books or papers between floors in hospitals, insurance offices, etc.

# ELEVATORS 22
## - SECTION -

Section Number 1/5 Catalog Number

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Elevator Supplies Co., Inc. ..... 22/15
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Matot, D. A. ..... 22/7
Otis Elevator Co. ..... 22/8
Payne, F. S., Co. ..... 22/9
Rotary Lift Co. ..... 22/10
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Wagner Mfg. Co. ..... 22/17
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### CONSOLE
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See Elevators — Theater — Orchestra, Organ, Console, Stage, etc.

### CONTROLLERS
**Dumbwaiter**
See Dumbwaiters—Electric
**Elevator**
See Elevators—Electric
**Elevator Door**
See Elevators—Electric

### CONTROLS
**Door Operator—Elevator**
See Operators—Door Elevator

### CONVEYORS
**Dumbwaiter**
See Dumbwaiters

### DOOR
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See Interlocks—Elevator or Dumbwaiter Door
**Operators**
See Operators—Door Elevator

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**Dumbwaiter**
See Dumbwaiter—Doors

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ESTABLISHED 1889

INCORPORATED 1917

# BECKWITH ELEVATOR CO., INC.

TELEPHONE
Liberty 8333

113 Albany Street, BOSTON, MASS.

For Sidewalk Elevators—Hand Power, Hydraulic and Electric, see File Index

## DUMBWAITERS, HOME AND FREIGHT ELEVATORS; ELECTRIC AND HAND POWER

### Hand Power Dumbwaiter (Fig. 5)

Standard outfit, capacities to 100 lbs., ¾-in. ash car—30 in. high with removable shelf; adjustable metal guide shoes slide on three heavy hard pine guide posts; counterweight heavier than car runs in two slotted guide posts. Gearless ball bearing machine with large hand wheel and self-adjusting automatic brake; hand rope, ¾-in. (4-strand) India hemp with two part coupling; hoist cable, ⅜-in. (6x37) steel with cable clamps. All best quality, complete, ready for installation. Legal fireproof shaftway with slide-up counterweighted doors having fusible links, furnished by others. *For capacities of 100 to 300 lbs. use geared machine.*

**CAR, SHAFTWAY, MACHINE AND DOOR SIZES FOR FIGS. 5 AND 6**

| Gearless Machines — Capacities 75 to 100 lbs. | | | | Geared Machines — Capacities 100—300 lbs. | | | |
|---|---|---|---|---|---|---|---|
| Car size outside w'th x d'th | Shaft size inside w'th x d'th | Machine height, in. | Door size, in. | Car size outside w'th x d'th | Shaft size inside w'th x d'th | Machine height, in. | Door size, in. |
| No. 1—18x15 | 23x18 | 22 | 20x36 | No. 1—20x18 | 25x21 | 24 | 22x42 |
| No. 2—20x18 | 25x21 | 24 | 22x36 | No. 2—24x20 | 29x23 | 30 | 26x42 |
| No. 3—24x20 | 29x23 | 28 | 26x36 | No. 3—30x24 | 35x27 | 36 | 32x42 |
| No. 4—30x24 | 35x27 | 30 | 32x36 | No. 4—36x30 | 41x33 | 42 | 38x42 |

*Note:* Allow 2½ in. additional front to back of shaft if doors and sills inside of shaft are wanted. Add 1 in. to depth of shaft if car is double face, (open front and back).

### Hand Power Undercounter Dumbwaiter (Fig. 6)

Same car, shaft and door sizes, machine, capacities, etc., as Fig. 5, except that machine is located at lower opening either side of shaft. Automatic brake machine. (Use same table as for Fig. 5.)

May be had electrically operated—machine on floor.

### Electric Dumbwaiter (Fig. E)

Full automatic, push button operated from any service door. ¾-in. ash or steel car with removable shelf; metal guide shoes; stops automatically at desired landing. Traction type machine mounted overhead has heavy duty motor, solenoid-operated brake—bronze gear, steel worm with ball bearing thrusts operating in oiltight housing mounted on steel beams; latest type full magnetic controller; steel guide rails with adjustable counterweight. Hoist cable, ⅜-in. (6x37) steel with clamps. Contact switches for landing doors to render car inoperative unless all service doors are closed are standard; door locks operated by car if wanted. All wiring in conduit. All of best quality and workmanship. Legal fireproof shaftway with slide-up or two-part counterweighted doors having fusible links, furnished by others. Car any size to suit.

### Electric Undercounter Dumbwaiter (Fig. D)

Electric undercounter dumbwaiter for restaurants, libraries, etc. Same general specifications as Fig. E but machine to be drum type mounted on floor, push button control. Can be full automatic if doors equipped with electric contacts are used. If doors are not to be used provide push button system as shown. Car to be sent from each landing but not called, thereby eliminating accidents. Car sizes to suit space available or opening in floor and height under counter. Cars are standard hard wood painted, galvanized or stainless steel as wanted.

### Hand Power Elevator (Fig. 8)

*500-800-1000-15000 lbs. capacities*

Operated by pull rope from the door landings or car. Car made of ash with matched hard pine floor, steel braces and gussets, strong and rigid. Car locked or speed controlled by pulling brake rope. Machine band brake roller bearing, heavy duty type, to suit capacity. Counterweight heavier than car and adjustable. Guide rails best quality hard pine, with center guide strips for largest outfits. Two steel hoist cables. Hand and brake ropes best quality manila bolt of proper size. Machine beams, hard pine or steel. Car sheathing or safety devices to hold car in case of rope breakage are extra. (See table below for shaftway and other sizes.)

**HAND POWER ELEVATOR (FIG. 8)**

Car, shaftway, machine and door sizes

| Lifting capacity, lbs. | Car sizes, W x D, ins. | Car height, ins. | Hand wheel dia., ins. | Shaft sizes, WxD., ins. — Single face | Shaft sizes, WxD., ins. — Double face | Overhead space for machine, ins. | Door sizes, ins. |
|---|---|---|---|---|---|---|---|
| 500 | 36x36 | 48 | 36 | 43x39 | 43x40 | 42 | 38x54 |
| 800 | 42x42 | 72 | 42 | 52x45 | 52x46 | 48 | 44x78 |
| 1000 | 48x48 | 78 | 54 | 58x52 | 58x52 | 60 | 50x78 |
| 1500 | 60x60 | 78 | 54 | 70x64 | 70x64 | 60 | 62x78 |

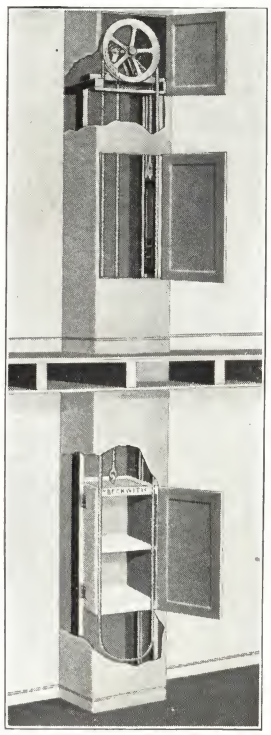


Fig. 5 Hand Power Automatic Brake Dumbwaiter

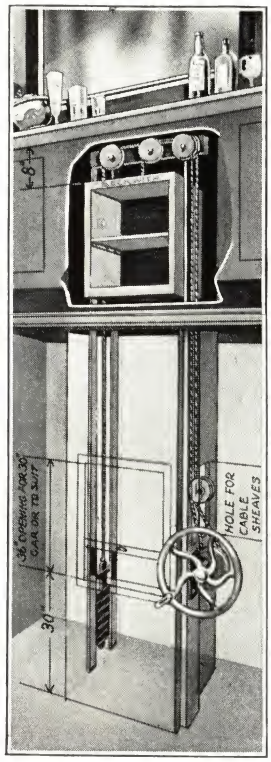



Fig. 6 Undercounter Hand Power Dumbwaiter

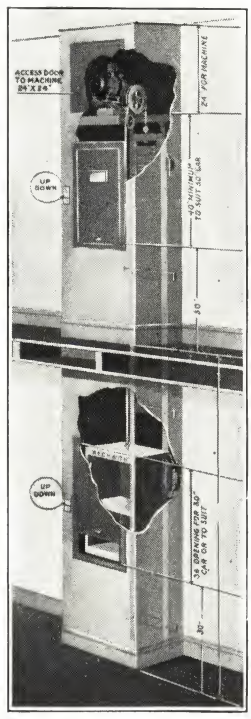



Fig. E Electric Dumbwaiter
Push button control

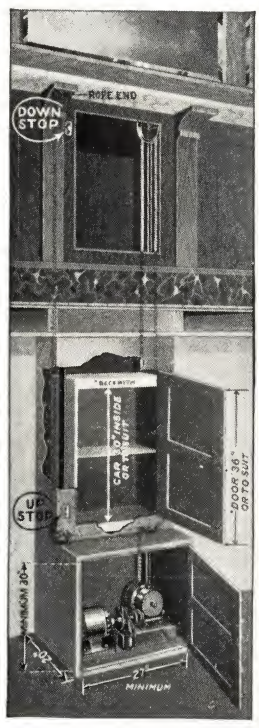



Fig. D. Electric Undercounter Dumbwaiter

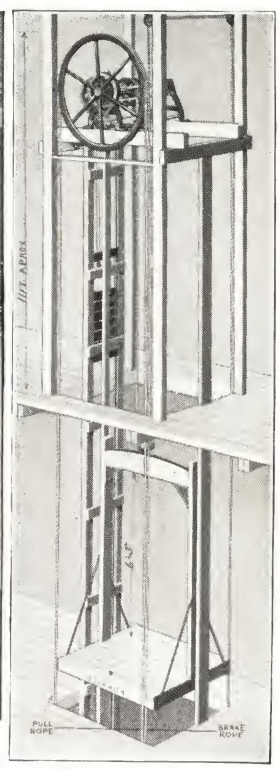



Fig. 8 Hand Power Elevator

ESTABLISHED 1876

# CHELSEA ELEVATOR CO.

INCORPORATED 1912

## Manufacturers of Electric and Hand Operated Dumbwaiters and Elevators

EXECUTIVE OFFICE
Architects Building, 101 Park Avenue, NEW YORK, N. Y.
FACTORY: NORTH BERGEN, N. J.
REPRESENTATIVES IN ALL PRINCIPAL CITIES OF THE UNITED STATES

### Products

ELECTRICALLY OPERATED DUMBWAITERS, PUSH BUTTON PASSENGER ELEVATORS and SIDEWALK ELEVATORS.

HAND OPERATED DUMBWAITERS and ELEVATORS for all purposes.

Our machines include Dumbwaiters for residences, apartments, hotels, restaurants, hospitals, etc.; Trunk Lifts, Book Lifts, Fuel Lifts, and Tube, "Tellerwaiter," and Under-counter Dumbwaiters; also various kinds of elevators, including Invalid, Freight, Sidewalk and Automobile Elevators; Ash Hoists, Mortuary Lifts, Hatchway Hoists; also Sidewalk Elevator and Dumbwaiter Doors and Semiautomatic Gates.

A complete selection of dumbwaiters is available, "Chelgear," "Chelduogear," "Chelnogear," "High Speed," and "Heavy Duty Band Brake."

CHELSEA TRADE-MARK



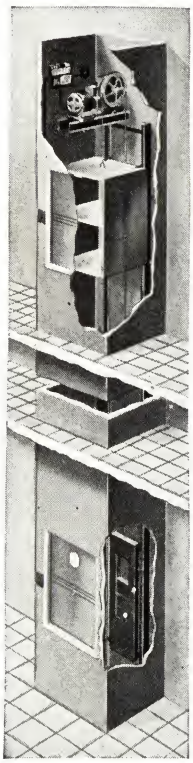

### Quality of Products

CHELSEA ELEVATOR CO. realizes the value of its reputation of long standing for integrity and quality, and architects and their clients can depend upon it that CHELSEA ELEVATOR CO. intends to maintain this reputation, and products purchased from this company may be relied upon to be of the highest grade obtainable.

### The Company

CHELSEA ELEVATOR CO. with 61 years of experience in the elevator industry, maintains agents in all the principal cities who are competent to give service and will co-operate with architects, owners and builders.





### Passenger Elevators

Chelsea Automatic Electric Elevators embody every known safety requirement. Children, elderly persons, invalids and semi-invalids and others will find this equipment a constant source of satisfaction both in comfort and convenience.

The low cost of installation and maintenance should recommend it to all those requiring such an equipment.

The No. 7 Hand Operated Elevator is a safe equipment where current is not available and minimum expense is considered.

The Dwight W. Morrow residence and the Harkness residence use Chelsea Elevators.



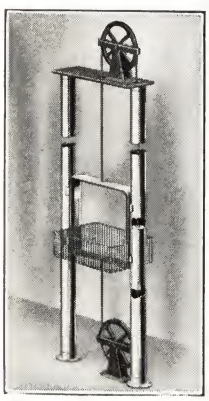
**No. 7 Patent Frame Passenger Elevator**
500 to 1000-lb. capacity

### Electric Dumbwaiters

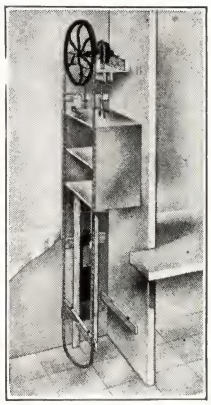
Chelsea Electric Dumbwaiters are complete equipments designed by our own Engineers and manufactured in our own plant where facilities are ample and especially suitable for the manufacture of this product.

All types of control signal systems as well as complete door units are obtainable.

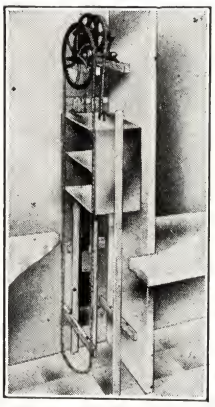
Chelsea Electric Dumbwaiters have a reputation unsurpassed for efficient service, and equipments have been installed successfully in nationally known buildings from coast to coast. The Pierrepont Morgan Library and the Hon. Jas. W. Gerard residence use Chelsea Dumbwaiters.



**No. 0 Teller Type Rapid Dumbwaiter**
1 to 20-lb. capacity
High speed

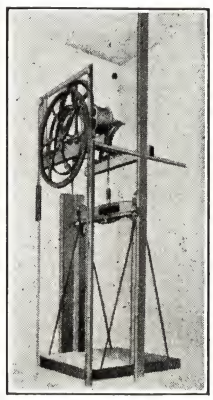


**"Chelnogear" No. 5—Plain Double Automatic Brake Dumbwaiter**
25 to 75-lb. capacity
Class AA, A, B, and C

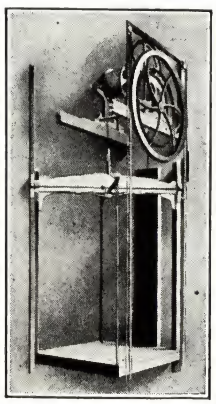


**"Chelgear" No. 5—Full Diameter Geared Automatic Brake Dumbwaiter**
15 to 150-lb. capacity. Class D, E, F, G, H, I, J, K

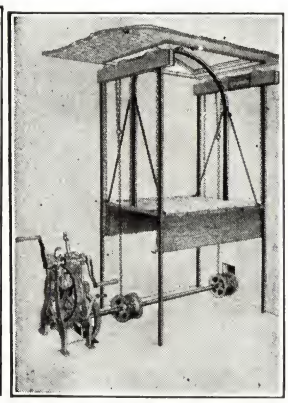
**"Chelduogear"**
To 500 lbs. capacity



**No. 8 Patent Frame Side Post Store Elevator**
1000 to 3000-lb. cap.



**No. 9. Patent Frame Corner Post Store Elevator**
1000 to 3000-lb. cap.



**No. 10. Hand Power Sidewalk Elevator**
1000 to 6000-lb. capacity

# CAPITAL ELEVATOR & MANUFACTURING CO.

## Freight and Passenger Elevators, Hand and Electric Dumbwaiters

Town and Lucas Streets, COLUMBUS, OHIO

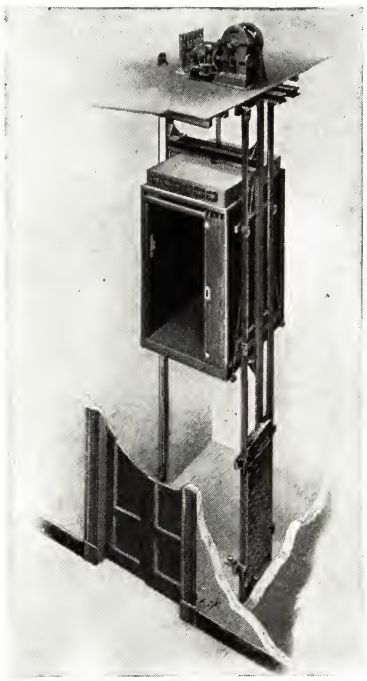
For Local Representatives, see our pages on Ash Hoists

### Products

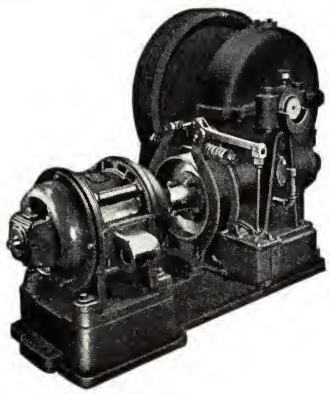
ELECTRIC PASSENGER and FREIGHT ELEVATORS, ELECTRIC SIDEWALK LIFTS, HAND and ELECTRIC DUMBWAITERS.

Also Residence Lifts; Hand Power Elevators and Sidewalk Lifts; Ice Hoists and Conveyors; Automatic Stereotype Plate Handling Equipment; Roll Paper Handling Equipment; Skip Hoists; Belt Conveyors; Gravity Conveyors; Designers of Special Purpose Handling Equipment.

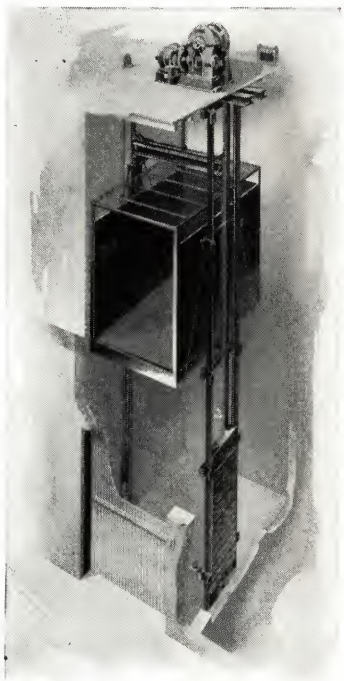
For pages on Ash Hoists and Conveyors, see File Index.



Electric Passenger Elevator



Engine



Electric Freight Elevator

### Electric Passenger Elevators

Capital Passenger Elevator Installations are modern in design, safe and reliable in operation and are especially suitable for hotels, apartment houses, stores, hospitals, sanitariums, offices, schools and other public buildings. Control may be by means of push buttons or car switch.

They are very simple in design, rugged and durable in construction.

### Electric Freight Elevators

Capital Freight Elevators are used for all purposes in all types of buildings. Size, capacity and speed may vary to suit requirements of the traffic and the height of the building. Any standard system of control furnished, such as shipper rope, hold-in push buttons, full automatic push buttons or car switch. They are highly efficient, dependable and durable and are suitable for the most exacting service.

### Ohio State University

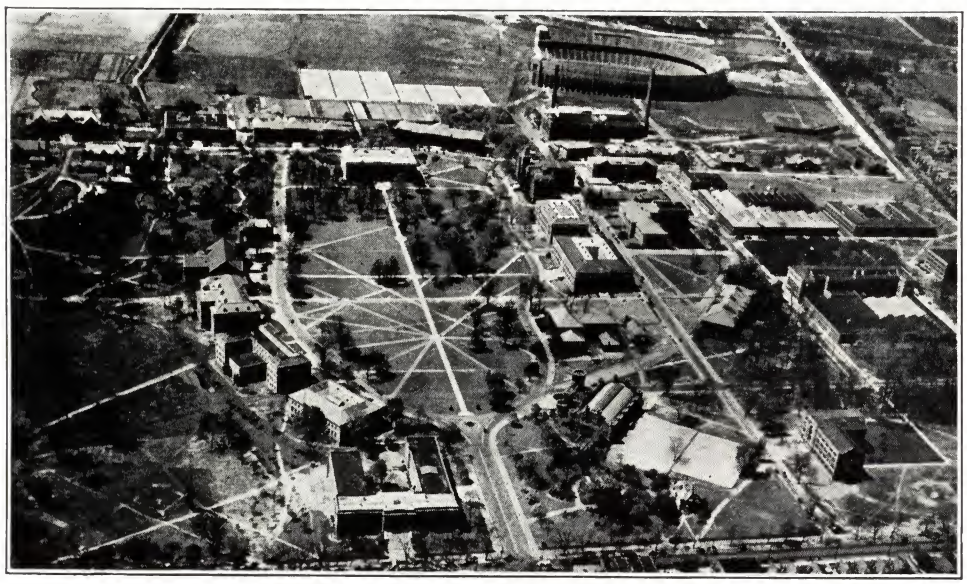
HOWARD DWIGHT SMITH
University Architect

Jos. Nelson Bradford, Professor Emeritus, College of Architecture. Author of Photographic History of University and University Architect 1913-1929. Designed the majority of the 68 structures on University Campus of 1392 acres, serving an annual enrollment of approximately 15,000 students.

Is among the largest of State Universities.

Nine (9) Capital Elevators in use on Campus.

80,000 spectators have watched gridiron contests in the giant horse shoe stadium shown at the top right.



# THE CAPITAL ELECTRIC AND HAND DUMBWAITERS



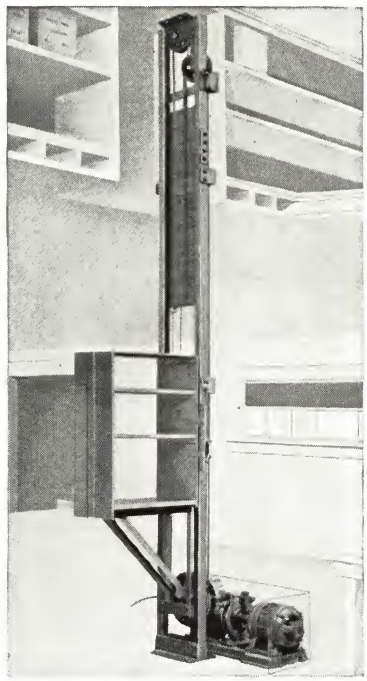
Electric Dumbwaiter

## Capital Electric Dumbwaiters

**Capital Utility—** Suitable for many purposes, such as food lifts in hospitals, hotels, restaurants, clubs and private residences; book lifts in libraries, offices, banks and public buildings; tools and parts in manufacturing plants; accessories in garages, service stations, etc. Made in sizes, capacities and speeds to suit individual requirements.

Cars may be had in any form desired and finished with paint, duco, or baked enamel. Push button control, either automatic, or constant pressure, or single station control.

When combination car and counterweight guides are placed at the rear as shown and sliding doors are placed inside the shaft, the plumb hatchway inside should be 9 in. wider and 9 in. deeper, front to back, than the size of the car desired. Doors are usually placed 30 in. from the floors and the space above the top of the top opening should be 5 ft.



Model 9 Counter Dumbwaiter

## Capital Electric Counter Dumbwaiter Model 9

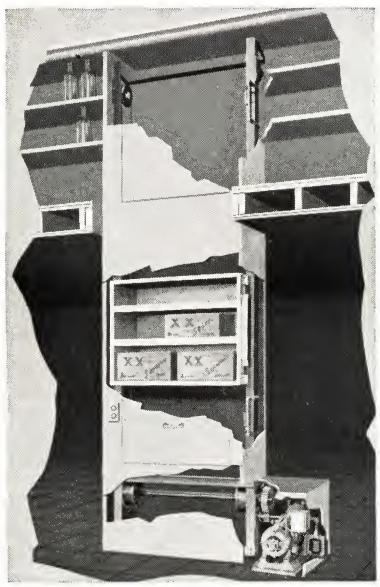
This dumbwaiter is designed especially for restaurants, cafeterias, candy counters, stores, etc. They may be spotted at any convenient location without any unsightly shaftways projecting above the counters.

Made in sizes and capacities to suit conditions and requirements. Operated by push buttons, it is a very simple and convenient type of lift.

The equipment is very flexible as to layout and the installation may be made in a variety of ways. We furnish complete layout plans for the approval of the purchaser and the equipment is constructed in accordance with the approved arrangement.

Has been in satisfactory service for many years.

Shaftway should be 9 in. wider than the car and 3 in. deeper than the car, exclusive of doors. If doors are used, allow another 3 in. for door and hardware. Clearance above, when in up position should be 6 in.—minimum stop above basement floor, 18 in.



Model 9A Economy Dumbwaiter

## Capital Economy Dumbwaiter Model 9A

Made to accommodate wider cars than is practical with Model 9.

An excellent general purpose dumbwaiter.

All steel construction, self-supporting.

Cars may have one or more compartments.

Stop at the floor line or any distance above.

Plumb shaftway should be 14 in. wider and 5 in. deeper than size of car.

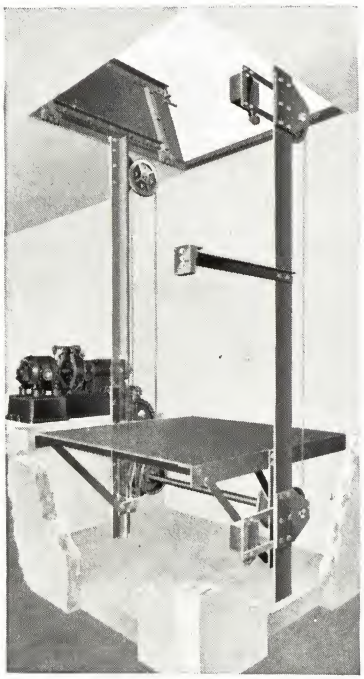
Clearance above car, when in the up position, should be 8 in.—minimum stop 3 ft. above basement floor.

Capacities 300 to 500 lbs. at 30 ft. per minute.

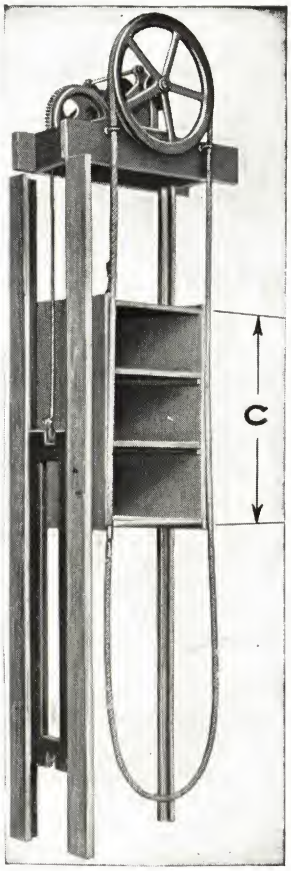
Automatic push button control.

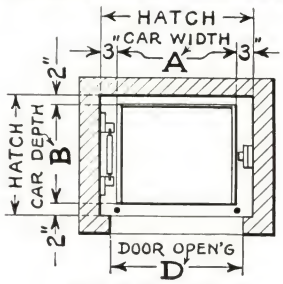
## Sterling Electric Sidewalk Lift Model 20

Of the highest grade manufacture, with oil immersed worm gearing and enclosed cut spur gearing from machine to drum shaft. Car of size to suit conditions with steel or wood floor, enclosed when desired, or equipped with bow for operating doors. May also be provided with instantaneous safety devices and automatic warning gong. Machine may be placed at right or left of hatchway. Control similar to freight elevators.



Model No. 20 Sidewalk Lift




Model A Dumbwaiter

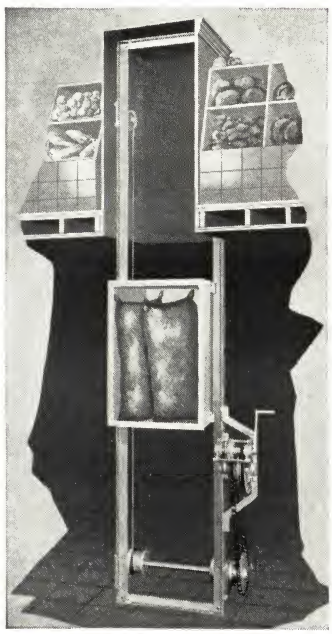
### Capital Ball Bearing Dumbwaiter Model A Automatic Brake

This machine makes an excellent outfit for use in restaurants, hotels, stores, offices, libraries, hospitals, sanitariums, factories, etc. It is easily operated, simple in design, ruggedly constructed for long service.

Standard cars are wood but steel cars or steel enclosure with hardwood shelves may be had at a small additional cost.

| No. | A | B | C | D |
|---|---|---|---|---|
| 1 | 20″ | 16″ | 30″ | 22″ |
| 1A | 20″ | 16″ | 30″ | 22″ |
| 2 | 24″ | 20″ | 30″ | 26″ |
| 2A | 24″ | 20″ | 30″ | 26″ |
| 3 | 28″ | 24″ | 30″ | 30″ |
| 3A | 28″ | 24″ | 30″ | 30″ |
| 4 | 32″ | 28″ | 30″ | 36″ |
| 4A | 32″ | 28″ | 30″ | 36″ |
| 5 | 36″ | 30″ | 30″ | 38″ |
| 5A | 36″ | 30″ | 30″ | 38″ |

| No. | Ratio | Capacity |
|---|---|---|
| 1 | 4:1 | 50 lbs. |
| 1A | 8:1 | 100 lbs. |
| 2 | 5:1 | 50 lbs. |
| 2A | 10:1 | 100 lbs. |
| 3 | 5:1 | 50 lbs. |
| 3A | 10:1 | 100 lbs. |
| 4 | 6:1 | 75 lbs. |
| 4A | 12:1 | 150 lbs. |
| 5 | 7:1 | 100 lbs. |
| 5A | 14:1 | 200 lbs. |



Model C Dumbwaiter

### Capital Store Dumbwaiter Model C

Capacity 200 lbs.

Ball bearing geared winch.

Automatic brake.

Double drum with chain drive to drum shaft.

All-steel construction.

Self-supporting.

Space required on each side for guides, 4½ in.

Clearance front and back, 2 in. each—minimum stop above basement floor, 1 ft. 6 in. Clearance above car, when in up position, 8 in.

An excellent lift for stores, bars, etc.

### Capital Counterbalanced Undercounter Dumbwaiter Model B

Capacity same as Model A.

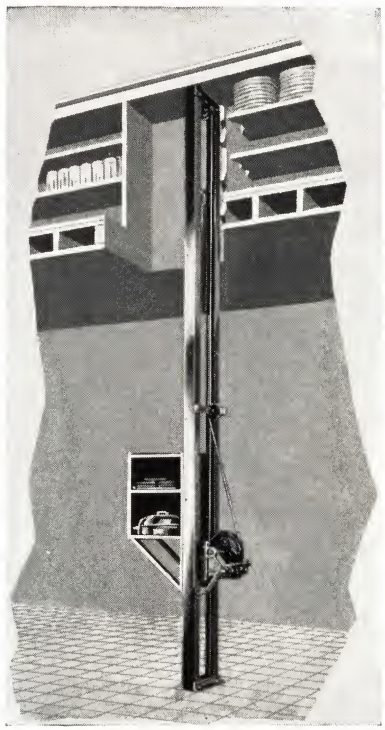
Self-supporting.

Ball bearing.

Automatic brake.

All-steel construction.

Car should not exceed 24 in. across front and 20 to 24 in. deep. Shaftway should be 9 in. wider than the car and 3 in. deeper, exclusive of doors. If doors are used, allow another 3 in. for door and hardware. Clearance above car, when in up position, 6 in.—minimum stop above basement floor, 18 in.



Model B Dumbwaiter

Car may be of wood, if desired.

Dumbwaiter cars usually stop 30 to 36 in. above the floor.

When sliding doors are placed inside a shaftway, it requires from 2 to 3 in. of space, depending on the door construction. There should be not less than 1 in. of clearance between the car and the sills or door construction.

### Capital Double Car Reciprocating Dumbwaiter Model D

Saves half the time in operating.

All-wood construction.

Self-supporting.

Ball bearing winch.

Automatic brake.

Requires a hatchway 20 in. wider than combined width of cars and 4 in. deeper than cars.

Stops 2 ft. 6 in. above basement floor and requires 10 in. of space above cars, when in the up position.

Designed for bars, sandwich shops, restaurants, etc. Capacity 50 lbs.



Model D Dumbwaiter

ESTABLISHED 1887

# ENERGY ELEVATOR COMPANY

## Manufacturers of Dumbwaiters–Freight Elevators—Residence Elevators

TELEPHONE
MARket 0821

210-218 New Street, PHILADELPHIA, PA.

AGENTS IN ALL PRINCIPAL CITIES

### Products

DUMBWAITERS, HAND and ELECTRIC.
DUMBWAITERS, UNDERCOUNTER.
DUMBWAITER DOORS.
FREIGHT ELEVATORS, HAND and ELECTRIC.
SIDEWALK ELEVATORS, HAND and ELECTRIC.
RESIDENCE ELEVATORS, HAND and ELECTRIC.
Also Mortuary Lifts, Fuel Lifts, Book Lifts, Coin Lifts.

ENERGY
ELEVATORS & DUMBWAITERS
WHEREVER A LIFT IS NEEDED

### Service for Buyers

Our files are a storehouse of successful applications of Energy equipment to meet special requirements. One of these applications may be the answer to your particular problem, if a standard arrangement cannot be used. Practical suggestions are obtainable without obligation on your part.

Erecting plans, instructions and wiring diagrams are supplied by us to guide the installation by local mechanics.

### Features

For 50 years, Energy Elevators and Dumbwaiters have been handling all kinds of lifting problems. They are well designed, sturdily constructed, and adaptable to various building conditions.

The best of raw material is carefully selected for each unit, and accurately processed by careful workmen in our large, completely equipped factory.



### Guarantee

All Energy Elevators and Dumbwaiters are fully guaranteed for materials and workmanship, and can be installed with the knowledge that they will give utmost service over the years.



For Hospitals



In Stock Rooms

In Offices



For Homes and Apartments



## GUIDE TO ENERGY HAND-OPERATED DUMBWAITERS

| Capacity range, lbs. | Energy dumbwaiter | Standard car size, in. | | | Maximum car size, in. | | | Size of shaft for standard car, in. | | Shipping weight, lb. (for 10-ft. travel) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Width | Depth | Height | Width | Depth | Height | Width | Depth | |
| 1-25 | Little Beauty—Type 362 | 20 | 16 | 30 | 24 | 20 | 30 | 26 | 18 | 275 |
| 25-75 | Energy—Type 632 | 24 | 20 | 30 | 36 | 24 | 30 | 29 | 23 | 300 |
| 75-300 | Heavy Duty—Type 432 | 30 | 24 | 36 | 9 sq. ft. | | *48 | 36 | 27 | 450 |
| 150-300 | Little Giant—Type 1100 | 30 | 42 | *48 | 9 sq. ft. | | *48 | 36 | 45 | 525 |
| 25-300 | Undercounter—Type 1063 | 20 | 16 | 30 | 30 | 24 | 30 | 25 | 18 | 120-450 |

All dumbwaiters and dumbwaiter cars subject to wide variations to fit service needs. See descriptions for full information.
*To headbeam.

## LITTLE BEAUTY DUMBWAITER, TYPE 362

*Capacity Range: 1-25 lbs.*

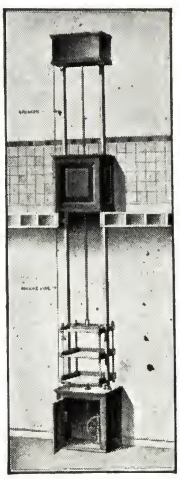
For use in restaurants, tap rooms, banks, offices, light manufacturing plants, etc., for the quick movement of short orders, papers, letter trays and small objects. The sturdy and simple construction provides actual strength far in excess of its capacity of 25 lbs.

### Features

(1) Quick acting.
(2) Ornamental finish.
(3) Easy erection.
(4) Self-holding brake.
(5) Roller bearings.
(6) Speaker arrangement.
(7) Rubber bumpers.

### Equipment

Guarded wheels and brake, overhead cabinet with mechanism mounted, car, counterweight, brass tube guides with collars and clamps, operating rope with connections, speakers. If desired, cabinet base and cabinet stand for each floor opening can also be furnished.



### Specifications

**Operating Gear**—Consists of rope passing over iron wheels mounted on iron stands at top and bottom of shaft. Wheels turn on roller bearings and are equipped with rope guards. Self-holding brake, applied or released by one line, securely sustains car loaded or empty at any point. Loaded car descends by gravity, speed being controlled by brake line, which prevents burning hands on car rope.

**Cabinet Enclosure**—Of paneled hardwood for top wheel and brake. Finished American Walnut unless otherwise desired.

**Car**—Hardwood trays finished American Walnut unless otherwise desired, spaced with square brass tubes. Fitted with adjustable guide shoes, polished brass connections and rubber bumpers on bottom. One shelf, making two compartments 12 and 14 ins. high.

**Counterweight**—Moulded lead in steel jacket. Steel coil spring provided for weight, which runs in one tube.

**Guides**—Two polished brass tubes with flanges at the top and bottom and intermediate clamps for fastening at floor line. Mouthpiece in one tube at each floor for speaker.

**Operating Rope**—Braided cotton, fitted with necessary connections for car and weight.

### Variations

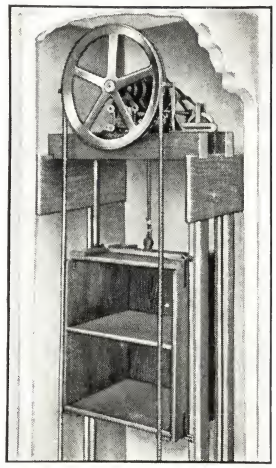
Car can be furnished any size up to maximum (see table) with one or two compartments, completely enclosed, or in special metals.

## ENERGY, OR RESIDENCE DUMBWAITER, TYPE 632

*Capacity Range: 25-75 lbs.*

This Dumbwaiter is for use in homes, apartments, restaurants, stores, and light manufacturing plants for the quick transfer of food, dishes, and supplies between floors.

The strength of the equipment, which is much greater than the maximum capacity, and the simple, practical construction insure a long life of service, without trouble.



### Features

(1) Automatic brake acts independently of the operator; of a type which applies on the downward motion of the car only, being free of all friction on the up motion.
(2) Especially designed and fitted for erection by local mechanics.
(3) Assembled machine.
(4) Adjustable counterweight.
(5) Finished car.
(6) Roller bearings.
(7) Compounded guides.

### Equipment

Machine, car, counterweight, guides for car and weight, hoist cable, hand rope and guards.

### Specifications

**Machine**—Automatic lock type, which sustains the loaded car at any point of travel, and requires no hand brake. The lock applies in the downward direction only, eliminating all brake friction when raising loads. Main shaft is polished turned steel, revolving on roller bearings, and the entire mechanism is mounted in one rigid iron frame. All parts are accurately machined and carefully fitted, to make a substantial hoisting machine.

**Car**—First quality, well-seasoned hardwood, finished with filler and varnish. The top and bottom are gained into the sides, braced, and bound with irons. Standard size is 24 ins. wide, 20 ins. deep, and 30 ins. high, with one middle shelf, making two compartments 14 and 12 ins. high. Guide shoes are of iron, and are adjustable.

**Counterweight**—Heavier than the car to assist in raising loads and runs smoothly in guides. It is sectional in construction and easily accessible for adjustment to the average load conditions.

**Guides**—Consist of a maple strip on one side, and two grooved pine runs on the opposite side, arranged to guide both car and weight, conserving shaftway space and assuring quiet, easy operation. Grooved runs are compounded to prevent warping.

**Hoist Cable**—Flexible iron cable, of ample strength, with necessary fastenings for the car and weight.

**Operating Rope**—First quality hemp, free from splinters, with guards to hold it always in place.

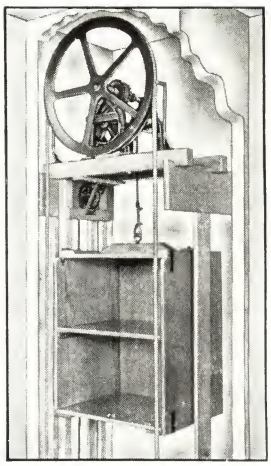
### Variations

This dumbwaiter can be furnished with car open front and back, front and either side, or equipped to run on brass tubes. It can be any size to maximum (see table), with any number of shelves. Steel car can also be furnished.

## HEAVY DUTY DUMBWAITER, TYPE 432

*Capacity Range: 75-300 lbs.*

For use in hospitals, schools, bakeries, shipping rooms, garages, etc., for movement of food in quantity, containers, tools, supplies, etc.



This dumbwaiter is made in various capacities for maximum loads of 150 to 300 lbs. Each machine is geared, according to the duty required, to handle the average load with ease.

### Features

(1) Finished car.
(2) Compounded guides.
(3) Geared machine.
(4) Automatic brake acts independently of the operator.
(5) Adjustable and accessible counterweight.
(6) Designed and fitted for easy erection by local mechanics.
(7) Antifriction bearings.

### Variations

This type of dumbwaiter may have any or all of the following:

Machine-cut gearing; full diameter traction sheave; steel car; car open front and back, or front and side.

### Specifications

**Machine**—Automatic lock type, sustaining loaded car at any point without hand brake. Lock applies on downward motion only, eliminating all friction in raising loads. Geared to raise average load easily. Spur gearing, cast from machine-cut patterns, and shafts of turned steel on antifriction bearings, all contained in an iron frame. All parts accurately machined and carefully fitted.

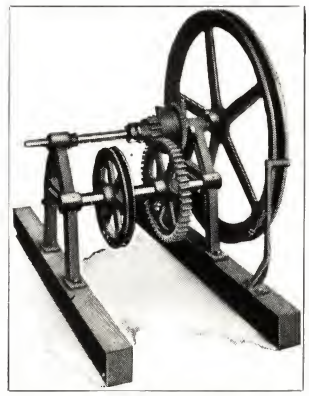
**Car**—Cabinet type, of first quality well-seasoned hardwood, finished with filler and varnish, braced and bound with irons. One middle shelf. Adjustable guide shoes of iron.

**Counterweight**—Heavier than car to assist in raising loads. Sectional and adjustable to average load conditions.

**Guides**—Consist of a maple strip on one side and two grooved pine runs on opposite side, arranged to guide both car and weight. Runs are compounded to prevent warping.

**Hoist Cable**—Flexible steel of ample strength, with necessary fastenings.

**Operating Rope**—First quality hemp, free from splinters, with guards to hold it in place.



Heavy Duty Machine

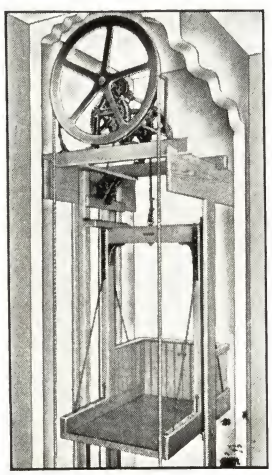
### Equipment

Machine, car, counterweight, guides for car and weight, hoist cable, hand rope and guards.

## LITTLE GIANT DUMBWAITER, TYPE 1100

*Capacity Range: 150-300 lbs.*

A platform lift with an automatic brake for use in apartments, institutions, dormitories, warehouses, stores, laundries, etc., for transporting trunks, barrels, cases and heavy smaller articles.



### Features

(1) Large substantial platform.
(2) Geared machine.
(3) Automatic brake acts independently of the operator. Car moves upward without friction.
(4) Antifriction bearings.
(5) Adjustable counterweight.
(6) Designed and fitted for easy erection by local mechanics.

### Variations

This dumbwaiter may have any or all of the following:

Enclosed weight box; positive safety device on car; full enclosures on car; machine with compound machine-cut gearing, with or without an adjustable ratio feature.

### Specifications—Equipment

**Machine**—Automatic lock type, sustaining loaded car at any point without hand brake. Lock applies on downward motion only, eliminating all friction in raising loads. Geared to raise average load easily. Spur gearing, cast from machine-cut patterns, and shafts of turned steel on antifriction bearings, all contained in an iron frame. All parts accurately machined and carefully fitted.

**Car**—Platform type with crossbeam, stiles and sills of first grade hardwood, amply reinforced with beam angles and wrought iron stay rods. The floor consists of hardwood planking through-bolted to the stiles. Car enclosed on the rear sides and back to a height of 18 in. with yellow pine fencing, neatly finished. Guide shoes are iron and adjustable to the runs.

**Counterweight**—Heavier than car, sectional for adjustment to the average load, runs smoothly in closed box.

**Guides**—Consist of a maple strip on one side and two grooved pine runs on opposite side, arranged to guide both car and weight. Runs are compounded to prevent warping.

**Hoist Cable**—Flexible iron of ample strength, with necessary fastenings.

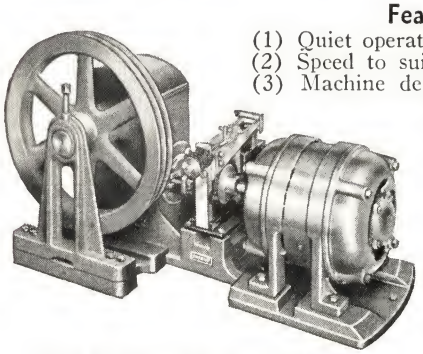
**Operating Rope**—First quality hemp, free from splinters, with guards to keep it in proper position.

## ENERGY ELECTRIC DUMBWAITERS

*Capacity—up to 500 lbs. at any practical speed desired.*

This line is extremely capable in service and adaptable to every type of building condition and vertical transit need. It makes available the advantages of electric service at places where it has heretofore been considered impossible or too expensive.

### Features



Type R Electric Dumbwaiter Machine

(1) Quiet operation.
(2) Speed to suit the service.
(3) Machine designed for long life, with all internal working parts and surfaces of bronze and steel.
(4) Motor protected against overload, no voltage and phase reversal.
(5) Full call and send push button control, inoperative while car is in motion.

### Equipment

Machine with motor and brake; idler wheels, shafts and bearings; automatic push button control units; car (size and type desired); counterweight; cables and connections; guide runs for car and weight.

### Specifications

**Machine**—Latest improved direct-connected traction type. Overhead or basement floor mounting. Worm gear is solid bronze and worm and worm shaft are cut from one blank of hardened steel and coupled directly to the motor. Ball bearing thrusts are located on all shafts, and all bearings and heads are bronze.

**Motor**—Ample capacity, manufactured especially for dumbwaiter service and guaranteed to comply with standards of the A. I. of E. E. Alternating or direct current, 220-440 volts. Brake is the solenoid type, self-holding and automatic.

**Control**—By push button at each landing to call or send the car from or to any floor. Effected by a single momentary pressure of the proper button.

**Car**—Any size up to 3 ft. square and 4 ft. high, with or without shelves, of material to fit surroundings. Furnished in wood, steel or stainless metals.

**Guides**—Hardwood or planed steel rails, according to service and speed desired.

**Cables**—Special flexible steel construction of such size and number as to give a high factor of safety.

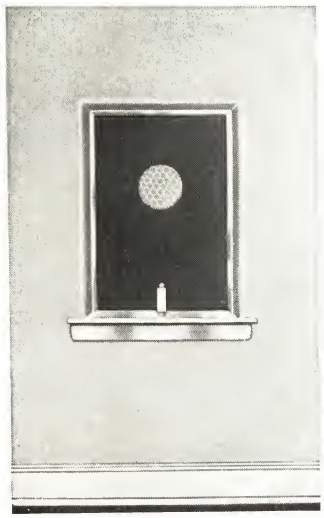
*Note:* Machine can be built for installation at top of shaftway or at foot, offering adaptability to all types of building construction.

## ENERGY DUMBWAITER DOORS

Energy Dumbwaiter Doors have been designed for use with either hand operated or electric dumbwaiters—where an easily operated door with a continuous service sill is desired. The door panel slides vertically in one piece—all parts are of metal, designed to insure long life and good appearance.

On electric dumbwaiter installations, the door locks are shop-fitted to the door frames, providing permanent setting and alignment, and reducing installation expense.

### Features



(1) All steel flush panel—easily cleaned.
(2) Minimum space required for installation.
(3) Guide shoes on door operate over steel guides, insuring easy operation and proper alignment.
(4) Especially arranged for easy erection by local mechanics.
(5) A unique method of equalized balancing eliminates all sheaves and chains.
(6) Solid bronze hardware—anti-pinch lift, with rubber bumpers at top and bottom.

### Equipment

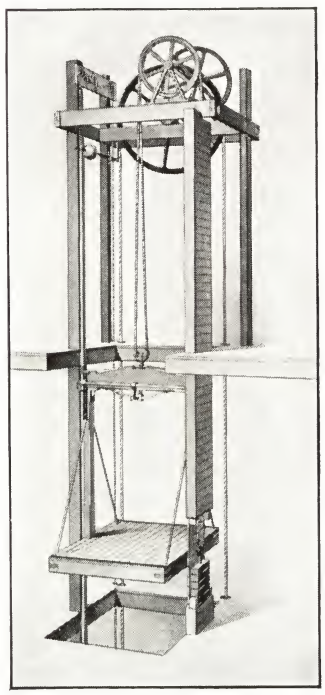
A standard unit includes a steel door panel with guide shoes mounted; bronze lift; steel guides; spreaders, guide backing, sill and head; rubber bumpers and a shop coat of paint—which constitutes a complete door—but does not include trim for the wall opening, building support for guides, or ordinary hardware. A vision light of wired glass, in the upper part of the door, is optional equipment.

Shipping weight of a door to provide a clear opening 2 ft. wide by 3 ft. high is approximately 70 lbs.

Blue prints and erecting data are furnished to guide local mechanics in making the installation.

*We are prepared to solve your particular door problem.*

## ENERGY HAND-OPERATED FREIGHT ELEVATORS



These elevators are made in four standard sizes—500, 1000, 1500 and 2000 lbs. maximum working loads. They are geared for operation by one man with the maximum load on the car. To reduce exertion in raising loads, and to balance descending loads safely, each is counterweighted enough to neutralize part of the average load. The empty car rises without exertion, and a capacity load descends by gravity. Controlled by brake line beside the operating rope.

### Equipment

Machine, car with safety catch, counterweights on a wrought iron bar, hand rope, two hoist cables and fastenings, check line, car runs.

*Note:* Guide posts, machine supports, weight box, and bolts for installing are not included, as they can be purchased locally at a saving.

### Specifications

**Machine**—Shafts are steel with turned journals. Cable wheel is machine scored. Gearing is made from machine-cut patterns and keyed to shafts. Reversible yokes, with bearings cut integrally, keep gears in alignment and are equipped with heavy steel rollers. Pull wheel is of largest diameter consistent with capacity and car size. Brake band is of leather lined steel, making equalized contact on the two outer flanges of the pull wheel. It is self-holding and adjustable.

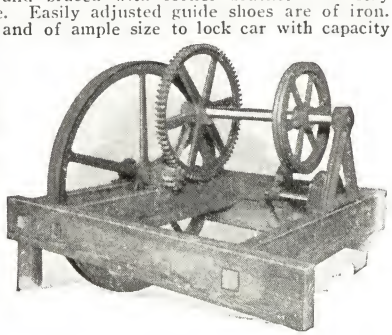
**Car**—Heavy first grade hardwood, tenoned and throughbolted at every joint; reinforced with irons and braced with corner brackets and stay rods. Flooring is hard maple. Easily adjusted guide shoes are of iron. Safety catch is instantaneous and of ample size to lock car with capacity load to guide runs should both cables break.

**Counterweight**—Enough to overbalance empty car, made in sections to provide adjustment to actual load conditions.

**Ropes**—Operating rope and brake line are first grade hard manila.

**Cables**—Two of steel to suspend car and counterweight, having a strength of ten times the load and connected with equalizing fittings.

**Guide Runs**—Hard white maple, milled for guide shoes, drilled and countersunk.



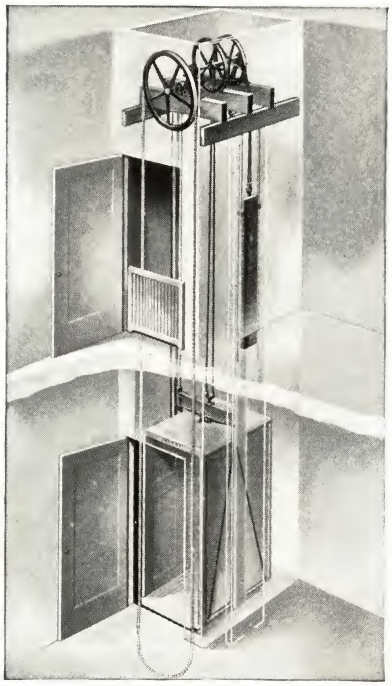
ENERGY HAND ELEVATOR, TYPE 992

| Maximum capacity, lbs. | Car size (width and depth), ft. | Shaft size (width and depth), ft. in. | Shipping weight, lbs. |
|---|---|---|---|
| 500 | 3 x3½ | 3-11 x 3-8 | 1100 |
| 1000 | 3½x4 | 4- 5 x 4-2 | 1400 |
| 1500 | 4 x4½ | 4-11 x 4-8 | 1700 |
| 2000 | 4½x5 | 5- 6 x 5-2 | 2100 |

# ENERGY RESIDENCE ELEVATORS

These Elevators are designed to provide peace of mind and a sense of security to the passenger. The fully enclosed car, the safety device, the automatic brake, the quietness and absence of jolts and jars, the extra strength built into the vital parts—all these and other safeguards make the passage between floors a comfortable experience, rather than the tense ordeal which the lack of such features can create.

Energy Residence Elevators are dependable, because they are simply and substantially constructed, with a minimum number of working parts to keep in adjustment, and with all parts of such design as the practice and experience of many years dictate. They can be installed at a reasonable cost in the moderate size home. In 33 years, no Energy Residence Elevator machine has ever worn out.



Showing Hand Operation

## Specifications
### Hand-Operated Residence Elevator

**Machine**—Has steel shafts, with turned journals, fillet finished. Cable wheel is machine scored. All spur gears have machine cut teeth and are keyed to shafts. Entire machine is set up in heavy iron stands, fitted with roller bearings, keeping gears in perfect alignment. Brake is automatic in both directions, with solid bronze bands making equalized contact on an iron drum, and positively holding car, either empty or loaded, at any point.

**Car**—Hardwood frame construction, 3 ft. wide, 4 ft. deep, with maple floor, well-braced with irons and fitted with adjustable guide shoes. It has a spring grip safety device which will lock car to guides instantly in the remote event of both cables breaking. Enclosures consist of wood panels on sides, back and top, finished to harmonize with the surrounding woodwork.

**Cables**—Two steel cables, with equalizers, suspend car and counterweight and have a combined strength of 18,000 lbs.

**Counterweight**—In sections, for convenience in adjusting weight to balance loaded car. It runs between wood guides to insure quietness.

**Operating Rope**—Best grade of Italian hemp, durable, yet free from splinters. Suitable eyes are provided to guide rope in proper course.

**Guide Runs**—Hard white maple, milled for car guide shoes, and drilled and countersunk for erecting screws.

### Equipment

Machine, hardwood car, hoist cables with fastenings, counterweight, operating rope, guide runs.

*Note:* If desired, safety gates can be supplied to protect the entrances to elevator while the car is away from the landing.

## Specifications
### Electric Residence Elevator

**Machine**—Overhead, direct connected traction type, capacity 500 lbs., with high factor of safety. Worm and worm shaft cut from one blank of solid steel, turning on phosphor bronze bearings with roller bearing thrusts. Brake is solenoid type, self-holding and automatic.

**Motor**—Of ample capacity, guaranteed to comply with standards of A. I. of E. E. Alternating or direct current.

**Control**—By pushbutton at each landing to call or send car to or from any landing, or by push-button within car. Outside control system inoperative while car is in motion, or while any landing door is open.

**Car**—Hardwood frame construction, 3 ft. wide, 4 ft. deep, with maple floor, well-braced with irons and fitted with adjustable guide shoes. It has a spring grip safety device that will lock car to guides instantly in the remote event of both cables breaking. Enclosures consist of wood panels on sides, back and top, finished to harmonize with the surrounding woodwork.

**Cables**—Two steel cables, with equalizers, suspend car and counterweight, and have a combined strength of 18,000 lbs.

**Counterweight**—In sections, for convenience in adjusting weight to balance loaded car. It runs between wood guides to insure quietness.

**Guide Runs**—Hard white maple, milled for the car guide shoes, and drilled and countersunk for screws.

### Equipment

Machine for alternating or direct current; hardwood car with safety device: two steel cables and fastenings; counterweights on wrought iron bar; maple guide runs; controller, door contacts, reverse phase relay, limit switches, push buttons.

# ENERGY HAND-OPERATED SIDEWALK ELEVATORS

Energy Sidewalk Elevators increase the usefulness of the basement in stores, factories, schools and hospitals.

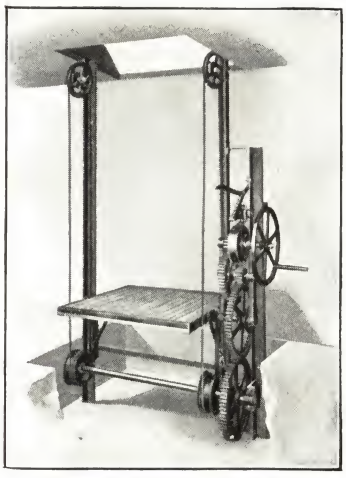
They save man power, keep the sidewalk clear, and make the dispatch of goods a quicker, more satisfactory operation.

In design they are the most modern obtainable, are sturdily constructed and will give lasting satisfaction under hard service conditions.

All Energy Sidewalk Elevators are designed to conform to local regulations. Sidewalk Doors are furnished on request.

### Equipment

Machine with brake; main shaft and hoist drums; two structural steel guides with main bearings and overhead wheels; platform car with fittings; hoist cables and connections.



Sidewalk Elevator, Type 977

**Type 977** *Capacity 1000 lbs.*
This arrangement shows the operating mechanism mounted in triple yoke bearings upon the structural guide angles. It provides a positive drive, permanently aligned.

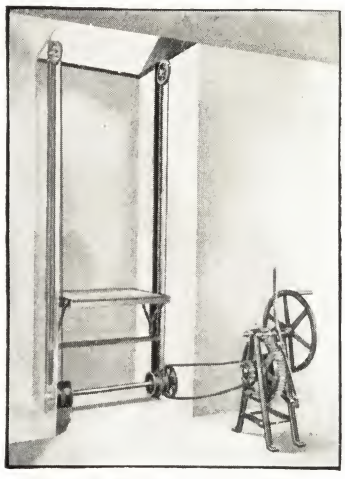
**Type 1002** *Capacity 500 lbs.*
Similar to Type 977, but for lighter loads, with sturdy sprocket chain for transmission of power.

**Type 1004** *Capacity 1000 lbs.*
For use where the shaftway projects from the building. A gear train transmits lifting power positively, and absorbs loading shocks and jars.

**Type 994** *Capacity 500 lbs.*
A lighter arrangement of Type 1004, in which the sprocket chain drive replaces the gear train, for smaller cars.

**ENERGY HAND-OPERATED SIDEWALK ELEVATOR DATA**

| Capacity, lb. | Type | Car size, outside measurements, ft. | Size of door openings required, ft.-in. | Size of pit, ft.-in. | Size of hatch, ft.-in. |
|---|---|---|---|---|---|
| 1000 | 977 | 4 x 4 | 4-10 x 4-2 | 5-10 x 4-2 | 4-10 x 4-2 |
| 1000 | 1004 | 4 x 4 | 5- 3 x 4-2 | 5- 3 x 4-2 | 5- 3 x 4-2 |
| 500 | 1002 | 3 x 3 | 4- 0 x 3-2 | 4- 6 x 3-2 | 3- 8 x 3-2 |
| 500 | 994 | 3 x 3 | 3- 8 x 3-2 | 3- 8 x 3-2 | 3- 8 x 3-2 |



Sidewalk Elevator, Type 994

## General Specifications

**Machine**—Is compound gearing on steel shafts, set up in yoke bearings or on a heavy iron floor stand, according to whether it is placed in hatch beside car or inside building line. It is equipped with a counterbalanced brake. Drive wheel is heavy cast iron and disengages for descent of car by gravity. Main shaft is heavy steel with two iron drums. Shaft bearings are solid and removable and double bracketed to the structural guides.

**Car**—Is of structural steel frame braced diagonally, inlaid with heavy plank floor and a renewable top floor of hard maple, with scuffing irons at edges. Cable members are slung from underside of car bottom. Guide shoes are finished and tapped through the frame.

**Guides**—Heavy structural steel at each side, supporting machine (when mounted beside car) and overhead wheels.

**Overhead Wheels**—Turn on steel studs bracketed to the structural guides by heavy steel gusset plates.

**Cables**—Flexible iron with a combined strength many times in excess of rated capacity, and with all necessary connections.

# INCLINATOR COMPANY OF AMERICA

Originators and Manufacturers of Simplified Electric Passenger Lifts for the Home

311-315 So. Cameron Street, HARRISBURG, P. A., U. S. A.

## *INCLIN-ATOR*

TRADE-MARK REG. U. S. PAT. OFF.

### The INCLIN-ATOR—Description

The *INCLIN-ATOR* is not an elevator, but performs a similar service. The installation provides a simple, safe, and economical method of ascending and descending stairs in private homes, apartment houses, and institutions, where costly elevator installations are not practical.

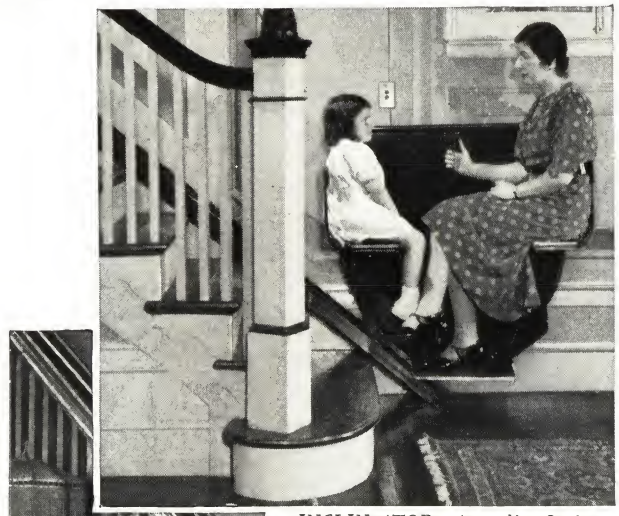
The *INCLIN-ATOR* can be installed quickly and economically in both new and old buildings, and will not in any way interfere with the customary use of the stairs.

**Operation**—The *INCLIN-ATOR* is controlled by electric switch buttons on the car and at top and bottom of stairs. The motive power is supplied by a small electric motor driving a worm-gear, winding drum and cable.

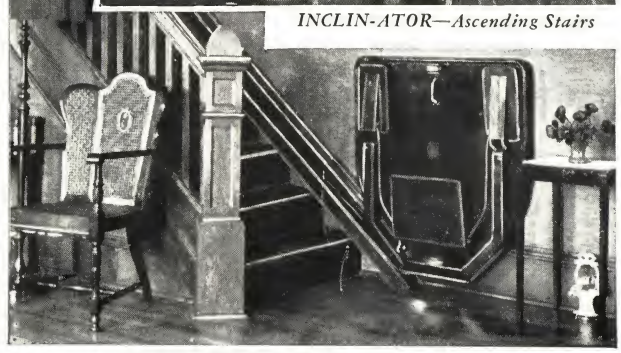
The car is carried on a multiroller steel truck, traveling in a special steel channel securely attached to the baseboard on one side of the stairway, and resting on the treads. Both seats and the foot platform fold against the car, therefore when not in use the *INCLIN-ATOR* extends less than 6 ins. from the wall.

**Installation**—On new construction provision can readily be made to accommodate the equipment. On existing stairways few, if any, changes will be needed. Installation is simple and does not require cutting or defacing the building.

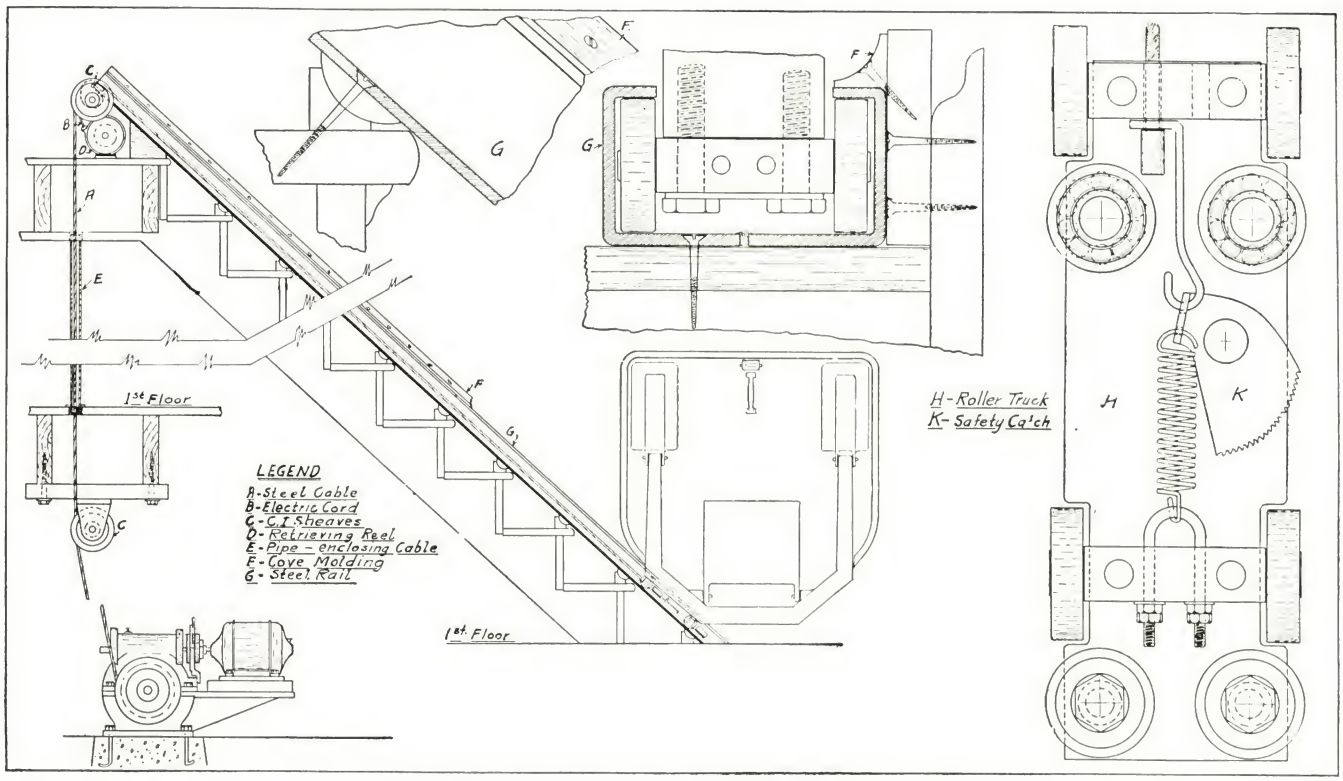
The operating mechanism may be placed on the ce-



*INCLIN-ATOR—Ascending Stairs*



*INCLIN-ATOR—Folded at Bottom of Stairs*



ment floor of the basement, in a closet underneath the stairs, or at the head of stairway (enclosed to resemble a window seat). The cable travels within the truck channel and after leaving the channel may be concealed in partition wall, or in tubing to the winding drum, over suitable sheaves.

**Construction**—The channel is $\frac{7}{32}$-in. gauge rolled steel. The car is pressed steel. The operating cable is ¼-in. diameter, flexible plow steel.

### Finish

The *INCLIN-ATOR* can be finished in oak, walnut, mahogany, or other color to harmonize with the wood trimmings of the house. Thus it becomes a desirable and useful piece of furniture.

**Specifications**—For existing buildings, architects are requested to furnish information as to location of stairs, number of steps, width of tread, height of riser, and other conditions of construction.

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# "Elevette"

TRADE-MARK REG. U.S. PAT. OFF.

### The "Elevette"—Description

A new and unique form of elevator especially adapted to private homes where curving stairs interfere with the installation of the *INCLIN-ATOR*.

**Location**—The "Elevette" can be located in the stair-well, or elsewhere in the house. Only small space is required for the car, and no overhead construction is used.

**Construction**—The car frame is of rolled steel angles, with hardwood floor.

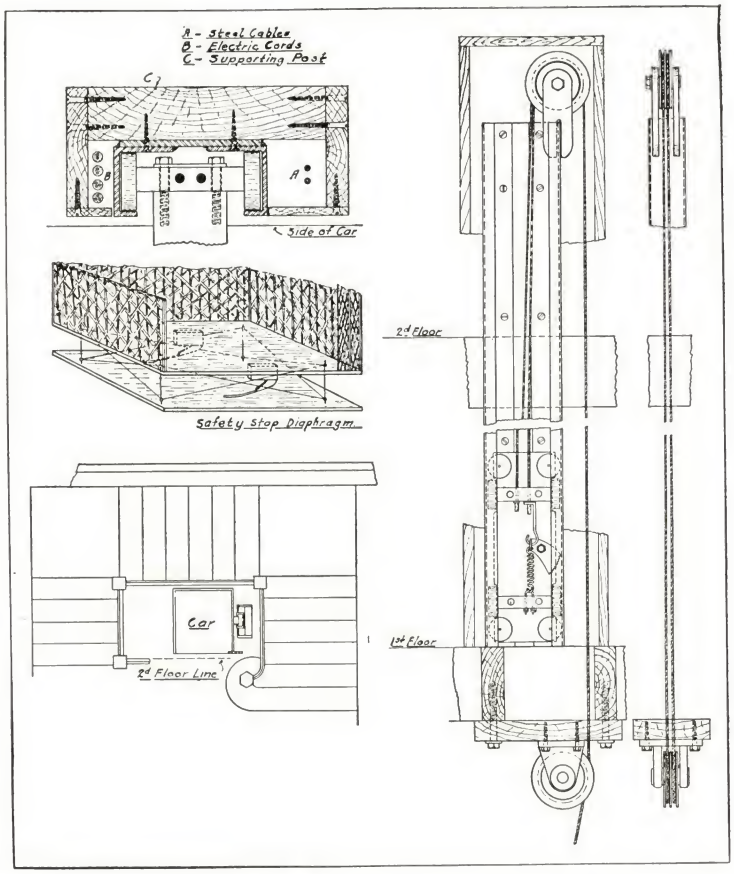
The car is enclosed with metal grille imitating woven cane, and may be finished in a color to harmonize with the surroundings. The size and shape of the car will be determined by the available space, but can be sufficiently large to accommodate a small wheel chair.

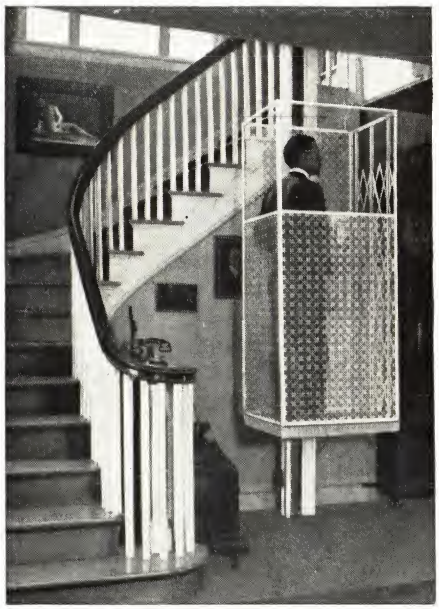
**Safety Devices**—The "Elevette" is equipped with push button controls, automatic stops, full safety provisions, and electrical and mechanical interlocking.

**Installation**—In new structures space is easily provided. In older buildings the installation usually is a simple operation.

### Guaranty

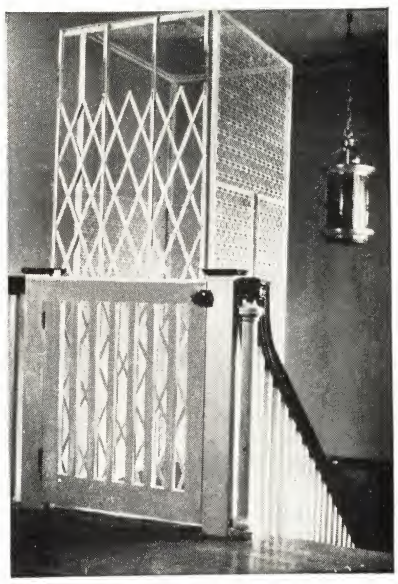
The INCLINATOR COMPANY OF AMERICA guarantees the *INCLIN-ATOR* and the "Elevette" against defects in material and workmanship for a period of one year after installation.



*"Elevette"—Ascending and Showing Unchanged Appearance Below*





*Landing Above*

# JOHN W. KIESLING & SON, INC.

Manufacturers of Elevators, Dumbwaiters and Doors

TELEPHONE
Jefferson 3-3320

Atlantic and Rochester Avenues
BROOKLYN, N. Y.

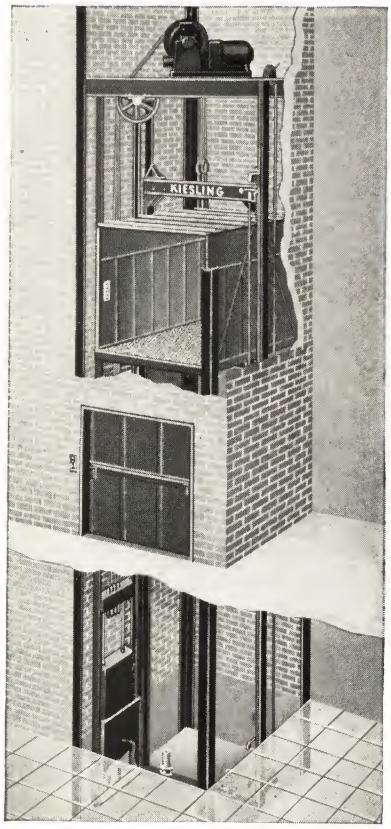
48 YEARS
OF SERVICE

REPRESENTATIVES IN PRINCIPAL CITIES

## KIESLING PRODUCTS

PASSENGER ELEVATORS
FREIGHT ELEVATORS
RESIDENCE ELEVATORS
ELEVATOR BI-PARTING DOORS
PRESSED STEEL DOOR BUCKS
SIDEWALK ELEVATORS
SIDEWALK ELEVATOR DOORS
ELECTRICWAITERS
DUMBWAITERS
UNDERCOUNTER DUMBWAITERS
STEEL ANGLE HOISTWAY TOWERS
SHEET STEEL HOISTWAY ENCLOSURES
DUMBWAITER BI-PARTING DOORS
LIGHT-O-MATIC SIGNAL CONTROL
ELEVATOR CABLE EQUALIZERS

KIESLING
Ball Bearing DumbWaiters Elevators *and* Lifts




**Type K.E. Freight Elevator**

Available with Automatic Push Button, Car Switch, or Constant Pressure Push Button Control. Where the walls are not of ample wall bearing strength, we can furnish Steel Angle Hoistway Towers, to carry the overhead machinery

### STANDARD SIZES OF TYPE K.E.

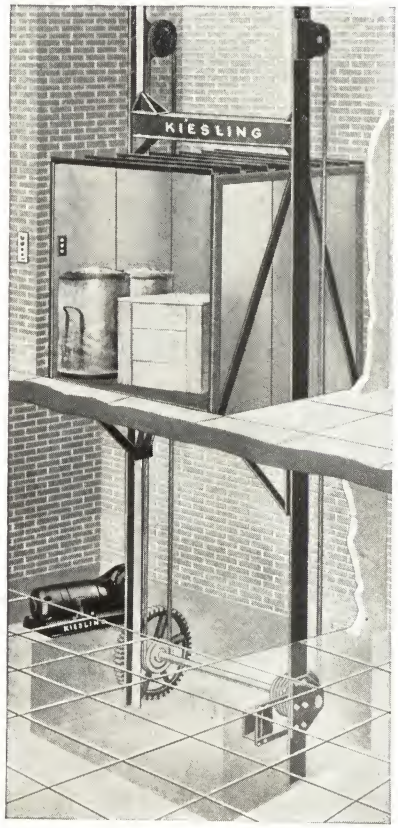
The following list of standard sizes is primarily intended to give a more comprehensive idea of space requirements. We can also furnish special sizes to meet individual conditions.

| Car Size Outside dimensions Wd. Dp. | Hoistway Inside dimensions Wd. Dp. | Door Size Clear opening Wd. Ht. |
|---|---|---|
| 5′ 6″ x 6′ 9″ | 7′ 0″ x 7′ 0″ | 5′ 2″ x 7′ 0″ |
| 6′ 6″ x 7′ 6″ | 8′ 0″ x 7′ 9″ | 6′ 2″ x 7′ 0″ |
| 7′ 0″ x 7′ 6″ | 8′ 10½″ x 7′ 9″ | 6′ 8″ x 7′ 0″ |
| 8′ 4″ x 10′ 0″ | 10′ 3″ x 10′ 3″ | 8′ 0″ x 7′ 0″ |
| 8′ 4″ x 12′ 0″ | 10′ 5″ x 12′ 3″ | 8′ 0″ x 7′ 0″ |
| Garage 9′ x 20′ | 11′ x 20′ 3″ | 8′ 8″ x 10′ |

Add 4 in. to depth of hoistway if Bi-parting Type of door is to be used.

## USERS OF KIESLING PRODUCTS

F. W. Woolworth Co.
S. S. Kresge Co.
Corning Glass Co.
Schrafft's
Childs
Libby Owens Glass Co.
Ford Motor Co.
W. T. Grant Co.
Horn & Hardart
S. H. Kress & Co.
Statler Hotels
Bickfords
Whelan Drug Co.
Thompson's
Peoples Drug Co.
H. L. Green Co.
H. C. Bohack Co.
Sherwin-Williams Co.
Great A & P Tea Co.
McLellan Stores
J. J. Newberry Co.
G. C. Murphy Co.
Greyhound Bus Terminals
Fishman Stores
United Cigar Stores Co.
Nathan Straus-Du-Parquet
American Store Equipment Co.
Silvers
B/G Food Shops
Big Bear Markets
Waldorf Systems
Stewarts
Standard Container Co.
Middletown Sanitarium
Liggett Drug Co.
Foltis Fisher
Eastman Kodak Co.
Union News Co.




**Type S.B. Freight Elevator**

Available with Automatic Push Button, Car Switch, or Constant Pressure Push Button Control. Especially designed for installation where floor to ceiling height on upper floor is limited, as it only requires a clearance of 10 feet on the upper floor

### STANDARD SIZES OF TYPE S.B.

The following list of standard sizes is primarily intended to give a more comprehensive idea of space requirements. We can also furnish special sizes to meet individual conditions.

| Car Size Outside dimensions Wd. Dp. | Hoistway Inside dimensions Wd. Dp. | Door Size Clear opening Wd. Ht. |
|---|---|---|
| 4′ x 4′ | 5′ 2″ x 4′ 3″ | 4′ x 7′ |
| 4′ x 7′ | 5′ 2″ x 7′ 3″ | 4′ x 7′ |
| 5′ x 5′ | 6′ 2″ x 5′ 3″ | 5′ x 7′ |
| 5′ x 7′ | 6′ 2″ x 7′ 3″ | 5′ x 7′ |
| 6′ x 6′ | 7′ 2″ x 6′ 3″ | 6′ x 7′ |
| 6′ x 7′ | 7′ 2″ x 7′ 3″ | 6′ x 7′ |
| 6′ x 8′ | 7′ 2″ x 8′ 3″ | 6′ x 7′ |

Add 4 in. to depth of hoistway if Bi-parting Type of door is to be used.

*"You Furnish the Hoistway—We Furnish the Rest"*

# KIESLING WEATHERTIGHT BI-PARTING ELEVATOR DOORS

*With Automatic Sealing Device and Self-Closing Truckable Sill*



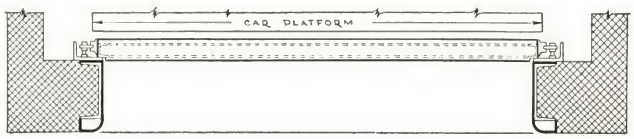

This newly designed door thoroughly seals the opening at top, sides, and sill, eliminating passage of drafts and cold. When used at street openings, the "*Automatic Sealing*" feature insures a weathertight effect. The "*Self-Closing*" Truckable Sill automatically reduces gap between car and door saddle, providing safe and easy trucking. Door is fitted with bronze guide shoes, operating on machined cold drawn steel guide rails. Steel Silent Roller Chain Suspension means is used.

Flush Sanitary Combination Jamb and Trim of 14-gauge pressed steel and Anti-slip saddles, electrically welded in all corners, ground and polished, may be furnished.

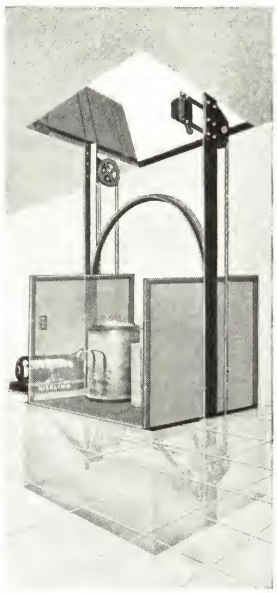
When Kiesling "Light-O-Matic" Control *(shown at left)* is used with elevator, door vision panels are not necessary.

Electric Mechanical Door Interlocks and Locks, furnished as standard equipment.





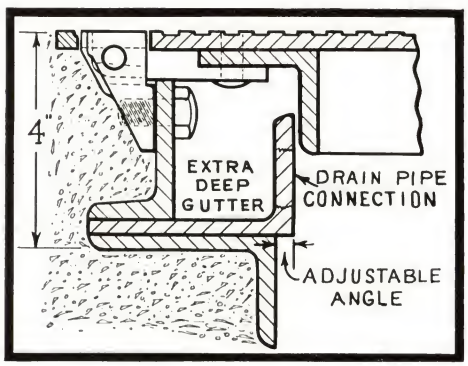

# KIESLING "ALL-STEEL" SIDEWALK ELEVATORS AND DOORS



**Type F.A. Electric Sidewalk Elevator**

All-steel construction, ball bearing, push button or car switch control

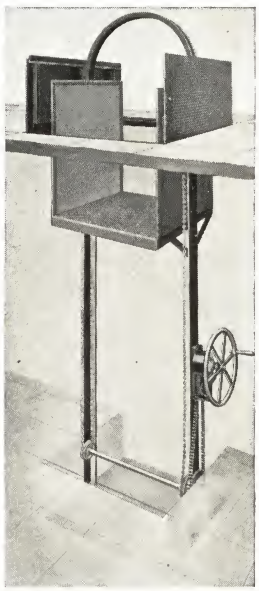
Motor or Hoisting Machine may be placed at either side or to front and side of car platform. Building conditions vary to such an extent that our recommendation for practical sizes of car, door, hoistway, and pit, should be requested.




## KIESLING "ALL-STEEL" SIDEWALK DOOR

Kiesling Sidewalk Doors set perfectly flush with sidewalk in every detail of their construction. The multigrip steel door leaves sustain a live load of 300 lbs. per sq. ft. These doors are watertight, have a condensation gutter tapped for plumber's drainpipe connection.

Door leaves are fitted with extra heavy, quick removable, flush cast bronze hinges and are fitted on underside with steel strike plates, so arranged as to contact the car bow during the automatic opening and closing of the doors. Entire door, including all corners, reinforcements, strike plates, etc., is electrically welded.

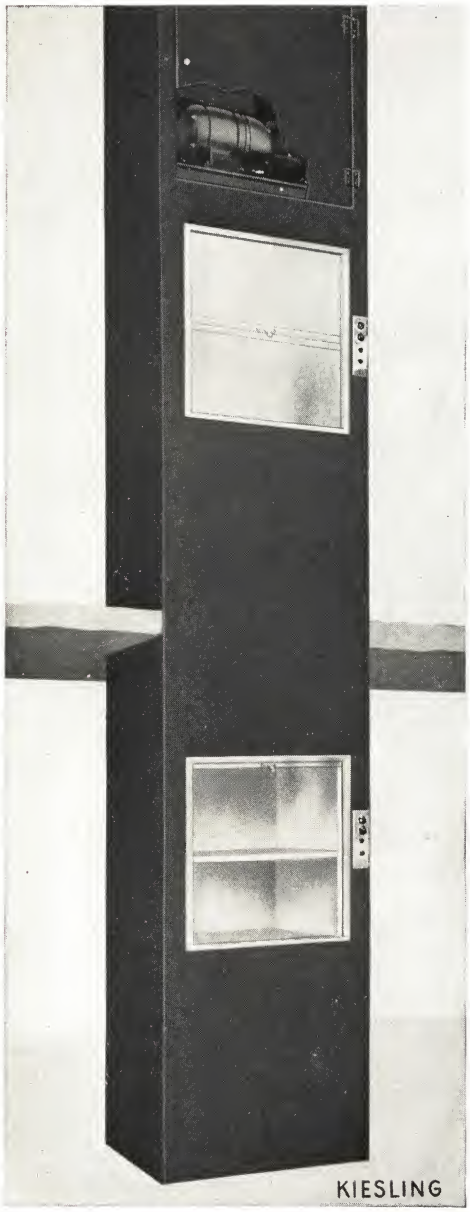


**Type D Hand Power Sidewalk Elevator**

All-steel construction, ball bearing, automatic brake, manual control

# KIESLING ELECTRICWAITERS AND "LIGHT-O-MATIC" CONTROL

*With Doors, Hoistway Angle Tower, Steel Enclosure, and Speaking Tubes*




Electricwaiter—Overhead Type

Motor can be arranged for installation at top of shaftway or at the bottom as shown at the right. This latter arrangement is known as the "under counter" type dumbwaiter and it is specially suited for use in restaurants, cafeterias, soda fountain stores and similar establishments where overhead room is limited.

Either the overhead or the under counter type can be furnished with car size and capacity to meet individual requirements.

You will note that illustration shows the equipment assembled within a steel angle frame with a sheet steel enclosure, resulting in a complete self-contained and self-supporting unit. This not only eliminates the necessity of an expensive, cumbersome built-in enclosure, but it also facilitates installation.

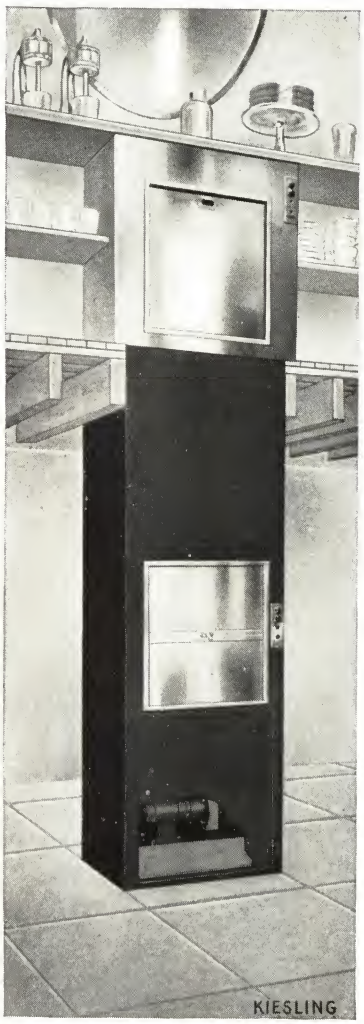
### STANDARD SIZES

The following list of standard sizes is primarily intended to give a more comprehensive idea of space requirements. We can also furnish special sizes to meet individual conditions.

| Car Size Outside dimensions A B | Hole Size Outside dimensions C D | Door Size Clear width E |
|---|---|---|
| 20″ x 16″ | 30″ x 21″ | 21″ |
| 20″ x 20″ | 30″ x 25″ | 21″ |
| 24″ x 20″ | 34″ x 25″ | 25″ |
| 24″ x 24″ | 34″ x 29″ | 25″ |
| 29″ x 18″ | 39″ x 23″ | 30″ |
| 28″ x 24″ | 38″ x 29″ | 29″ |
| 28″ x 28″ | 38″ x 33″ | 29″ |
| 32″ x 28″ | 42″ x 33″ | 33″ |
| 36″ x 36″ | 46″ x 41″ | 37″ |
| 42″ x 26″ | 52″ x 31″ | 43″ |

### KIESLING FEATURES

1. All-steel construction.
2. Complete self-supporting unit.
3. Completely enclosed motor, brake and gear reduction unit.
4. Cold drawn steel guide rails with patented adjustment to assure accurate alignment.
5. Steel silent roller chain for carrying car and counterweight.
6. Machine cut phosphor bronze guide shoes.
7. Electrically welded reinforced steel car (galvanized, monel or stainless).
8. Wide range of control systems.
9. Kiesling "Light-O-Matic" interlock, limit switch and signal device.
10. Steel shaft enclosure.
11. Steel bi-parting doors.




Electricwaiter (Under Counter Type) Complete with Doors and Enclosure




## KIESLING "LIGHT-O-MATIC" SIGNAL DEVICE

*Combining Interlock and Limit Switch*

Realizing the need for an improvement in signal systems to eliminate wasted time and effort of floor clerks in not knowing when the dumb waiter car is at their particular landing, when car is in motion, or when car is at another landing but door is not tightly closed to permit operation, Kiesling Engineers developed the "Light-O-Matic" system which answers the above problem.

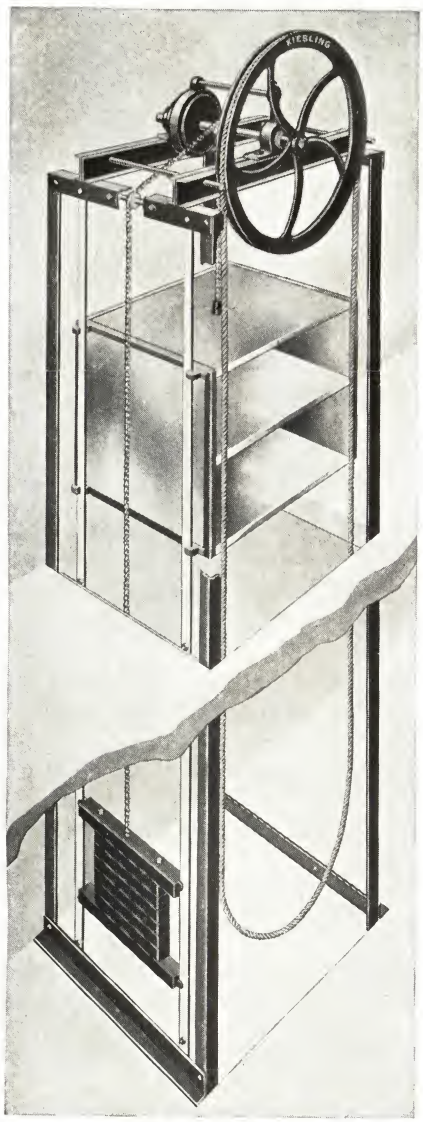
It is true that other systems have been installed to signal such operations but the equipment has either been too complicated or too costly to warrant wide use.

The "Light-O-Matic" Equipment combines the interlock, limit switch and signal cam in one unit, with red and green signal lights, speaking tubes and buzzer buttons mounted on push button panels to complete the system. The "Light-O-Matic" Signal System is now being used by many nationally-known chain store systems (see page one) as standard equipment.

*Specify Kiesling "Light-O-Matic" Signal System.*

# KIESLING "STEEL RAIL" AUTOMATIC BRAKE DUMBWAITERS AND BI-PARTING DOORS

*With Steel Angle Hoistway Tower and Steel Silent Roller Chain Suspension*




"Overhead" Type
Kiesling Hand Power Dumbwaiter

Kiesling Hand Power Dumbwaiters can be adapted to meet practically any condition of dumbwaiter service.

Standard "overhead" and "under counter" equipment illustrated are types most commonly used and in view of limited space we will not attempt to cover the more intricate designs. Either type can be furnished with car size and capacity to meet individual requirements; however, where possible, we recommend the use of standard sizes as listed.

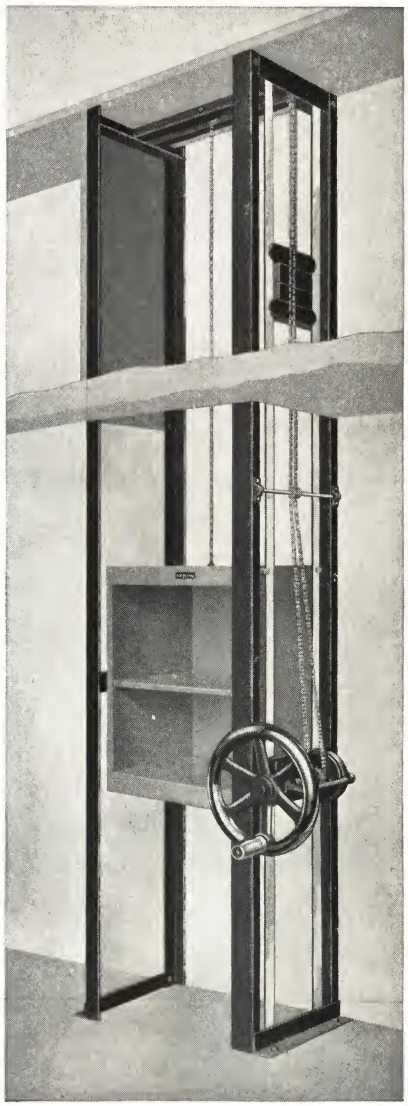
Standard equipment includes: complete ball bearing machine having a double acting automatic brake with actual braking surface of 18 in. on smaller sizes to 45 in. on larger sizes, steel machine beams, cold drawn steel guide rails with patented adjustment bolts to assure perfect alignment, adjustable counterweight, steel silent roller chain for carrying car and counterweight, braided cotton or imported hemp hand rope, welded reinforced steel car with phosphor bronze guide shoes and steel angle frame support to form a complete self-sustaining dumbwaiter unit.

**STANDARD SIZES**

| Car size ins. | | Shaft size ins. | | Door size ins. | |
|---|---|---|---|---|---|
| Width | Depth | Width | Depth | Width | Height |
| 20 | 16 | 25 | 21 | 21 | 36 |
| 24 | 20 | 29 | 25 | 25 | 36 |
| 24 | 24 | 29 | 29 | 25 | 36 |
| 28 | 24 | 33 | 29 | 29 | 36 |
| 32 | 28 | 37 | 33 | 33 | 48 |
| 36 | 36 | 41 | 41 | 37 | 48 |




Kiesling Bi-parting Door
(Shaft Side)



"Under Counter" Type
Kiesling Hand Power Dumbwaiter

## Bi-Parting Doors

The Standard doors are constructed of sheet steel, with or without flush combination hollow-metal jambs and trim, and solid steel sills.

They can be furnished in stainless steel, monel, bronze, etc.

The bi-parting vertical sliding door opens the full height and width of the doorway by the upper half rising above and the lower half descending below the door jambs. Ease of operation is assured by the upper half of door counterbalancing the lower half.

The doors are suspended on silent steel roller chains which pass over double annular ball bearing sheaves. They are fitted with phosphor bronze guide shoes which run in steel guides.

## Undercounter Type

The Undercounter type dumbwaiter can be fitted with a vertical downward sliding counterbalanced door at the under side of the counter. Door can be of stainless steel with stainless steel moulding, facia, and sides. This undercounter dumbwaiter can be furnished with the Kiesling "Light-O-Matic" Signal Control, consisting of door interlock, red and green signal lights, buzzer button and speaking tube for inter-floor communication.

## Access and Hinged Dumbwaiter Doors

In addition to bi-parting doors we manufacture a complete line of Access and Hinged Doors as well as dumbwaiter and elevator enclosures. Doors can be made any size to fit existing or special conditions.

ESTABLISHED 1888

# D. A. MATOT

## Manufacturers of Hand Power Dumb Waiters and Elevators

TELEPHONE
Lincoln 0002

1538-1546 Montana Street, CHICAGO, ILL.

REPRESENTATIVES IN MOST PRINCIPAL CITIES

### Products

All types of HAND POWER DUMB WAITERS for residences, apartment houses, hospitals, restaurants, hotels, clubs, etc., made in Automatic Brake, Band Brake, and Geared Types; Roller Chain; Metal Tube, High Speed, Undercounter; also Library Book Lifts, Fuel Lifts, and Trunk Lifts.

All types of HAND POWER ELEVATORS for hospital, invalid, and freight; also Sidewalk Type.

For Refrigerator Doors and Shelving, see File Index.

### Guarantee and Services

All Matot Dumb Waiter and Elevator Machines are guaranteed for five years. Repair parts will be furnished free of charge any time within that period if parts are returned to us.

Our 45 years' experience manufacturing hand power lifts is at your service in the selection of equipment best suited to specific requirements. Complete information including drawings and estimates on any of the regular or special sizes of equipment shown here will be gladly sent on request.

### Installation

Complete instructions for erecting, including blue prints, are furnished with each outfit. This enables them to be satisfactorily installed by local labor. Where desired, we will install same. Although we sell machines only, and complete outfits, we strongly recommend that the complete outfit be specified. This will give best results and insure complete satisfaction.

### Dumb Waiter Cars

Matot Dumb Waiter Cars are made of selected, kiln dried ash lumber, carefully machined and assembled and will withstand long, hard usage. The cars are filled, shellacked and varnished two coats.

We carry in stock all regular catalogue sizes of dumb waiter cars, equipped with one hinged or removable shelf. The No. 1 size cars are 2 ft. 6 in. high inside, and the Nos. 2, 3, 4 and 5 sizes are 3 ft. high inside. The outside height of dumb waiter cars is 6 in. higher than the inside measurements. We build to order special cars of any specified material.

**Door Openings**—At least one door opening in hatchway should be wherever possible 2 in. wider and 6 in. higher than car so that car can be placed in hatchway, or leave out door jamb and casing until car is placed in hatchway. Making door opening 6 in. higher than car increases the length of pull on hand rope with consequent easier operation.

### To Specify

(1) State type of hatchway, whether A, B, C, D or E (as illustrated).

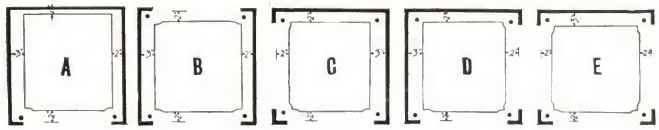
(2) Type of equipment, or whether for use in residence, hospital, factory, etc.; weight to be handled; also whether weight travels mostly up or down, or both ways.

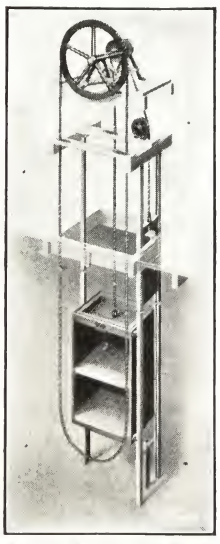
(3) Size of car, and whether inside or outside dimensions; or give us the inside measurements of hatchway in the clear, the width, depth and height. In stating the height give us the measurements from lower floor to ceiling of upper floor or highest point of hatchway in the clear.

(4) How many shelves in car? Hinged or removable?

**Complete Outfit**—Includes the machine mounted on platform, car, guides, counterweight, ropes, rope guides and bumpers.

**Machine Only**—Includes the machine, leading sheaves for types requiring same, and hand wheel.



Matot Automatic Brake Dumb Waiter Erected

### Matot Automatic Brake D. W.

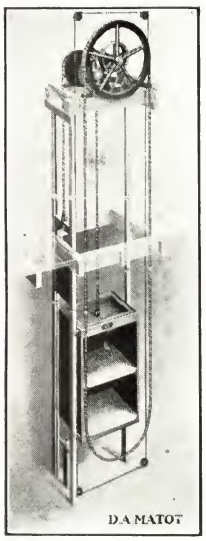
Capacities up to 75 lbs., depending on size of car as shown on table. Outfits listed are strong enough to lift a much greater load, but to do so will require more energy.

Machine is full automatic, both up and down. Brake mechanism is so designed to be fully released when car is in motion, causing no friction regardless of load or direction of travel and requires no adjustments of any kind. Load is automatically held by machine itself, without any check or brake lines. Machine is so arranged that when operator releases pull on hand rope, car stops automatically. Brake does not lock fast, but is applied and regulated by load, holding car securely at any point. The heavier the load, the more positive the brake. Roller bearings are used throughout to assure a smooth, easy running, long life equipment. Machine is guaranteed for five years and will last a lifetime.

### Matot Band Brake D. W.

Capacities up to 75 lbs., depending on size of car as shown on table. Practical for use in high hatchways where a strong, reliable, rapid running dumb waiter for hard service is required. Speed in lowering or positive stops, are regulated by a partial application or a final pull on brake cord. Brake band is lined with vulcanized fiber to withstand hard usage. Practical for lowering loads as it does not require operation of hand rope, the speed being regulated by brake cord. Machine is carefully assembled and fitted with roller bearings.

Also made in geared full diameter lift type with capacities up to 250 lbs. A practical equipment combining band brake feature with large lifting capacity. Gears are of hobbed cut type.



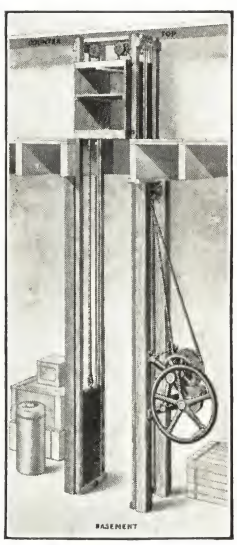

Matot H. C. Type Geared Band Brake Dumb Waiter Erected

### Matot Geared Automatic Brake H. C. Type D. W.

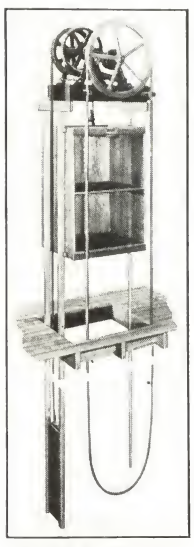
Full diameter lift wheel, hobbed cut gears. Capacities up to *250* lbs., geared according to capacity to give greatest speed, plus ease of operation. Any outfit listed on table is strong enough to lift a much greater load, but to do so will require more energy. Roller bearings throughout.

A practical equipment combining an automatic brake feature with large lifting capacity. Smooth in action and positive in brake. Full automatic both up and down. Requires no adjustments of any kind. Machine guaranteed 5 years. Gears are of the hobbed cut type having teeth uniform in size, assuring smooth and noiseless operation.

Also made in compound geared automatic type in 500-lb. capacity. A practical equipment for heavy loads combining automatic brake feature with heavy lifting capacity, easy to operate.




Matot Undercounter Dumb Waiter



Matot H. C. Type Geared Automatic Brake Dumb Waiter

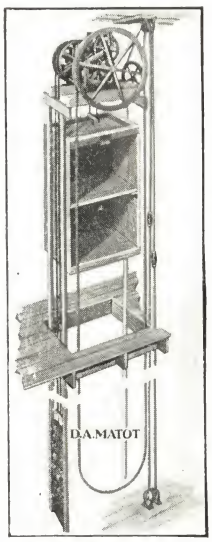
### Matot Undercounter D. W.

These undercounter dumb waiters are designed to fit where lack of space precludes placing machinery overhead, which condition is sometimes encountered where space does not allow the highest part of equipment or dumb waiter car to come higher than 3 ft. over the top floor, or in some cases counter height. Machine can be placed to right, left or bottom of hatch, also hung to ceiling of lower floor and operated with hand rope. In the 50-lb. geared type machine can be made with drum to wind up cable which eliminates overhead sheaves and counterweight, as shown in the fuel lift type. The automatic brake type is 25-lb. capacity and the geared automatic brake type is 50-lb. capacity and up.

## STANDARD STOCK SIZES, MATOT DUMB WAITERS

| No. | Car size outside, in. | | Space required, in. | | | | Capacity, and feet pull to raise car one foot | | | | | | | Feet pull to raise car one foot, and pounds pull to lift capacity | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Single face | | Double face | | Automatic Brake, Band Brake and Economy Type | | | | | | Geared Automatic Brake, Geared Band Brake | Compound Geared, lbs. | Geared Automatic Brake, Geared Band Brake | | | | | | | | Compound Geared | | Diam. hand wheel, in. | Machine space, all types, ft.-in. | Head room, all types, ft.-in. |
| | | | | | | | 6-in. sheave | | 8-in. sheave | | 9-in. sheave | | | | 100-lb. | | 150-lb. | | 200-lb. | | 250-lb. | | 500-lb. | | | | |
| | Width | Depth | Width | Depth | Width | Depth | Cap., lbs. | Pull, ft.-in. | Cap., lbs. | Pull, ft.-in. | Cap., lbs. | Pull, ft.-in. | | | Pull, ft.-in. | Pull, lbs. | Pull, ft.-in. | Pull, lbs. | Pull, ft.-in. | Pull, lbs. | Pull, ft.-in. | Pull, lbs. | Pull, ft.-in. | Pull, lbs. | | | |
| 1 | 20 | 16 | 25 | 19 | 25 | 20 | 48 | 2-8 | 38 | 2-2 | 31 | 1-9 | All sizes can be had in capacities of 100, 150, 200 and 250 lbs. (See pounds pull.) | 500 | 5-5 | 19 | 6-2 | 25 | 7-2 | 28 | 7-8 | 33 | 14-1 | 35 | 16 | 1-10 | 8-2 |
| 2 | 24 | 20 | 29 | 23 | 29 | 24 | 60 | 3-3 | 48 | 2-8 | 38 | 2-2 | | 500 | 5-5 | 19 | 6-4 | 25 | 7-4 | 28 | 8-0 | 32 | 14-0 | 36 | 20 | 2-0 | 8-6 |
| 3 | 28 | 24 | 33 | 27 | 33 | 28 | 70 | 3-11 | 56 | 3-1 | 45 | 2-6 | | 500 | 5-6 | 18 | 6-3 | 25 | 7-7 | 26 | 8-7 | *30 | 14-9 | 34 | 24 | 2-3 | 8-10 |
| 4 | 32 | 28 | 37 | 31 | 37 | 32 | .. | .. | 68 | 3-9 | 55 | 3-0 | | 500 | 5-4 | 19 | 6-3 | 24 | 7-6 | 27 | 8-4 | *30 | 14-0 | 36 | 30 | 2-9 | 9-4 |
| 5 | 36 | 36 | 41 | 39 | 41 | 40 | .. | .. | .. | .. | .. | .. | | 500 | 5-6 | 19 | 6-0 | 25 | 7-4 | 23 | 8-2 | *31 | 15-0 | 33 | 30 | 2-9 | 9-4 |

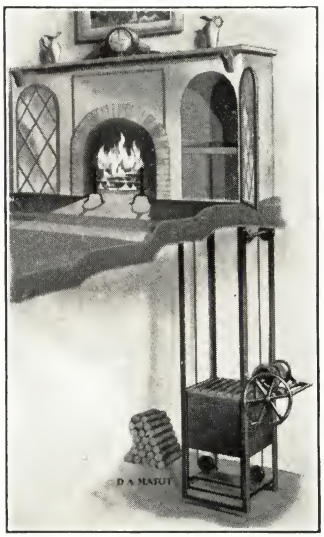
*No. 3 capacity can be had up to 350 lbs.; No. 4 capacity, up to 400 lbs.; No. 5 capacity, up to 400 lbs.
Any of the outfits listed in the above table is strong enough to lift a much greater load, but to do so will require more energy.




Matot 2-speed, 2-capacity Geared Automatic Brake Type

## Matot 2-Speed, 2-Capacity Hand Power D. W.

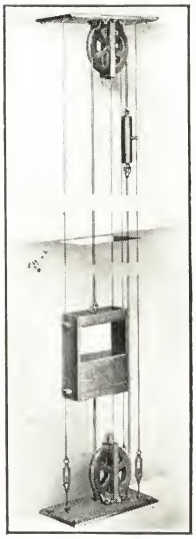
Made in any combination of light and heavy loads from 50 to 500 lbs. having geared automatic brake and band brake features incorporated as desired. A great time and labor saver where both light and heavy loads are handled, and overcomes difficulties due to slow traveling car that has machine geared for heavy loads, when in most cases light loads are used. When a heavy load is handled on slow gear, empty car can be brought back to loading point on high gear, saving time. Simple, easy pull on shifting rope changes capacity and speed; load cannot drop while shifting.




Matot Fuel Lift Installed

## Matot Fuel Lifts

A most convenient arrangement for hoisting wood from basement to fireplace on floors above. Made to fill requirements.



Matot High Speed Type Dumb Waiter

## Matot High Speed D. W.

A small, quick acting, rapid running outfit with wire guides. Adapted for light loads, such as copy work, messages and small articles usually passed from one department to another. Regularly furnished with cars 1 ft. 6 in. high outside. Special sizes made to order.

Furnished in three sizes: 10x6 in.; 12x8 in.; 14x10 in. Space requirements are 8 in. added to each width and 2½ in. added to each depth.

## Matot Tube D. W.

Designed for use where equipment is to be placed in open, having no enclosure, as in a store or office, and where an exceptionally neat appearing outfit is desired. Also made in regular Matot Automatic Brake, Band Brake and Economy Dumb Waiter styles, with regular stock size cars, but in place of wood guides, as regularly used, metal tubes are substituted. Can also be made in geared types. Cars furnished in wood, highly polished, and can be trimmed with brass fittings. Brass or steel cars furnished as desired.

## Matot Economy D. W.

Capacities up to 75 lbs., depending on size of car as shown on table. An inexpensive dumb waiter having a spring check on hand rope. Adaptable where a moderate cost dumb waiter is wanted and where automatic brake feature is of no particular advantage and where work is not hard enough to warrant installation of a band brake equipment.




Matot Invalid Lift

## Matot Invalid Lifts

This equipment is designed to convey invalids from one floor to another and is exceptionally easy to operate; in fact, a child can handle due to our system of compounding the gears. The automatic brake feature is so arranged when operator releases pull on hand rope, car automatically stops itself, loaded or empty, traveling up or down. It has, besides the automatic brake feature, additional safety devices to provide a most safe and practical outfit for the purpose intended.

Five standard sizes with cars ranging from 3 to 5 ft. square for one or two persons or invalid and chair and attendant.

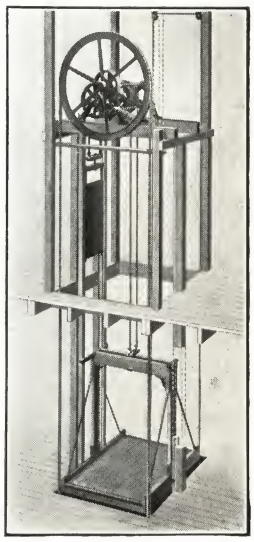
## Matot Hand Power Elevators

Capacities up to 2000 lbs. geared according to capacity to give greatest speed plus ease of operation. Matot elevators are also made in two-speed, two-capacity type in any combination of light and heavy loads.

The smaller sizes are suitable for private residences as trunk lifts, larger sizes for all around use in industrial buildings, warehouses, etc. Stock cars are regularly 6 ft. 3 in. high under beam. Can be made any special size required. Cars made of hardwood well braced with iron and will withstand hard usage. Can be equipped with safety catches.

Machinery is fitted throughout with roller bearings, and as gears are hobbed cut, they have teeth uniform in size and operate most quietly. Brake band is lined with vulcanized fibre and speed in lowering, also positive stop, is regulated by a partial application or a final pull on brake cord. Machine is guaranteed for five years and will last a lifetime.

Blue prints on any elevator outfit submitted on request.



Matot Hand Power Elevator

### STOCK SIZES

| No. | Car outside | | Space required | | Hand wheel diam., in. | Mach. space | Head room |
|---|---|---|---|---|---|---|---|
| | Width | Depth | Width | Depth | | | |
| | ft. | ft. | ft.-in. | ft.-in. | | ft.-in. | ft.-in. |
| 1 | 3 | 3 | 3-8¾ | 3-5 | 36 | 3-9 | 10-9 |
| 2 | 3 | 4 | 3-8¾ | 4-5 | 36 | 3-9 | 10-9 |
| 3 | 4 | 4 | 4-8¾ | 4-5 | 42 | 4-7 | 11-7 |
| 4 | 4 | 4 | 4-8¾ | 4-11 | 42 | 4-7 | 11-7 |
| 5 | 4 | 5 | 4-8¾ | 5-5 | 42 | 4-7 | 11-7 |
| 6 | 5 | 6 | 5-8¾ | 6-5 | 48 | 5-1 | 12-1 |

If outfits are installed in brick or tile hatchways, the space required is 2⅜ in. more in width.

## Matot Sidewalk Elevators

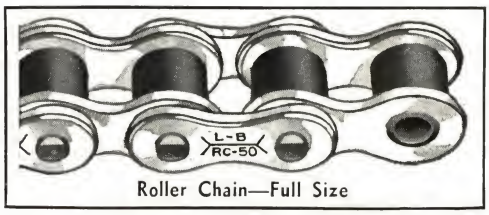
Made in five standard sizes, from 3x5 ft. square, special sizes made to order. Capacities up to 1000 lbs.

## D. A. MATOT ROLLER CHAIN DUMB WAITERS

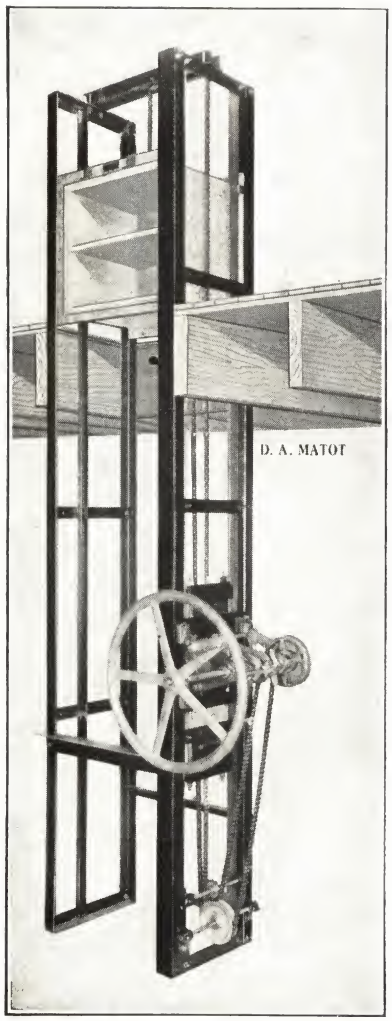
The latest improvement in hand operated dumb waiters using a heavy steel roller chain in place of the regular rope or wire rope as a hoist cable. Illustrations of chain show the heavy type used; ultimate breaking strength of chain is 5800 lbs. Roller chain can be provided on all types of hand power dumb waiters with capacities from 50 to 500 lbs. and over. Equipments can be furnished in all steel construction with either cold rolled steel guides or channel iron guides, as shown in illustrations, or all wood construction as shown on preceding pages, or in combination steel and wood constructed dumb waiters.

The undercounter type is provided with a patented automatic stopping device, eliminating the use of bumpers and unnecessary strain and jar on chain. With the automatic stop we incorporate a special rubber and metal flexible coupling to absorb jar to machine and operator when automatic stop operates. Overhead equipments can be provided with a special safety device on car.

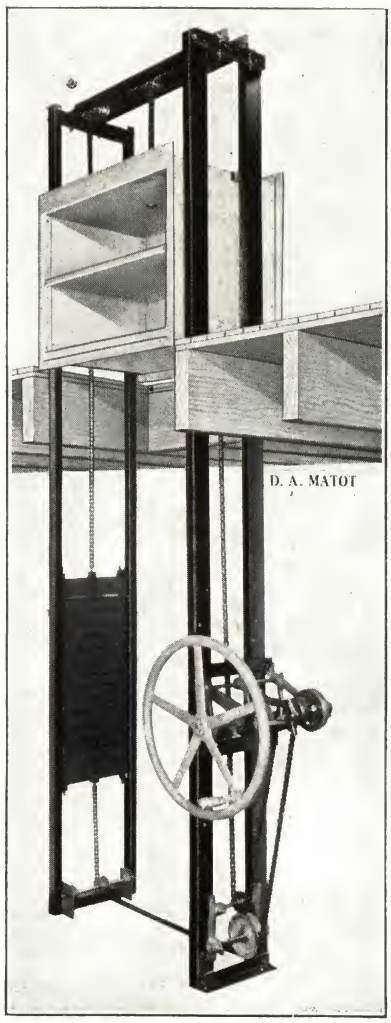
*Equipments provided with the roller chain cost very little more and in most cases the same price as regular equipments, depending on capacity and size.* The use of roller chain eliminates the costly replacement of rope or cable, which is largely due to friction on sides of sheaves. At no time with this type, will it be possible for car to slip, as chain is positively secured in sprocket in machine. The use of roller chain assures less friction and easier and quieter operation.



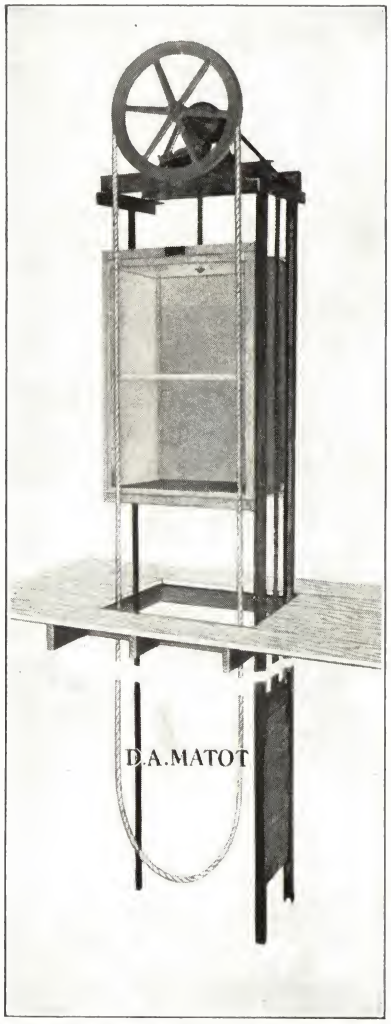
Roller Chain—Full Size



Matot Undercounter All-steel Dumb Waiter; Cold Rolled Guides



Matot Undercounter All-steel Dumb Waiter; Channel Guides



Matot Overhead All-steel Dumb Waiter; Channel Guides

### STANDARD STOCK SIZES UNDERCOUNTER DUMB WAITERS

| No. | Car size outside | | | Space required | | | | Overhead sheave space, in. | Headroom undercounter, in. |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Wood supports | | Steel supports | | | |
| | Width, in. | Depth, in. | Height, in. | Width, in. | Depth, in. | Width, in. | Depth, in. | | |
| 1 | 20 | 16 | 27 | 32 | 18 | 25 | 18 | 4 | 31 |
| 2 | 24 | 20 | 27 | 36 | 22 | 29 | 22 | 4 | 31 |
| 3 | 28 | 24 | 27 | 40 | 26 | 33 | 26 | 4 | 31 |
| 4A | 30 | 15 | 27 | 42 | 17 | 35 | 17 | 4 | 31 |
| 5A | 30 | 20 | 27 | 42 | 22 | 35 | 22 | 4 | 31 |

Machine projects 24 in. from supports.
Machine can be placed in hatchway under car if necessary.
Special sizes furnished to fit building conditions.

# OTIS ELEVATOR COMPANY

GENERAL OFFICES
Otis Building, 260 Eleventh Avenue, NEW YORK, N. Y.
SALES AND SERVICE OFFICES IN ALL PRINCIPAL CITIES OF THE WORLD
Member of The Producers' Council, Inc.

ELEVATORS AND ACCESSORIES OF ALL KINDS AND TYPES — ESCALATORS — DUMBWAITERS — STAGE AND CONSOLE LIFTS.

SKIP, MINE AND FURNACE HOISTS — COMMERCIAL STEEL CASTINGS. INCLINE RAILWAYS.

## FINGER-TIP CONTROL

The extension of the field of application of Otis Signal Control now completes the line of Otis Finger-Tip Control, and makes available to architects and engineers a full line of automatic elevator operation meeting practically all service requirements in all types of building, low—moderate—or high; and either new or old.

All types of automatic operation available for passenger service are now made available for freight service, as well as two additional and simpler forms.

Finger-Tip Automatic Control is divided into several classifications to suit different requirements, as follows:

**Finger-Tip Signal Control**—The finest type of elevator equipment for elevators requiring an attendant. This embodies all the latest hoisting, operating, and control features, with car speeds up to 1200 ft., or even higher, if necessary. It is now used in all types of buildings requiring the finest forms of service. Heretofore this type has been available only for high speed gearless elevators. It has now been developed for geared traction elevators for all moderate speeds. This offers wide possibilities of better service for the more moderate size building, as they can now have the same type of control as their taller neighbors and so be placed in a much better competitive position. A still greater field is opened to owners of existing buildings with geared types of elevators, as this new development can be applied to such elevators at reasonable expense and without the necessity of entirely changing the machines. This will be a great incentive to modernization of elevator equipment in the older buildings and so enable them to compete with newer buildings having the latest type of equipment. The varying needs of the largest types of office buildings during the several rush hour periods of each day can be adequately met in each case by means of special controller arrangements providing adjustable express zones under a traffic handling system known as *Peak-Period Control.* Our nearest office will be glad to make studies to meet any situation. Consult our Sales Bulletins B-400 and B-4004.

**Collective Control**—An advanced type of push-button control now available with automatic door operation, providing highest class of service for elevators either with or without an attendant, designed primarily for apartment house or other service where an attendant is required only part of the time or not at all. Micro Self-leveling and car speeds up to 600 ft. are available.

**Single Call**—The original type of automatic control for intermittent service where the elevators serve only one call at a time, and operate at slow speed.

**Double Button**—A safe and easy type of freight elevator control for use where service conditions do not justify an operator at all times. The elevator is called up or down to a floor and then operated by constant pressure of push-buttons. The car starts when a button is pressed and stops when the button is released. Used only for moderate freight service. Consult our Sales Bulletin B-285.

**Dualite Control** — An improved form of constant pressure push-button control for freight elevators, with which pressure of a single button at a landing calls the car either *up* or *down* to that floor. A light indicates when the car is moving and when it arrives at the floor. Use and operation from within the car are the same as with Double Button. Consult our Sales Bulletin B-476.

## MICRO SELF-LEVELING

This is a feature which may be supplied on all Otis Electric Elevators, except those of the very smallest size. This distinctive Otis two-way feature automatically levels the car at the floor landing, regardless of rope stretch, change in load, and whether or not the car would otherwise have stopped short of the landing or beyond it. Micro leveling speeds up elevator service, reduces current consumption and prolongs the life of the elevator equipment.

## SPECIFICATION UNITS

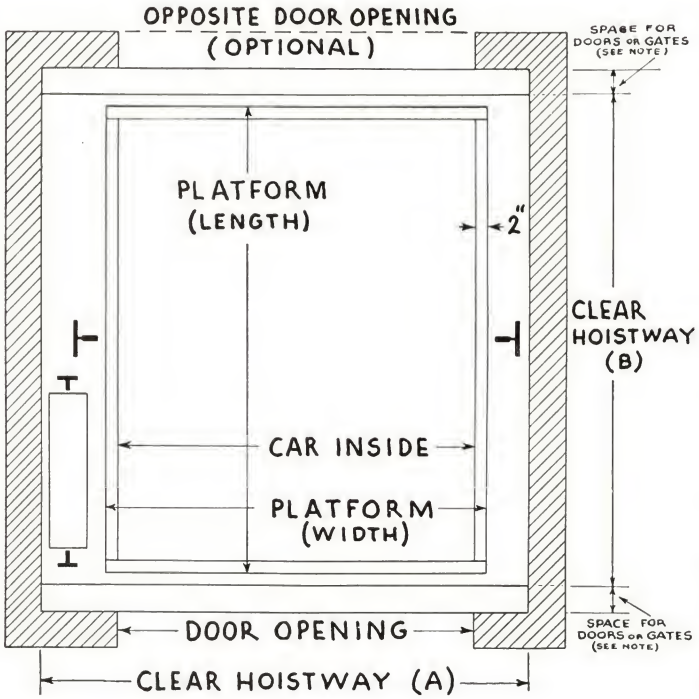
By long experience and an intensive study of layouts of elevators in thousands of buildings, with consideration as to the varying requirements of different types of buildings, it became possible to determine elevator duties and platform sizes that were in the greatest demand for certain service requirements. From these studies we have developed a number of specification units which are applicable to such service. Architectural specifications that conform to these special units assure equipment that has been proven to be particularly suited to such requirements. These complete units are also available for quicker delivery than those which have to be particularly built to order.

Any of our offices will gladly give complete information as to the units available. Additional units are being added to the list as fast as it becomes possible to work them out. Data on several of them are shown in the following pages.

# STANDARD FREIGHT ELEVATORS

Otis has developed a line of standard freight elevators. Use of these standard elevators assures quick delivery.

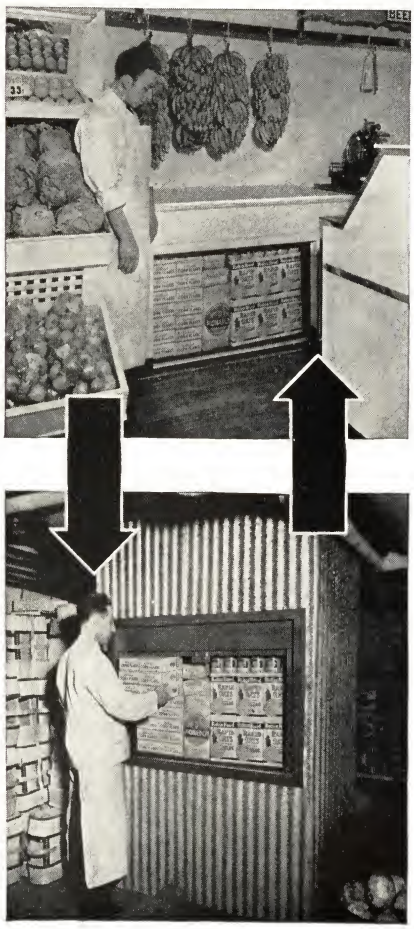
Below are shown space requirements for some of the more popular freight elevators used in warehouses, stores, mills, small factories, and similar buildings. These dimensions are for preliminary use only. The nearest Otis office will gladly provide detailed layouts showing loads, hoistway construction, elevations, etc., for any contemplated installation.




| Capacity (lbs.) | Platform | | Door opening | Hoistway | |
|---|---|---|---|---|---|
| | Width | Length | | (A) | (B) |
| 2500 | 5′ 6″ | 6′ 9″ | 5′ 2″ | 7′ 0″ | 6′ 11½″ |
| | 6′ 6″ | 7′ 6″ | 6′ 2″ | 8′ 0″ | 7′ 8½″ |
| 4000 | 7′ 0″ | 7′ 6″ | 6′ 8″ | 8′ 10½″ | 7′ 8½″ |
| | 8′ 4″ | 10′ 0″ | 8′ 0″ | 10′ 3″ | 10′ 2½″ |
| 5000 | 8′ 4″ | 10′ 0″ | 8′ 0″ | 10′ 3″ | 10′ 2½″ |
| | 8′ 4″ | 12′ 0″ | 8′ 0″ | 10′ 5″ | 12′ 2½″ |
| 6000 | 8′ 4″ | 10′ 0″ | 8′ 0″ | 10′ 3″ | 10′ 2½″ |
| | 8′ 4″ | 12′ 0″ | 8′ 0″ | 10′ 5″ | 12′ 2½″ |
| | Garage 9′ 0″ | 20′ 0″ | 8′ 8″ | 11′ 0″ | 20′ 2½″ |

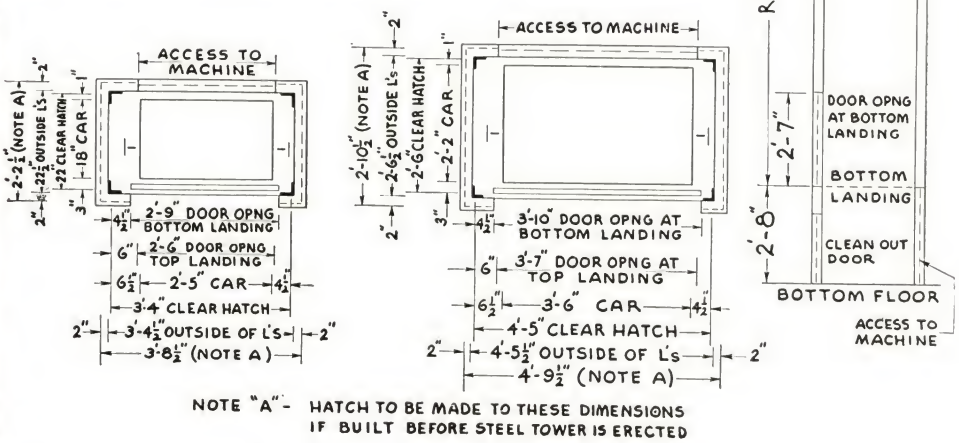
*Note:* A door-opening 7 ft. 6 in. high is generally used for freight service. The space required for vertical-sliding fireproof doors for this opening is 4¾ in. for floor heights 11 ft. 9 in. or more, and 6½ in. for floors less than 11 ft. 9 in. Wood slat hoistway gates require 4 in. for floor heights 13 ft. 1 in. or more, and 5 in. for floors 10 ft. 8¼ in. to 13 ft. 1 in.

# UNDERCOUNTER DUMBWAITER



This electric dumbwaiter is designed for use in stores, restaurants, hotels—anywhere that economy of space and installation is desirable. The Undercounter Dumbwaiter has Finger-Tip automatic control, is foolproof and dependable. It is practical and economical for almost every two-stop, moderate rise dumbwaiter installation.

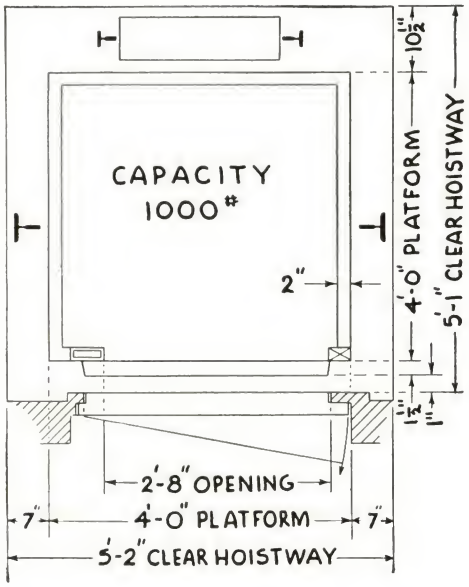
The equipment is complete in itself, has a steel hoistway frame which facilitates quick installation, and requires no pit or expensive alterations. Capacity of car is 300 lbs. at 50 ft. per minute. Maximum rise 17 ft. 6 in. Full automatic push button control. No space is required above the counterlevel for overhead machinery, thus leaving space over the hatchway clear for shelving or other fixtures.

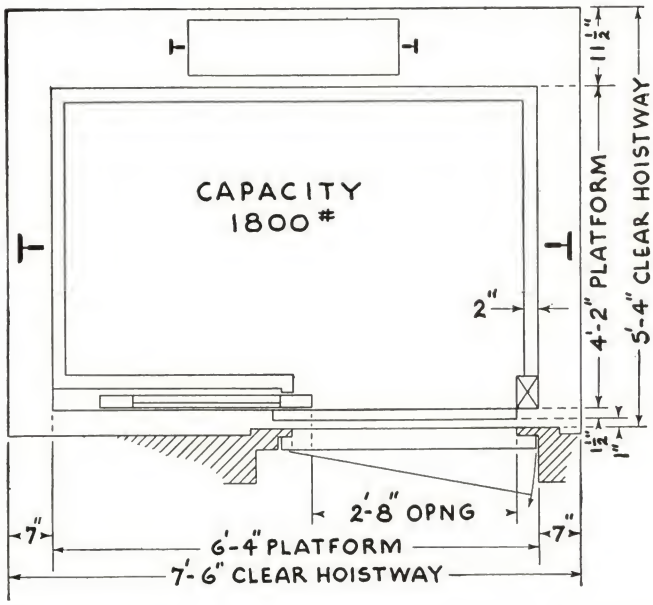



NOTE "A" - HATCH TO BE MADE TO THESE DIMENSIONS IF BUILT BEFORE STEEL TOWER IS ERECTED

# STANDARD PASSENGER ELEVATORS

A complete line of Otis standard passenger elevators covers practically every traffic requirement. Below are shown two standard layouts for automatic elevators for apartment houses of three to six floors. The 1000-lb. capacity car covers minimum elevator requirements, the 1800-lb. capacity car provides greater convenience to tenants and may be more easily equipped with power-operated doors and other improvements.




# PERSONAL-SERVICE ELEVATOR

## A New Otis Elevator for Private Residences

The Otis Personal-Service Elevator provides all advantages of commercial Otis elevators, in a smaller size at a lower price. It is an elevator through and through, and with reasonable care will give years of trouble-free service.

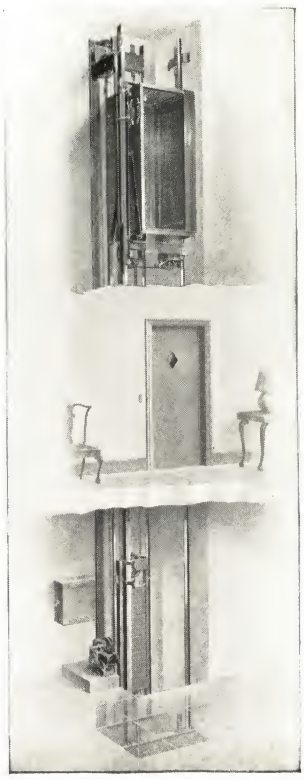
Designed especially for private homes, the Personal-Service Elevator offers quiet, dependable, Finger-Tip automatic elevator service with complete safety. The equipment may be readily installed in existing residences, requires no unsightly penthouse or extensive alteration work, and uses any standard alternating-current house-lighting circuit for power supply.

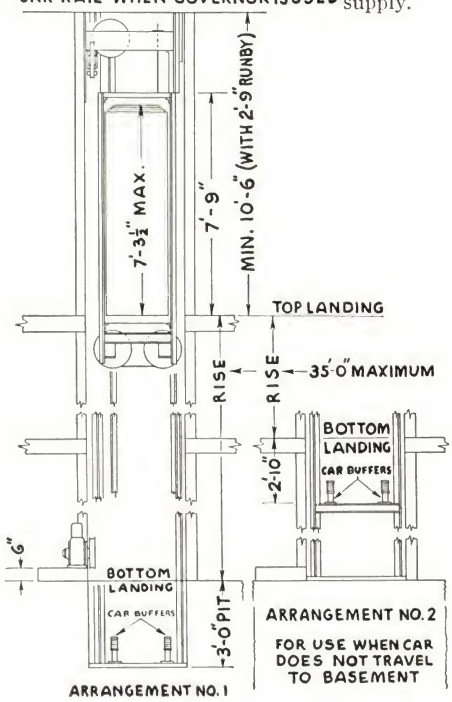
**Steel Frame**—Entire elevator is supported by steel frame mounted on basement floor and extending to top of hoistway.

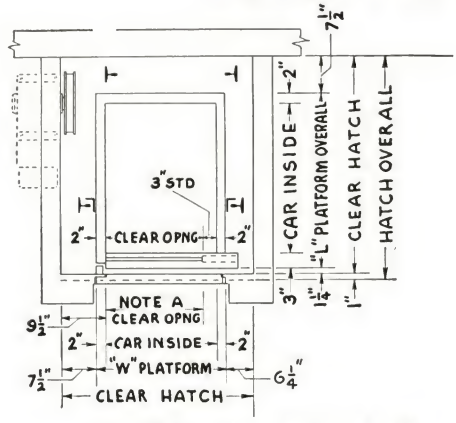
**Attractive Cars**—Cars of wood or metal are available in a variety of finishes and designs.

**All-steel Car Frame**—The all-steel car frame with instantaneous-acting, roll-type safety device, is underslung to permit installation where overhead height is limited.

**Push-Button Control**—Entirely automatic, the Personal-Service Elevator is operated by momentary pressure of buttons in the car or at each landing.






NOTE "A" - CLEAR OPENING 2'-8⅛" FOR OTIS STANDARD 3'-0" SWING DOOR

| | W | L |
|---|---|---|
| MINIMUM CAR SIZE A6092A BROKEN ROPE SAFETY | 2'-2½" | 2'-7" |
| MINIMUM CAR SIZE 6092F GOV. OPER. SAFETY | 2'-2½" | 3'-0" |
| MAXIMUM CAR SIZE EITHER SAFETY | 3'-2" | 3'-8½" |

# OTHER TYPES OF EQUIPMENT AND PRODUCTS

**Sidewalk Elevators**—For the handling of freight, ashes, etc. between basement and street levels. Sturdy labor-saving equipment, embodying the latest safety and operating features.

**Hydraulic Elevators**—Direct lift plunger elevators for sidewalk freight and other short-rise service.

**Hand-Power Elevators** — Used where service requirements are light and do not justify the expense of power-driven elevators. A complete line is offered for prompt delivery.

**Electric Dumbwaiters** — For hotel, apartment and other types of dumbwaiter service requirements including high-speed transfer in stores and banks. This type is in addition to the Undercounter type. Consult our Sales Bulletin B-453.

### Escalators

For use wherever large numbers of people are to be carried a short vertical distance in the least possible time, and without crowding or waiting. Three widths are available with passenger capacities of 4000, 6000 and 8000 per hour. The operating cost is low. Escalators are a profitable merchandising factor in department stores and very useful for banks, restaurants, and other busy enterprises on the second floor of a building. The new streamline model with metal balustrading and unlimited possibilities for special architectural treatment of the balustrading is becoming increasingly popular.

### Commercial Steel Castings

All regular and many special grades, including both heat and acid-resisting alloys, can be furnished from our steel casting plant at Buffalo, using the electric processes.

### Elevator Accessories

Otis manufactures all elevator accessories to the same high standards that govern construction of the basic apparatus. The purchaser thus gains the advantage of a single, unqualified guarantee covering the construction and operation of the complete elevator system.

**Cars**—Elevator cars which reflect painstaking craftsmanship are designed and manufactured by Otis to meet every requirement. This activity embraces the co-ordinated effort of architectural car designers; art metal foundries and finishing departments; specially equipped car shops and experienced field erectors. Many attractive basic designs are available or the services of our architectural car designers may be had without charge for the execution of special designs.

**Door Closers**—Otis Manually-Opened Door Closers and Interlocks—of strong and rugged construction—are of the latest improved designs for all types of service.

**Door Operating Devices** — Otis Power-Operated Door Devices materially reduce the time required at landings and speed up elevator service.

**Door Hangers**—Otis Door Hangers are of the ball bearing sheave type, providing quiet operation and long life.

**Signal Systems**—Otis Signal Systems are designed and built as an integral part of the elevator installation and not as a separate system merely assembled with the elevator. They contain a number of improvements which eliminate false stops of the elevator, save waiting time and speed up the service. Otis Elevator Dispatching Systems are also available. Signal fixtures are of modern and pleasing designs, in many finishes, to match the surroundings.

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### Engineering Service

Otis Elevator Company offers an engineering service for determining the number, type and size of elevators for any particular building. Preliminary drawings showing hoistway sizes, clearances, overhead supports, loads on beams and all other details will be gladly furnished.

This is a regular Otis service, based on over 85 years' experience in building more than half the world's elevators. Even for the most inexpensive type of passenger or freight elevator it is your assurance of an elevator of adequate size, properly located, using stock equipment wherever possible. This service is available without obligation simply by calling the nearest Otis office.

### Modernization

Pioneer in the modernization field, Otis has long specialized in this type of work. New improvements have been so designed that almost every one is adaptable to older equipment. Special methods have been developed for economically installing new cars, doors and other visible parts. Such changes often produce surprisingly good results at moderate cost. The experience of the manufacturer is especially valuable for this type of work, and here again Otis recommendations are yours for the asking.

### Service Facilities

Perhaps no other users of commercial equipment enjoy better service facilities than are extended to the owners of Otis Elevators. All equipment is standardized and parts are readily available at all Otis offices. Inspection, adjustment and repair services are provided at standard rates.

In addition, Otis has in general operation a *complete maintenance service* unsurpassed in efficiency, experience and facilities. This service is a contract agreement whereby we assume the entire care and repair of an Otis Elevator for a reasonable, flat monthly rate. Otis Maintenance Service has gained widespread popularity and is the elevator owner's absolute guarantee of good elevator performance. Availability of such service is an important consideration in the purchase of elevator equipment.

ESTABLISHED 1903

# F. S. PAYNE CO.

## Elevator and Dumbwaiter Manufacturers

GENERAL OFFICE AND WORKS
CAMBRIDGE, MASS.

BRANCH OFFICES
FRANKLIN, MASS. BOSTON, MASS. LOWELL, MASS. NEW HAVEN, CONN. PROVIDENCE, R. I.

### Products

ELECTRIC AND HYDRAULIC ELEVATORS: Passenger, Freight, Hospital, Apartment and Residence Types.

CONTROL SYSTEMS: Car Switch, Full Automatic Push Button, Double Button, Variable Voltage and Self-leveling.

ELECTRIC DUMBWAITERS.

Also Ash Hoists and Sidewalk Elevators.

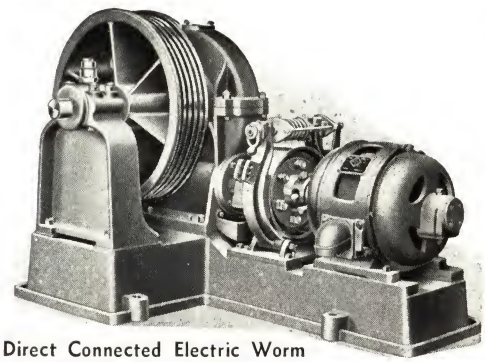
PAYNE

TRADE-MARK

### Experience and Service

Engaged solely in the design, manufacture, installation and maintenance of elevator equipment since 1903, the growth in business has been accompanied by expansion of plant and facilities and of the engineering organization required to anticipate the trends of modern elevators.

A careful study of the technical aspects of each individual project is made to assure equipment which will provide maximum utility for its purpose.

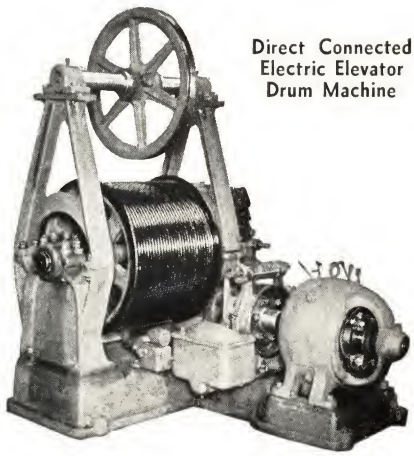


Direct Connected Electric Worm Gear Traction Machine

### Payne Elevator Machines

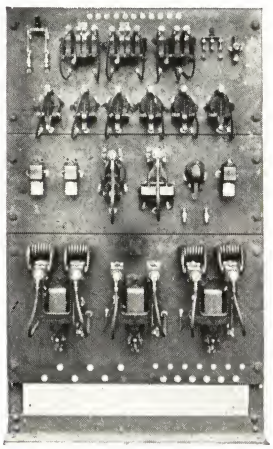
Payne Elevator Machines are single worm geared and of traction or drum type depending upon the conditions to be met. They are characterized by the ruggedness and stability which is essential in equipment classified as capital investment, and represent the refinements of more than 30 years' continual development.

Quietness of operation and smoothness are contributed to by unusually precise gear cutting, careful brake design and dynamic balancing of rotating elements. Other features result in lowered maintenance costs. As in the case of the machine, so throughout the entire elevator installation, no concession is made to safety.



Direct Connected Electric Elevator Drum Machine

### Payne Controllers



Variable Voltage Elevator Controller

Payne Controllers, backed by over 30 years' experience, comprise the simplest dumbwaiter unit to the most elaborate high speed elevator controller. Study of the individual problem assures perfect co-ordination of control equipment with any combination of apparatus.

In combination with the Payne Floor Finder and the appropriate machine arrangement, Payne Controllers provide fully automatic self-leveling for either car switch or push button operation. Besides assuring accurate landings, this equipment effects more gradual acceleration and deceleration resulting in smoother starts and stops.

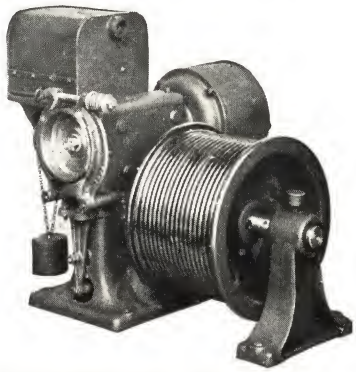
Automatic push button controllers are built in a wide variety of combinations, including collective, constant pressure or dual control with or without provision for automatic door operation.

Payne Controllers embody simplicity of design, rugged construction without electrical or mechanical compromise.

### Payne Dumbwaiters

Five machine sizes, together with appropriate control equipment and accessories, comprise the line of Payne Electric Dumbwaiters.

These machines are suited to all services for which dumbwaiters can be used, and may be arranged for any capacity and speed. They are built either as traction or winding drum types, making possible their application over a wide range of duties.



Electric Dumbwaiter Drum Machine

### Modernization

Payne controllers, brakes, electric door operators and accessories are of such construction as to be readily installed to permit modernizing any existing elevator equipment in an economical manner.

### Elevator Installations

Swift & Company
Standard Oil Company
United States Rubber Co.
American Thread Co.
American Woolen Co.
Cadillac Automobile Co.
Yale University
Harvard University
Albert Kahn, Inc.
Monks & Johnson
Foxboro Co.
Lockwood Greene Engineers, Inc.
New England Power Association
New England Confectionery Co.
Dennison Manufacturing Co.
Walworth Manufacturing Co.
United States Gypsum Co.
United Fruit Co.
Stone & Webster Engineering Corporation
Turner Construction Co.
Colts Patent Fire Arms & Ammunition Co.
Marc Eidlitz & Son, Inc.

MEMORANDA

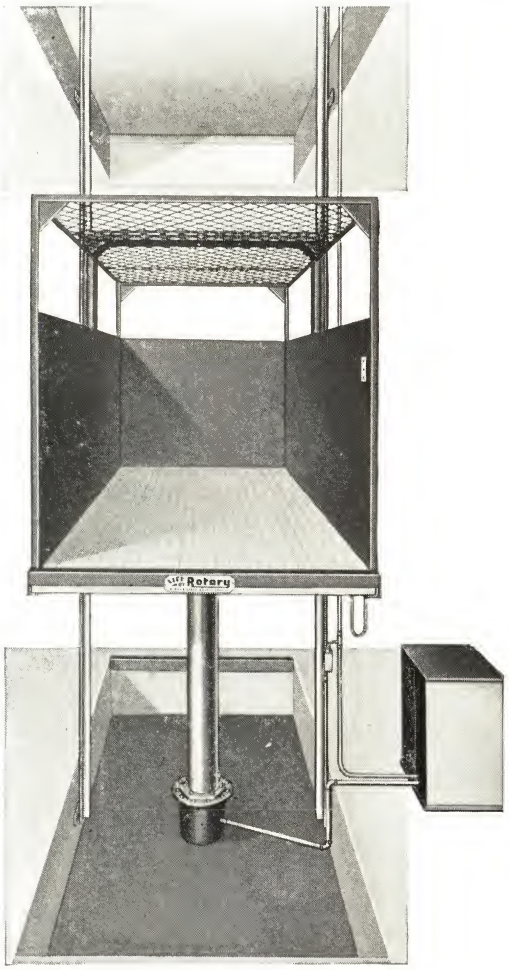
# ROTARY LIFT COMPANY

Designers and Builders of Hydraulic Lifting Devices

MEMPHIS, TENN.

REPRESENTATIVES IN MOST PRINCIPAL CITIES

## HYDRAULIC ELEVATORS—RAMP ELIMINATORS—ELEVATING TABLES




Rotary Hydraulic Elevating Equipment is the most economical and practical type for freight, loading platform, production line and industrial uses of various kinds involving the raising or lowering of materials where travel is 30 ft. or less.

Equipment can be furnished powered by electrically driven pumps using oil, by compressed air with oil as the controlling medium, or by water power from city mains. The electrically driven equipment is preferred because of more positive action and control and more economical operation.

Cost of original equipment is extremely moderate. Since overhead supports, cables, pulleys, counterweights and elaborate control equipment is unnecessary installation cost is very low and can be made in either new or old buildings without additional structural improvements.

Efficiency is unusually high and maintenance is negligible. Power is used only to elevate the load; lowering is by gravity.

Positive safety is inherent in all hydraulic equipment.

### ELEVATORS

Electric-oil hydraulic shown above.

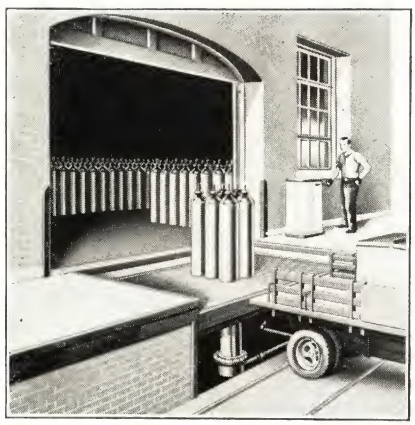
Jacks from 3⅜-in. diameter through 17¾ in. with power units (pumping units) from ¼ hp. through 20 hp., affording various capacities and speeds.

Various control methods are available.

### DATA FOR QUOTATION

Net capacity, total height of travel, speed desired, whether electric, air or water operation is preferred, type of control, dimensions of platform, rough sketch of proposed installation.

Indicate material to be handled.



### RAMP ELIMINATORS

Eliminate the necessity of trucking heavy or bulky materials up inclines. Also widely used on loading platforms as illustrated.

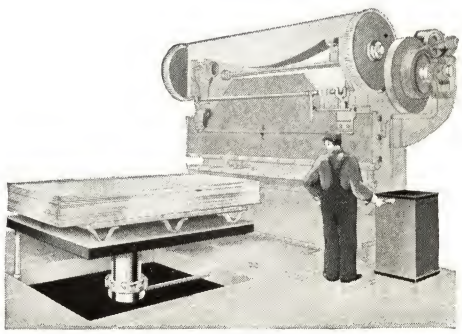
Size, type of platform, type of control, height of travel, etc. tailored to suit plant requirements.

Ramp Eliminators are rapid acting — economical — absolutely safe and dependable.

### ELEVATING TABLES

Designed to elevate material to be fed into machines, on to belt lines, etc. Built to handle loads of ½ ton through 12 tons.

Platform, rise, speed and type of control to specifications. Constant slow speed also available.



# THE SHEPARD ELEVATOR COMPANY

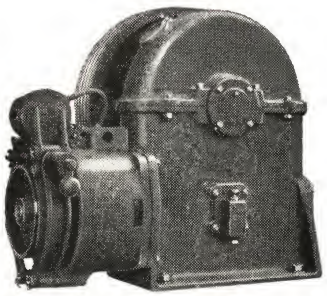
Pioneer Manufacturers of Ball Bearing Electric Elevators

2413-2431 Colerain Avenue
CINCINNATI, OHIO

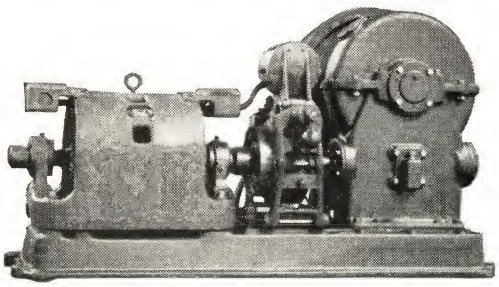
REPRESENTATIVES IN ALL PRINCIPAL CITIES

## *SHEPARD*

GEARED and GEARLESS PASSENGER and FREIGHT ELEVATORS. DUMBWAITERS, SIDEWALK HOISTS and RESIDENCE ELEVATORS. ELEVATOR CONTROL and SIGNAL SYSTEMS of all types. RECTIFIER and VARIABLE VOLTAGE CONTROLLERS a specialty.



**Geared, Ball Bearing, Single Speed, Alternating Current Elevator Machine**
With hand adjustable brake



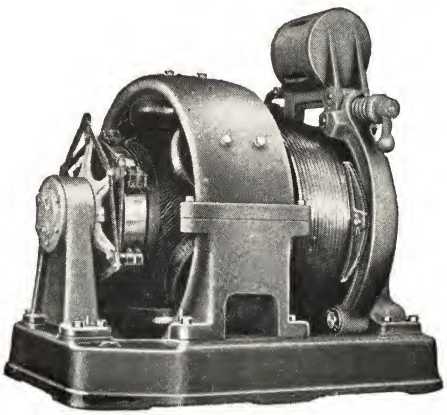
**Geared, Ball Bearing, Alternating Current Elevator Machine**
With two-speed tandem type motor and hand adjustable brake

As a pioneer in the development of the modern elevator, Shepard is credited with the early application of ball bearings to elevator machines—the perfection of safety equipment and other important steps in the progress of this industry.

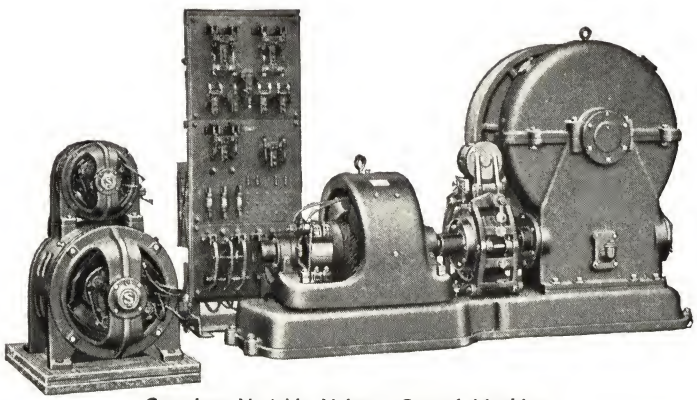
Shepard is one of the few elevator manufacturers who build the complete equipment, including motors and controllers, in their own shops. This advantage is reflected in the high quality of Shepard equipment and in its long and satisfactory performance.

Shepard skillful designing is exhibited in the hoisting machine, brake, controller and floor selector. Dynamically balanced parts and flexible couplings, eliminate noise and vibration.

Many of the leading office buildings, hotels, hospitals, apartment buildings and industrial plants in all sections of the country are equipped with Shepard Elevators. Our Engineers will co-operate with you in the solution of your elevator problems.



**Gearless Machine**
Recommended for 600-ft. speed and over



**Complete Variable Voltage Geared Machine**
Recommended for speeds up to 550 ft.

**Send for booklet on Elevator Planning and Scheduling of Cars for Various Kinds of Service, including diagrams of typical hatchways and penthouses**

# SHEPARD HomeLIFT

Patents Pending—Trade-Mark Reg. U. S. Pat. Off.

## TOMORROW'S HOME WILL HAVE AN ELEVATOR

Shepard HomeLIFT now makes it practical for homes of even moderate cost to have the convenience of an elevator. Architects find that eliminating the front stairway and substituting the Shepard HomeLIFT often provides better first floor arrangement at no extra cost.

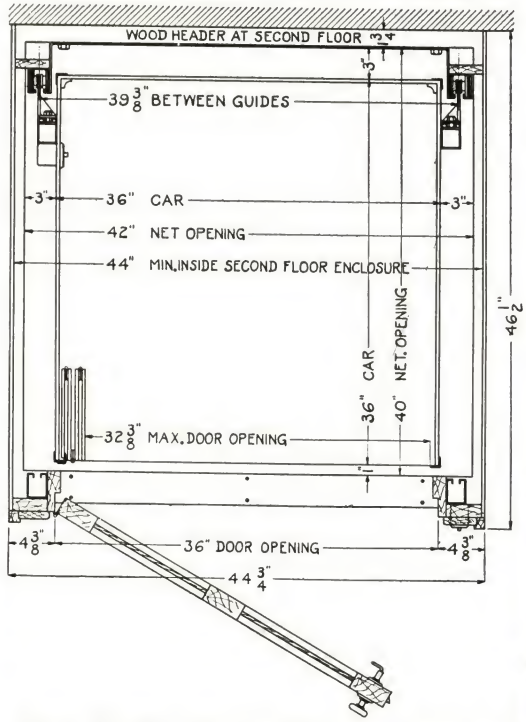
Designed to meet conditions in the average home, the Shepard HomeLIFT is a safe, automatic, electric elevator.

No special power lines need be installed. The HomeLIFT operates from the regular lighting circuit.

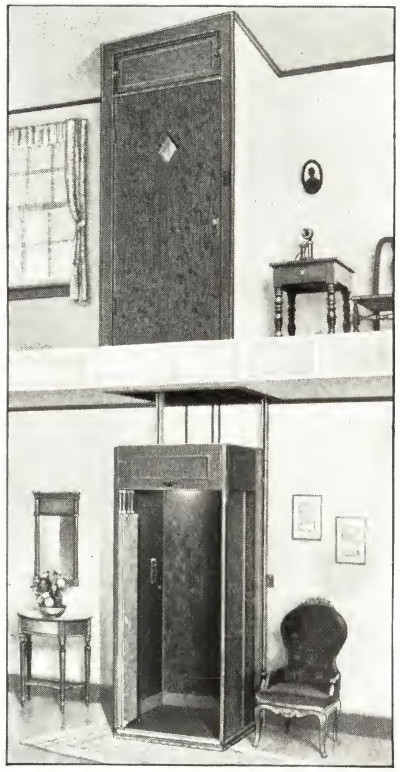
No major alterations need be made. An enclosure on the second floor and an opening between the first and second floors—that is all. When the cab is on the second floor nothing is visible in the room below but the rails along the wall, which may be finished to harmonize with the surroundings.

Installing an elevator in a home is modernization. Modernize with Shepard HomeLift.

The HomeLIFT is made in three standard sizes—with platforms 30x30, 36x36 and 36x42 inches. Special sizes on order. Lifting capacity is 350 lbs.



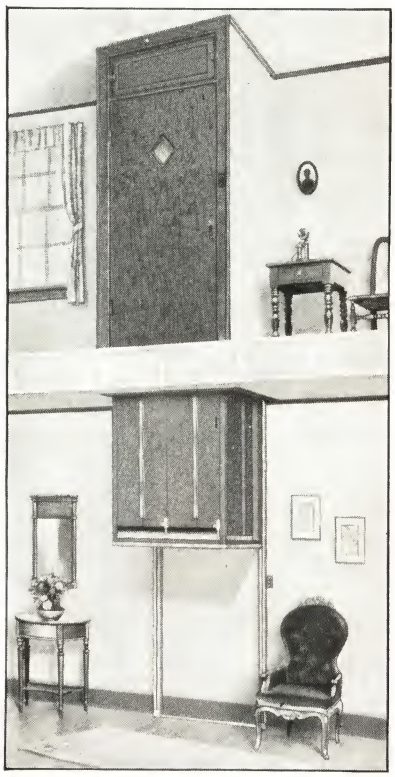

*Note:* For 30-in. square platform, the enclosure and car are 6 in. less in width and depth. Clearances are the same.



**HomeLIFT Completely Installed with Standard Second Floor Enclosure as Supplied**
Note wide entrance to cab

### Convenient and Safe

The HomeLIFT is controlled from each landing and from the cab. When the car is in motion, or at the lower level, the door to the enclosure on the upper floor is automatically locked. The elevator cannot be operated until the enclosure and cab doors are closed, nor can the cab door be opened while the car is in motion. Unless all safety precautions have been taken the elevator will not move. Children and pets may play under the car without fear as the slightest touch on the bottom stops it instantly. The Shepard Elevator has a very effective safety device to stop the car in case of failure of any part of the hoisting mechanism.



**Cab Halfway Between Floors—Enclosure Door and Car Door Are Locked**
Guide rails only are visible when car is up

# SHEPARD HomeLIFT, Sr.

## A LIFT WITH HIGHER SPEED

The Shepard HomeLIFT Senior has been developed for those who desire a lift of more speed. Like the HomeLIFT, it operates from the lighting circuit and has a capacity of 500 lbs. and a speed of 40 ft. per minute. An enclosure is required at each floor.

Full information and descriptive circulars of the HomeLIFT or the HomeLIFT Senior will be furnished on request.

# SEDGWICK MACHINE WORKS

## Manufacturers of Dumb Waiters, Elevators, Hoists and Lifts

TELEPHONE
WAtkins 9-4033

152 West 15th Street
NEW YORK, N. Y.

NATIONAL REPRESENTATION
(Write for name of nearest agent)

FACTORY
POUGHKEEPSIE, N. Y.

### Products

SEDGWICK *Dumb Waiters - Elevators* FOR ALL PURPOSES

HAND POWER DUMB WAITERS and ELEVATORS; ELECTRIC DUMB WAITERS, ELECTRIC RESIDENCE ELEVATORS, ELECTRIC SIDEWALK ELEVATORS; CORRESPONDENCE LIFTS; STAIR ELEVATORS.

Dumb Waiters for Residences, Apartments, Stores, Hotels, Restaurants, Hospitals, Libraries; High Speed, Automatic Brake, Band Brake and Geared Dumb Waiters; Compound Geared Dumb Waiters; Tube Dumb Waiters; Under-Counter Dumb Waiters; Book Lifts, Interfloor Office Lifts for mail, cash, etc.; Residence Fuel Lifts; Trunk Lifts; Mortuary Lifts; Gravity Drops.

Residence Elevators; Individual (Invalid) Elevators; Freight Elevators; Sidewalk Elevators; Hospital Elevators; Garage (Automobile) Elevators; Ash Hoists, Hatchway Hoists and specially designed Lifting equipment.

### Regarding Specifications

Whenever possible consult us before writing specifications. We cannot attempt to include in this catalog complete specifications covering the many types and arrangements of Sedgwick Dumb Waiters and Elevators, but we recommend where specifications are required immediately without opportunity to consult us, the following be used:

Furnish (and install) where shown on plans (one) Sedgwick (name type of equipment) Dumb Waiter (Elevator) in accordance with the manufacturer's blue prints and specifications which shall be submitted to the architect for approval.

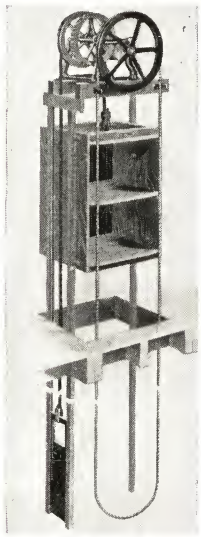


Fig. S3. Type FDCG Dumb Waiter

### Type "FDCG"

(Reg. U. S. Pat. Off.)

### Brake Dumb Waiters

*(For average loads up to 75 lbs. and capacity loads of 200 lbs.)*

Full diameter hoist wheel permits cable to lead directly to car and counterweight, eliminating deflecting sheaves. Machine cut spur gears. Brake adjustable for wear and self-regulating.

Anti-friction steel roller bearings, steel hand wheel and lift wheel shafts, substantial machine frames and steel brace rods.

Widely used in hotels, restaurants, stores, clubs, libraries, schools, churches, hospitals and elsewhere.

Sufficient lifting power for comparatively heavy loads.

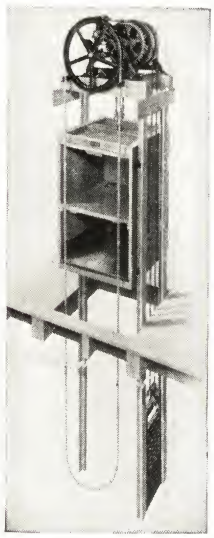


Fig. S4. "Sedg-Versal" Dumb Waiter

### "Sedg-Versal"

(Reg. U. S. Pat. Off.)

### Compound Geared Dumb Waiters

*(For average loads up to 150 lbs. and capacity loads of 500 lbs.)*

For heavy loads or where needs cannot be determined in advance. By using two sets of interchangeable machine cut spur gears the equipment can be adapted for lighter loads and greater speeds. Equipped with automatic or band brake.

Two full diameter hoist wheels, double safety cables, car and counterweight cable equalizers, metal reinforced car bottom and other features contributing to easy operation, safety and durability.

Widely used in banks, bakeries, hotels and schools.

### Automatic Brake Dumb Waiters

*(For average loads up to 25 lbs. and capacity loads of 75 lbs.)*

Dependable, smooth and quiet service. Quality construction throughout. Antifriction steel roller bearings, steel shafting and other refinements. Brake automatic in both directions, holds car stationary at any point.

Three guide runs.

Generally suited to service requirements in private houses and apartments.

### Under-Counter Dumb Waiters

Available in any desired capacity. For service where there is insufficient headroom for overhead machine. Widely used in restaurants, cafeterias, soda fountain stores, and similar establishments where available space is limited. An inconspicuous and convenient method of saving time and labor.

Consult with us when this type equipment is required.

### Sedgwick Tube Dumb Waiters

For use where enclosures are not desired or required and appearance is important.

Any capacity desired.

Tubes of steel, brass or white metal.

Cars of wood or any metal as preferred.

Special folder illustrating various arrangements will be gladly sent with blue prints and specifications.

### Standard Sizes and Dimensions

The standard car sizes of Sedgwick Dumb Waiters are given below but special sizes and arrangements can be built to meet unusual needs.

No. 1—20 in. wide, 16 in. deep
No. 2—24 in. wide, 20 in. deep
No. 3—28 in. wide, 24 in. deep
No. 4—32 in. wide, 28 in. deep
No. 5—36 in. wide, 36 in. deep

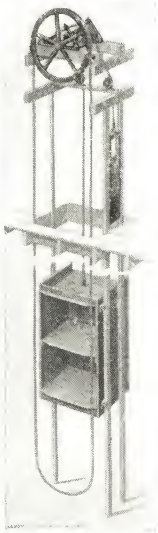


Fig. S1. Automatic Brake Dumb Waiter



Fig. S5. Under-Counter Dumb Waiter

NOTE: *See page 3 for additional information on hand power Dumb Waiters and hand power and electric Elevators.*

# SEDGWICK ELECTRIC "ROTO-WAITER"

## The Modern Word for Full Automatic Electric Dumb Waiter Equipment

In addition to all the elements of full automatic service, the unique design of the Roto-Waiter permits the use of a motor operating in one direction only, thereby eliminating the complicated control required for reversible motors.

The upward and downward movement of car is controlled by an endless steel roller chain drive which prevents any possibility of over-travel. Gravity starts the car in either direction reducing the starting torque, reducing current consumption and permitting the use of a smaller size motor.

### Advantages

**Moderate Price**—The original cost of the Roto-Waiter is economical. 25% is saved by the ingenious use of standard non-reversible motors. About 50% of the control parts ordinarily needed are eliminated. Only one-third of moving parts and contacts formerly required are needed. The gravity starting feature and more efficient application of power permit the use of a smaller horsepower motor with obvious saving.

**Easy and Economical Installation**—Easy installation is due to the self-supporting, self-contained and completely assembled construction. Easily and quickly installed by local mechanics without specialized experience. Wiring mounted in place ready for current connection.

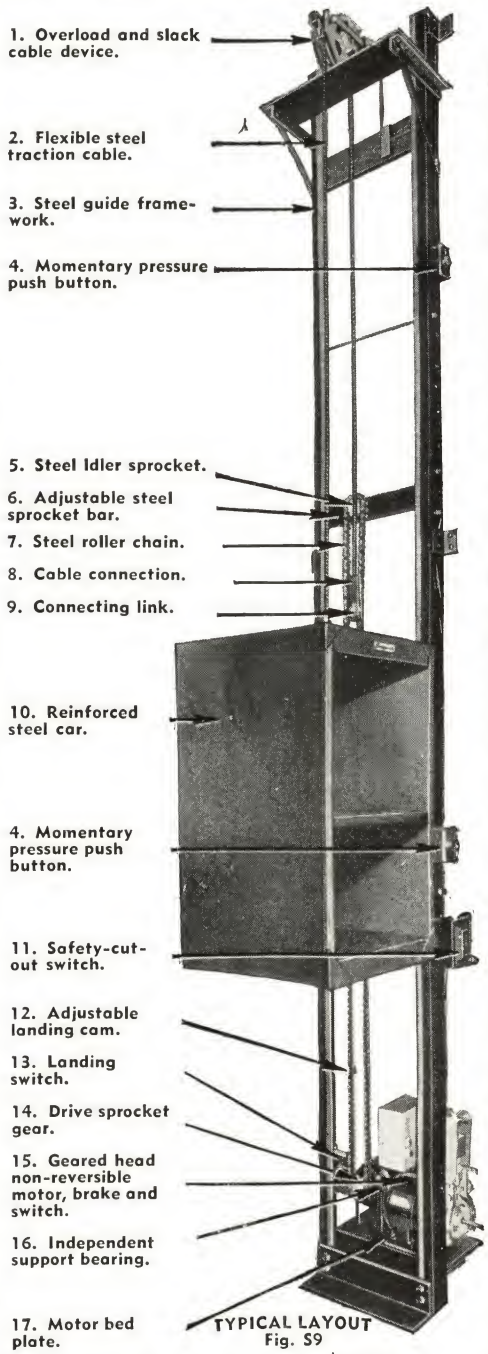
**Simple Operation**—There is only one push button to press at each landing.

**Compactness**—Requires only minimum space. Extravagant allowances for clearances are unnecessary.

**Durability**—Each unit is factory built and tested under extreme load conditions at the factory and guaranteed years of trouble-free performance.

**Adaptability**—The Roto-Waiter may be adapted to individual conditions. Machine may be located at top, bottom, side or back of unit. Car may open on one, two or three fronts and may serve under-counter or standard terminal at upper landing. Accurate landings of cars are made at all times.

**Safety**—No over-travel is possible with the Roto-Waiter. It is the only safe type of electric dumb waiter for under-counter installation. Electric door interlocks require doors to be closed while car is moving. The quality of design, materials and workmanship assure safety.




TYPICAL LAYOUT
Fig. S9

### Specifications

**Machine**—Single speed, Sedgwick Roto-Waiter Type Motor with worm gear. Motor mounted on steel base secured directly to steel angle guide framework. SKF self-aligning bearing between motor and driving sprocket.

Worm gear drive in separate compartment filled with special lubricant, providing automatic lubrication for all machine parts subject to wear.

Electro-magnetic brake adjustable to provide accurate floor stops and to compensate for wear. Gravity and spring set brake with adjustable tension, magnetically released and energized only when motor is running. Motor controlled by brake action. Brake arranged with double shoes having 1/16-in. brake lining.

Standard steel roller chain hardened and ground. Steel cable connected to master pin on chain. Chain drive endless to prevent over-travel.

Sprocket idler shaft with fitting for grease lubrication.

**Control**—Full automatic type permitting car to be called and dispatched from landing levels by momentary pressure on push buttons. Landing switch and cams automatically stop car at proper levels. Operating mechanism designed so that motor does not start against load.

**Current**—Suitable electric current brought to within 6 ft. of motor by the electrical contractor.

**Speed** — Approximately 50 ft. per minute.

**Car**—Sixteen-gauge steel, reinforced substantially for heavy duty and fitted with one solid shelf, duco finished. Suspended by special extra flexible steel hoisting cable.

**Guide Rails**—Steel angles not less than 3x4x3/8in., machine finished, rigidly braced and secured by steel tie rods.

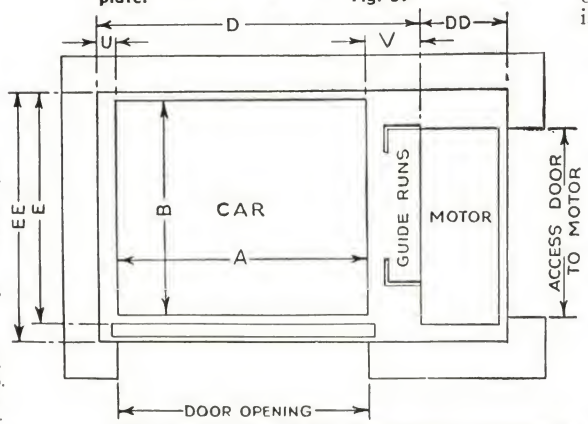
Steel angle guide self-supporting framework installed in one single section if possible.

**Overload Safety and Slack Cable Switch**—An overload safety device and slack cable switch to prevent overloading of car beyond a predetermined and adjustable point, and to shut off current if the car is caught and held in its up or down movement.

**Door Interlocks**—For each door to render operation impossible when a door is open and prevent the opening of doors except the one at which the car is at rest.

### Typical Installations

Fort Orange Club, Albany, N. Y.
Red Lion Grille, Boston, Mass.
The Cleveland Club, Cleveland, Ohio
Greenfield Restaurant, Detroit, Mich.
Montclair Library, Montclair, N. J.
City Hall, Paterson, N. J.
Bank for Savings, New York, N. Y.
Empire State Building, New York, N. Y.
Hotel Astor, New York, N. Y.
Tavern on the Green, New York, N. Y.
Standard Brands, Inc., Peekskill, N. Y.
City Infirmary, Poughkeepsie, N. Y.
Vassar College, Poughkeepsie, N. Y.
Murphy Memorial Hospital, Whittier, Cal.
Stone Grill, Akron, Ohio
Oriole Cafeteria, Baltimore, Md.
LaSalle Street, Terminal, Chicago, Ill.
Price Candy Company, Kansas City, Mo.
Fullers Earth Company, Midway, Fla.
University of West Virginia, Morgantown, W. Va.




This shows only one of the many possible arrangements

CHART OF SIZES (INCHES)

| No. | 1 | 2A | 2B | 3 | 4 | 5A | 5B | 5C |
|---|---|---|---|---|---|---|---|---|
| A | 12 | 24 | 24 | 28 | 32 | 36 | 36 | 36 |
| B | 16 | 20 | 20 | 24 | 28 | 36 | 36 | 36 |
| D | 20 | 32 | 32 | 36 | 40 | 48 | 48 | 48 |
| E | 19 | 23 | 23 | 27 | 31 | 39 | 39 | 39 |
| U | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| V | 6 | 6 | 6 | 6 | 6 | 7 | 7 | 7 |
| DD | 8 | 9 | 10 | 10 | 11 | 12 | 13 | 13 |
| EE | 21 | 25 | 25 | 29 | 33 | 41 | 41 | 41 |
| Capacities lbs. | 25 | 75 | 100 | 150 | 225 | 300 | 400 | 500 |

Dimensions D & E=net clear shaftsizes.

Dimensions DD=motor spaces.

Dimension EE allows 2 in. for vertical sliding doors by others. Other types of doors require different clearances. Consider individually.

## Doors and Enclosures



Fig. S10. Rotor-Waiter at Basement Dishwashing Station

Owners usually prefer their builders to include dumb waiter doors with hoistway enclosure work. However, requirements may be consolidated in one contract and doors of any practical arrangement and materials can be supplied by Sedgwick.

We can also supply hoistway enclosure surrounding the dumb waiter. The illustration shows steel shaft enclosure of sheet metal mounted on a steel angle tower. This construction has the advantages of being self-supporting, providing ample strength to carry the dumb waiter equipment and of occupying little space. Steel doors of the vertical sliding type are usually supplied.

## All-metal Equipment

Sedgwick Dumb Waiters and Elevators, both electric and hand power, can be supplied with Monel, Allegheny Metal, Steel or other metal cars, and with metal guide rails, if desired.

## High Speed Package and Correspondence Lift

Especially designed for rapid service between two or more floors where letters orders, prints, books, cartons and other light loads must be transmitted from one department to another. Also used for quick handling of money between cashier's desk and sales stations on other floors. This high speed lift is reasonably priced, costs nothing to operate and will give years of service without maintenance expense. Attractive in appearance, occupies little floor space and requires no enclosure. Blue prints and specifications upon request.

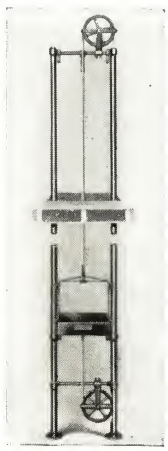


Fig. S2. High Speed Correspondence Lift

## Sedgwick Fuel and Log Lifts

A modern convenience to serve fireplaces on one or more floors. Brings fuel close to the point of use. Sedgwick Fuel Lifts for light duty, Log Lifts for heavier loads.

## Sedgwick Dumb Waiters — General Information

To assure selection of the type most suitable, we suggest following information be furnished so we can make recommendations and supply complete data, specifications and blue prints:

(1) What is the outfit to be used for?
(2) How large a car is desired?
(3) How far does the car travel?
(4) Have you a place prepared for the outfit?
(5) What will be the weight of average loads?
(6) What will be the weight of heaviest load?
(7) Are the loads all up, all down, or both up and down?
(8) Who will operate?
(9) Are all doors located in same front?
(10) If electric equipment is needed, give type of current available: voltage, cycles, phase.
(11) Whenever possible and particularly in the case of electrical equipment furnish rough sketch showing actual conditions and location of all door openings.

## Sedgwick Service

The Sedgwick Service Department offers architects the facilities of an engineering organization properly equipped for planning, constructing and installing vertical transportation equipment, and will assist architects in determining the selection of equipment to give best results under specific conditions.

**Installation**—Prices are quoted covering installation complete by experienced Sedgwick mechanics or we will supply equipment with blue prints and complete instructions for installation by local mechanics.

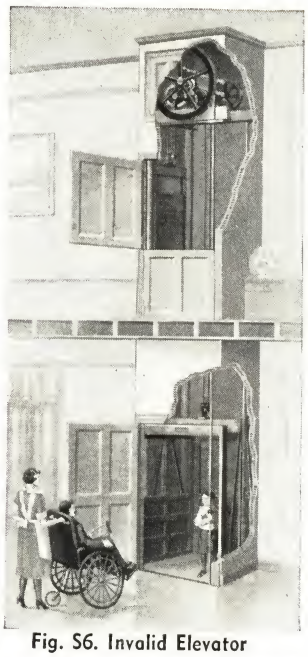


Fig. S6. Invalid Elevator



Fig. S7. Residence Elevator

## Sedgwick Sidewalk Elevators

Electric or hand power, Designed for dependable and economical handling of merchandise between basement and grade level and for ash removal. Details of all types will be furnished upon request.

## Sedgwick Mortuary Lifts

Provide an easy means of carrying caskets and other loads from one floor to another. Readily installed, cost nothing to operate and can be furnished in size and style to meet practically any requirement.

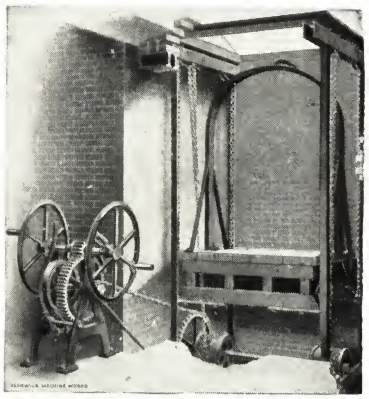


Fig. S8. Sidewalk Elevator Type "M"

## Sedgwick Hand Power Residence or Invalid Elevators

The automatic brake individual elevator is designed for those who cannot or should not climb stairs and can be easily operated with absolute safety by any person. There are six standard sizes with cars ranging from 30 inches square to 5 feet square, accommodating one or two persons, or invalid in wheel chair with an attendant. Special sizes built to order. The entire equipment is so carefully designed and constructed that about four pounds of pull on the hand rope will raise or lower car and full load. For this particular service the Sedgwick Individual Elevator is the most satisfactory and economical outfit obtainable.

## Sedgwick Electric Residence Elevators

Where the requirements of service are more in the line of general passenger duty we strongly recommend the use of the Electric Residence Elevator. Designed on the Roto-Drive principle, this equipment embodies all the advantages of full automatic service, and, at the same time, has been so greatly simplified as to be practical for private house service without the necessity of constant inspection and maintenance. Operating mechanism and control require a minimum amount of space above car. (See illustration at left — machine behind access door at top.) New, unique safety features. Special types to meet all needs and conditions.

## Literature on Request

We have complete catalogs on Sedgwick Dumb Waiters and Elevators available on request. These catalogs are particularly useful to the architect or builder as they contain charts showing all measurements necessary for the installation of equipment.

## Guarantee

All Sedgwick equipment is fully guaranteed against defects in workmanship and materials and is noted for long trouble-free service.

# THE W. S. TYLER COMPANY

CLEVELAND, OHIO

BRANCHES

NEW YORK BOSTON PHILADELPHIA CHICAGO LONDON, ENGLAND ST. CATHARINES, CANADA

## TYLER ELEVATOR CARS AND ENTRANCES

**The Final Complement to the Modern Elevator Plant. To the Tenant and Visitor They Evidence the Best in Transportation. When Selecting Elevator Equipment, Architects and Engineers Should Consider the Source of These Facilities.**

SEE TYLER CATALOG, SECTION 14 (SEE FILE INDEX)

## EXAMPLES OF ELEVATOR INSTALLATIONS WITH TYLER EQUIPMENT

### Commercial Buildings

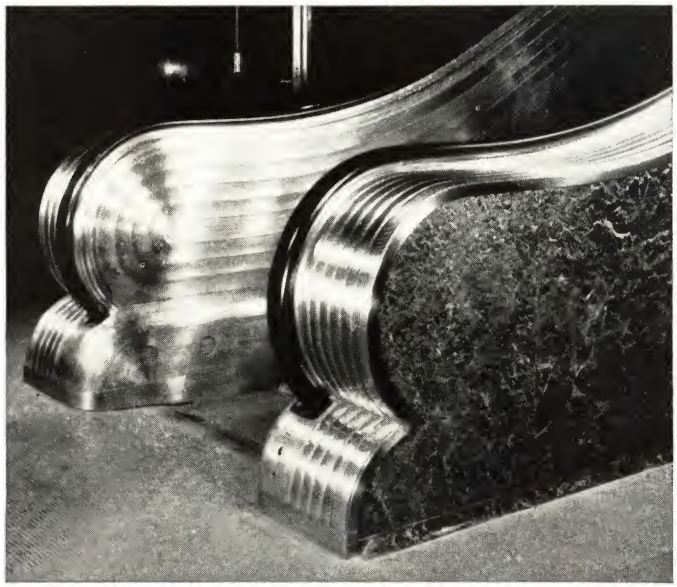
Aetna Life Insurance Company, Hartford, Conn.
Chicago Board of Trade Building, Chicago
Chrysler Building, New York
Empire State Building, New York
Fisher Building, Detroit
Insurance Company of North America, New York
Lincoln Building, New York
Metropolitan Life Insurance Co., New York
New York Central Building, New York
New York Life Insurance Co., New York
Rockefeller Center, Inc., New York
Terminal Tower Bldg., Cleveland
Tribune Tower Bldg., Chicago
United Shoe Machinery Company, Boston

### Hospitals

Alleghany General Hospital, Pittsburgh, Pa.
Bellevue Hospital, New York
Boston City Hospital, Boston
Hospital for Chronic Diseases, Welfare Island, N. Y.
Kings County Hospital, Brooklyn
Lakeside Hospital, Cleveland
New York Hospital and Cornell Medical School, New York

### Department Stores

Wm. H. Block Company, Indianapolis
Carson Pirie Scott and Company, Chicago
Marshall Field and Company, Chicago
Forbes and Wallace Company, Springfield, Mass.
G. Fox and Company, Hartford, Conn.
Halle Bros. Co., Cleveland
The Higbee Company, Cleveland
J. L. Hudson Company, Detroit
James McCreery and Co., New York
The May Company, Cleveland
Rike-Kumler Store, Dayton, Ohio
Stewart and Company, Baltimore
Wm. Taylor Son and Co., Cleveland
Wanamaker's, Philadelphia and New York
H. P. Wasson and Company, Indianapolis
Woodward and Lothrop, Washington, D. C.



Tyler Escalator Balustrades
International Building, Rockefeller Center

### Hotels

Book-Cadillac Hotel, Detroit
Haddon Hall, Atlantic City
Hotel Cleveland, Cleveland

Tyler Elevator Entrance, Watts Building



### Banks

American Bank Building, Portland, Ore.
Bankers Trust Company Building, New York
Central National Bank, Cleveland
Chase National Bank, New York
Fidelity-Philadelphia Trust Building, Philadelphia
First National Bank, Memphis, Tenn.
Irving Trust Company, New York
Bank of Manhattan Company, New York
Mellon National Bank, Pittsburgh
National City Bank, Cleveland

### Modernization

Hotel Astor, New York
Elliott Square Building, Buffalo, N. Y.
The Genesee Building, Buffalo, N. Y.
Hume Mansur Co. Building, Indianapolis
Insurance Building, Omaha, Nebr.
LaSalle Hotel, Chicago
Mallers Building, Chicago
Muncipal Building, New York
The Park Building, Pittsburgh
Philadelphia Bourse, Philadelphia
Rookery Building, Chicago
The Seelbach Hotel, Louisville, Ky.
Stroh Building, Detroit
David Whitney Building, Detroit

Tyler Elevator Car, Bank of Manhattan Co.



# THE WARNER ELEVATOR MFG. CO.

FOUNDED 1860

GENERAL OFFICES AND FACTORY

Annex Station, CINCINNATI, OHIO

BRANCH OFFICES AND SERVICE STATIONS IN MORE THAN FIFTY CITIES

## Facilities

The largest and most modernly equipped factory devoted exclusively to the manufacture of elevators west of New York. In this factory are manufactured the complete elevator — including motors, controllers, cars, safety devices, etc. All devices are thoroughly tested in our 100-ft. Test Tower. Expert individual attention by skilled workmen is given to each installation and at the same time the production facilities are such that the benefits of quantity production may be obtained.

## Engineering Service

We solicit the opportunity of making layouts showing plan and elevation dimensions and load reaction for proposed installations. We maintain an Engineering Department with men long experienced in the elevator business, qualified to make recommendations as to the type of elevator best suited to the duties required.

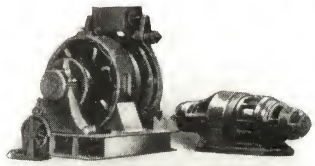
## Cost

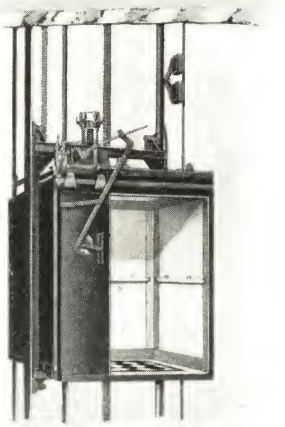
It is generally recognized by architects, engineers and building owners, that the cost of an elevator must be computed over its entire life, not merely in its initial selling price. All sizes of WARNER machines are of liberal proportions for duties required, manufactured on a precision tool basis, all parts being standard and interchangeable. There is a similarity of design and features of development embodied throughout the entire line which give all WARNER machines an indelible stamp of quality.

## Service

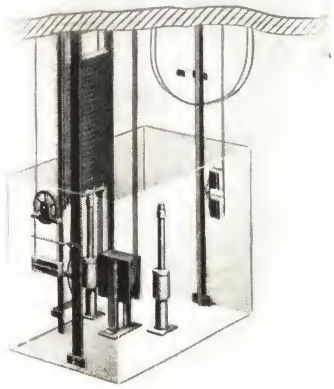
WARNER design and construction is fundamentally rugged, eliminating the need in all but the most complicated automatic installations, of what is commonly called elevator "Service." While we maintain branch offices and service stations in many of the larger cities for the transaction of our regular business, our interpretation of "Service" on elevators means a product built to endure and give service at the very minimum of expense; not the maintenance of or need of such in the way of high cost elevator service men. Machines bearing our name

WARNER









are manufactured complete in our Cincinnati factory, and our records and stock are so complete that emergency repairs can be shipped promptly. Such service is not only good but it is economical for our customers.

## Primary Current Considerations

Most cities supply only alternating current as the primary current for elevator operation. Passenger elevator service is satisfactory with alternating current up to 150 ft. per minute using single speed motors, and with two-speed alternating current motors up to 250 ft. per minute. Direct current from individual motor generator sets, known as *unit multi voltage or variable voltage,* is necessary for elevators of 300 ft. per minute or more. The use of variable voltage for lower car speeds than 300 ft. does not contribute either to the comfort, economy or dependability of the elevator, and should be avoided. Likewise, high-speed motor generators should be avoided.

## Products

ELECTRIC ELEVATORS of all types, including:
GEARLESS ELEVATORS for highest speed service
GEARED ELEVATORS for the average speed
CONTROL TYPES, including:
- Automatic Signal Stopping
- Automatic Collective
- Automatic Single Call
- Semi-Automatic
- Continuous Pressure Push Button
- Car Switch
- Car Switch Call-Back

DOOR OPERATORS—all types of electric and manual for both car and enclosure doors
ELEVATOR CARS—
- Standard designs with choice of finishes
- Special designs on architect's specifications
- Elevator car accessories, fan-lights, hand rails, etc.

RESIDENCE ELEVATORS
DUMBWAITERS
- Electric—Standard and Undercounter type, Hand Power

SIDEWALK ELEVATORS
- Electric, Hydro-electric, Hand Power

HAND POWER ELEVATORS

*Illustration shows Warner High Speed Gearless Passenger Elevator*

# CONSTRUCTION

THE WARNER ELEVATOR MFG. CO. from the beginning specialized in the highest grade of worm geared elevators, first drum and later traction type. No radical experiments have been sold and our customers have simplified equipment well made, which requires little attention or upkeep expense. We have made refinements from year to year through the forty years that such equipment has been sold, and now offer a complete line of standardized elevators with such features as:

### Timken Tapered Roller Bearings

Plates A and B show standard bearing construction on WARNER geared elevators. The drum shaft is fixed, and the spider bearing the worm gear and driving sheave rotate on suitable approved Timken tapered roller bearings. This eliminates most of the starting friction and wear that, sooner or later, calls for expensive repairs on the bushed or babbitted type drum shaft.

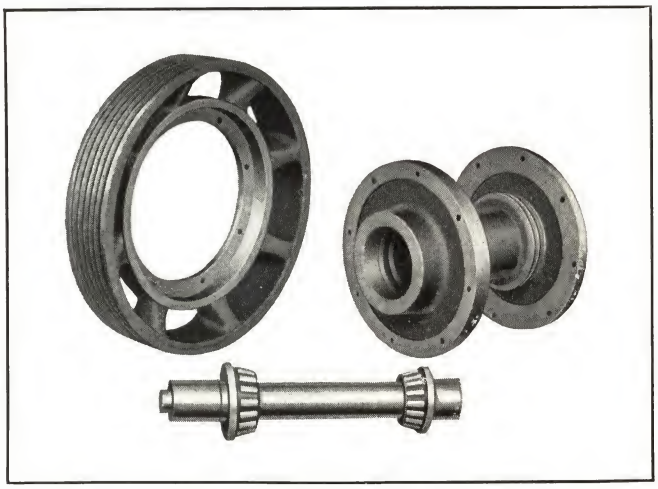


Plate A
Spider, and Shaft on which it Rotates with Demountable Rim

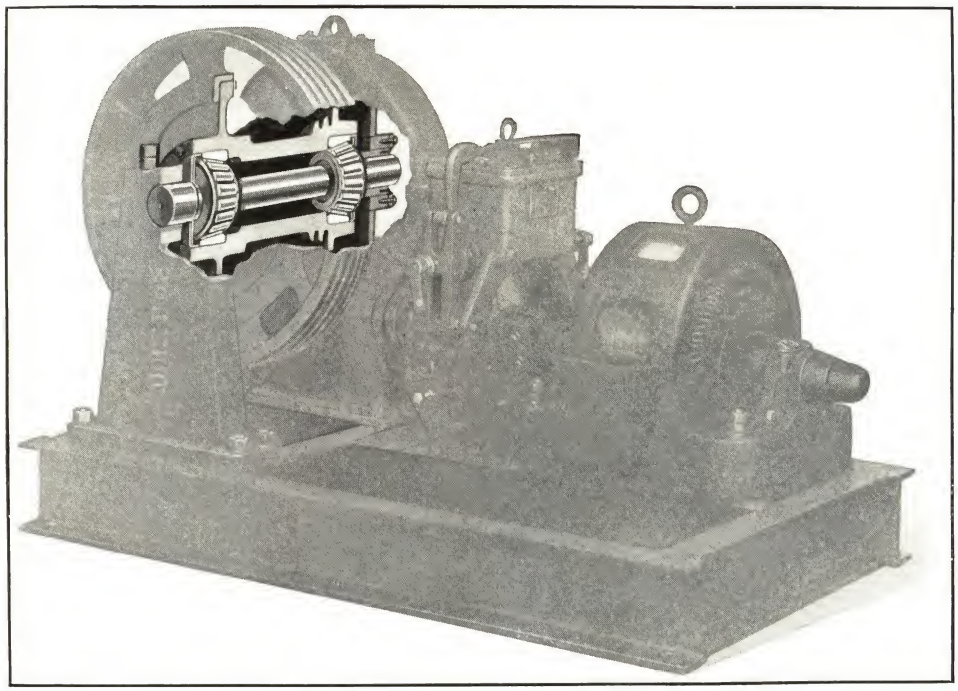


Plate B
Warner Engine Equipped with Timken Roller Bearings

### Cast Steel Demountable Sheave

The driving sheave illustrated in Plate A carries the entire weight of car, load and counterbalance. WARNER uses the best steel casting available for this sheave, instead of iron or semi-steel, as is sometimes used to save in cost. It has the hardness and toughness necessary to give traction and little wear with highest quality steel cables. It is also demountable for easy and less costly replacement when wear does occur.

### Welded Steel Bedplate

For greater strength and rigidity, WARNER uses deep ship channel sections, arc welded, with planed bearing pads for housing and motor. This bedplate maintains factory alignment of all parts so necessary for continued good service.

### Micro Adjustment

Another vulnerable point in elevator construction where wear is most likely to occur is at gear centers. Through the use of an eccentric shaft (Plate C) on each end of the fixed axle, the gears may be raised or lowered into closer mesh. This device permits both initial and later adjustments and adds years of service to the elevator.

WARNER

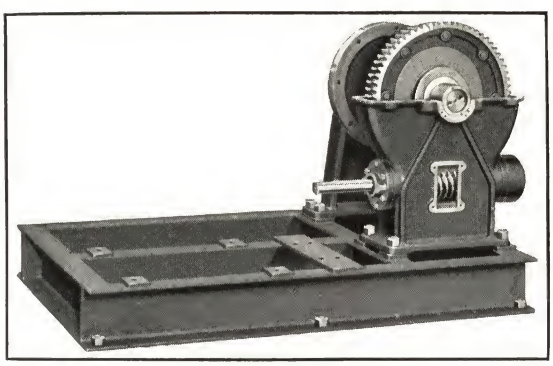


Plate C
Showing Micro Worm Gear Adjustment and Steel Bedplate

# TYPES OF CONTROLS



Main Assembly Floor, The Warner Elevator Mfg. Co. Plant, Cincinnati, Ohio

## Automatic Signal Stopping

The Automatic Signal Stopping system is a control plan used with a bank of elevators. The first car passing the floor in the direction indicated by the call stops for the passenger. A lantern over the entrance indicates to the waiting passenger the car which will answer his call. In this system all stops are automatic. An attendant in the car registers the destinations of all passengers as they enter and initiates the start with a lever that automatically closes the door.

## Automatic Collective

This type of control, sometimes called interceptive control, permits the elevator to stop at all floors from which calls have been registered. This type requires no operator, but an operator can be used in rush periods to accelerate the service.

## Automatic Single Call

This type of control is used in buildings of four stories or less or in higher buildings if the service is light. A person riding in the elevator has the exclusive use of the car until he reaches his destination, often advantageous in hospital buildings or small apartment buildings. Momentary pressure of a button at the landing calls the car, if not in use, and it stops accurately at the floor called, unlocking the enclosure door.

## Semi-Automatic

Up-down buttons are provided in the car and single buttons at each floor landing. Continuous pressure of a car button moves the car in the direction desired. Continuous pressure on a landing button brings the car to that floor, where it stops automatically. Two lights are provided in the landing button panel—the red light indicating the car is coming and the green light indicating the car has arrived at the floor and the doors may be opened.



Warner Under-Counter Type Dumbwaiter

## Continuous Pressure Push Button

Up-down buttons are provided in the car and at each floor landing. By continuous pressure of a button, the car moves in the direction desired. When the pressure on the button is released the car stops. If fireproof doors are used, vision panels should be provided so that floor button can be released when the car arrives at the floor.

## Car Switch Control

The Car Switch Control is the simplest type available and is quite satisfactory for freight or passenger service where an operator is used on the car.

## Car Switch Call Back

WARNER Car Switch Call Back Control consists of a sturdy switch in the car for operation and inching to the floors from the car; and a push button at each floor to operate the elevator from the floor.

## Leveling

Automatic Leveling is often an advantage when the elevator travels at a car speed of 300 ft. per minute or more. The WARNER automatic leveling system has the advantage of two-way leveling, requiring less braking pressure than when the car is required to stop accurately on the approach, thus affording faster and smoother stops.

## Door Operators

Door operators manufactured by the Warner Company fall in three general classes:

(1) **Master Operators** — On the cars, opening and closing both car and enclosure doors at high speed, for office building service, as shown on Gearless Elevator cut.

(2) **Car Door or Gate Operators**— Independent of enclosure doors. These operate at slower speed and are adapted to apartments and stores.

(3) **Car Door or Gate Closers**— Of the spring type with hold-open latch and magnetic release. These car gates are opened by hand and close automatically when another call is made for the elevator.



Small Type Passenger Elevator

# APARTMENT HOUSE AND RESIDENCE ELEVATORS

The Warner Company offers a small passenger elevator suitable for smaller apartment houses, stores and fine residences where not more than 3 or 4 passengers are to be carried per trip. This is a traction type elevator, provided with Timken roller bearings and the other advantages of Warner commercial elevators, excepting it is a smaller size offered at a lower price.

We also offer a special design residence elevator for operation where only two landings are to be served and the total travel does not exceed 12 ft. The maximum car size of this elevator is 3 ft. square; 350 lbs. capacity at slow speed; operates from any standard alternating current house lighting circuit.

# DUMBWAITERS

The Warner Company offers a complete line of electric dumbwaiters. For installations of three or more stories, the machinery is generally placed directly over the shaftway on supports furnished by others, the guides, etc., being fastened to the building as in the case of a regulator elevator. For a dumbwaiter serving only two floors, under-counter type, we offer a unit built complete in its own steel supporting frame and shipped assembled ready to place in the floor opening. A considerable saving in cost can be made with this unit if only a hole in the floor is provided in advance of installation; the enclosure, if furnished, must be applied after installation of the dumbwaiter.

# HAND POWER AND ELECTRIC ELEVATORS

The line of hand power elevators is complete, including dumbwaiters, sidewalk hoists, and counterbalanced hoists for short lifts of two or more floors. They also offer an electric sidewalk elevator of the worm gear type and hydro-electric for short lifts in any location.

# ELEVATOR SUPPLIES COMPANY, INC.

## Manufacturers of ES Products of Quality

EXECUTIVE AND SALES OFFICES:
420 Lexington Avenue, NEW YORK, N. Y.

WORKS:
RAHWAY, N. J.

DISTRICT OFFICES

BOSTON, MASS., 143 Federal Street
CHICAGO, ILL., 111 So. Jefferson Street
CLEVELAND, OHIO, 1114 Fidelity Building, 1940 E. 6th Street
LOS ANGELES, CAL., 1829 Vassar Street, Glendale
SAN FRANCISCO, CAL., 186 Fifth Street
PHILADELPHIA, PA., 927 Sansom Street

CANADIAN REPRESENTATIVE: Canadian Elevator Equipment Co., Ltd., TORONTO, ONT.

## MORE THAN 40 YEARS OF EXPERIENCE INSURE THE QUALITY OF ES PRODUCTS

This experience is available, for the asking, to those seeking a solution to the problems that constantly arise in the modernization of vertical traffic.

The following is but a generalized list of ES products. Space does not permit a detailed account of design, materials, construction, operation and adaptability.

Such information, however, will be gladly furnished to anyone interested upon request to any of the offices listed above.

## ELEVATOR DOOR OPERATING EQUIPMENT

### Electric Door Operators for Passenger and Freight Elevators

**Type "M"**—Used on elevators for opening and closing car and hatchway doors. It is a unit mechanism located above elevator car at front of car. The car door panels are operated by an electric motor which rotates a drive nut on a threaded driving shaft, thus converting the rotary movement of the motor to a straight line horizontal movement of the driving shaft. The drive shaft transmits the power to the car door panels through a multiplying lever or levers. A built-in, positive acting electric eddy current brake automatically cushions the doors and prevents them from slamming in either direction. The eddy current brake also serves to hold the doors in position at either limit of travel. A clutch mechanism is mounted on one of the car doors which transmits movement to the hatchway doors so the car and hatchway door panels open and close simultaneously. However, the clutch is disengaged while the car is in motion.

**Type "PB"**—A small compact unit mounted on top of the car at the front and, by power operation, opens and closes collapsible car gates (or light weight sliding car doors).

### Pneumatic Door Operators

**Type "B"**—A single-acting air-operated cylinder by means of which the door is opened, and within which is a helical spring for closing the door and locking it in closed position. To prevent door from slamming open or shut, a double-acting oil check unit is coupled to the door operator arm.

**Double Acting Type "B"**—Same construction and dimensions as Type "B", but used for doors in excess of 450 lbs. total weight. Employs two adjustable check connecting links in the oil check unit instead of one, so that stresses of operation may be equally divided between them.

**Overhead Type "B"**—Consists, briefly, of lever arms on the doors, connected to two opposed pneumatic cylinders in turn connected to a common valve chest which alternately turns air pressure into one cylinder for opening stroke and into the other cylinder for the closing stroke. Single double-acting oil check unit.

### Manually Operated Door Closers

**Single Cushioning Type**—A simple cylinder-unit device designed to close and lock doors automatically, quietly and rapidly. Has a single adjustable check unit to prevent door from slamming during *closing* motion only.

**Double Cushioning Type**—Same as Single Cushioning Type except that Cushioning adjustment is provided to prevent door from slamming *open and closed.*

### Interlock Equipment

Interlocks prevent the movement of the elevator while any door is open, thereby reducing to a minimum the possibility of accidents to passengers entering or leaving car. Our years of experience in the manufacture and installation of thousands of interlocks under all manner of conditions and codes are your assurance of the safety and efficiency of operation of ES Interlocks.

### Sheave Type Hangers

A careful study of the stresses and strains set up in hangers used for fast power operated doors has resulted in the development of a complete line of hangers, especially designed to meet the requirements of such service. These hangers are available in two classes, Type "A" and Type "BB". Type "A" Hangers are larger and have carrying capacities up to 1000 lbs. per panel. Type "BB" are recommended for usage under conditions requiring carrying capacities not more than 250 lbs. per panel.

## ELEVATOR SIGNAL SYSTEMS FOR ALL TYPES OF BUILDINGS

It is the height and character of a building, plus the degree of efficiency desired of the elevator service, that determine which type of major and auxiliary elevator signaling systems shall be used. This company is especially fitted, through experience, to act in an advisory capacity as to which systems shall be used, and, through its extensive facilities, to provide promptly such systems as might be decided upon. In the following we merely list the systems that are most generally used. Complete details of operation and equipment will be furnished on request.

### Major Signal Systems

Pre-Registering Signal System.
Complete or Full Flashlight Signal System.
Flashlight Annunciator System.
Locdrop Annunciator.
Flash-Set Annunciator System.
Combination Push Button and Illuminated Signal Panel System.
Department Store Signal System.

### Supplementary Signal Devices

Automatic Dispatching Systems.
Car Position and Motion Indicator.
Tell-Tale Annunciator.
Car Position Indicator.
Mechanical Indicator.
Vertical Mechanical Indicator.
Electric Position Indicators.
Fadelite Indicator.
Starter's Call Back.

## OTHER ES PRODUCTS

**Elevator Accessories**—A complete line of elevator service-improving equipment such as, Illuminated Thresholds, Guide Lubricators, Collapsible Car Gates, Curtain Gate Fenders, Directional Signs, Travel Recorders, Reverse Phase Relays, Stop Recorders, etc.

**Electric Dumbwaiters**—For all types of buildings and service.

**Televeyors**—Continuous duty electric tray conveyors entirely self-contained in portable, vertical cabinets for service between two connecting floors.

**Televators**—Complete electric push button dumbwaiters entirely self-contained in portable steel cabinets for service between two connecting floors.

**Steel Fireproof Theatre Curtains**—A fireproof, rigid steel theatre curtain that meets local ordinances and the requirements of Section 237 of the Building Code recommended by the National Board of Fire Underwriters.

**Orchestra Platform and/or Organ Console Lift**—Permits entire floor of orchestra pit or organ console platform to be raised or lowered at will.

**Special Purpose Machinery**—Our engineering experience and factory facilities are ideally coordinated to produce machinery of all kinds for special purposes.

**Machinery for the Wire Industry**—Such items as Continuous Wire Drawing Machines, High Speed Twisters, Reelers and Spoolers, Insulating Machines for silk, cotton and paper. Also Impregnating and Waxing Equipment for flame-stop wire and non-metallic sheathed cable.

# GRANT ELEVATOR EQUIPMENT CORP.

33-36 57th Street, WOODSIDE, LONG ISLAND, N. Y.

CALIFORNIA REPRESENTATIVE: Grant Products & Hardware Co., 443 South San Pedro Street, LOS ANGELES, CAL.

AGENCIES IN PRINCIPAL CITIES

## Products

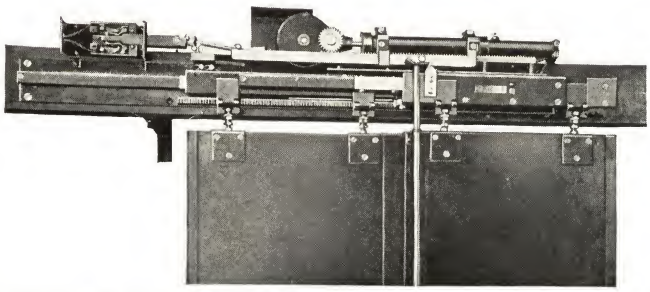
GEM BALL BEARING GRILLE GATE HANGERS.
GEM BALL BEARING GRILLE GATE HANGERS (cantilever type).
GEM BALL BEARING ELEVATOR DOOR HANGERS.
GRANT COMBINED GRILLE GATE HANGERS (cantilever type) with Liquid Closer.
GRANT BALL BEARING ELEVATOR DOOR HANGERS.
GRANT BALL BEARING GRILLE DOOR HANGERS (overhead type).
GRANT AUTOMATIC ELEVATOR DOOR CLOSERS.
GRANT ELEVATOR BAR LOCKS.
GRANT ELEVATOR ELECTRIC SAFETY SWITCHES.
GRANT ELEVATOR SIGNALS.
GRANT DIAL INDICATORS.
GRANT SELF-CLOSING HANGERS.

**For Sash Pulley, Window Hardware, etc., see page of Grant Pulley and Hardware Company as listed in File Index**

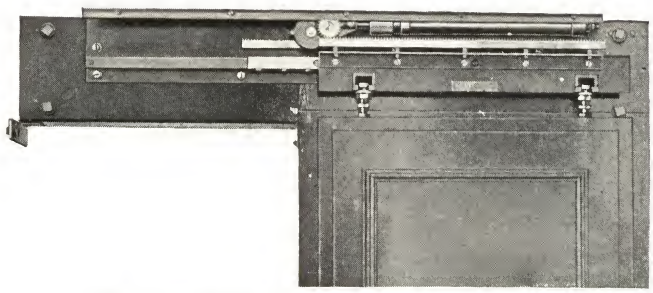
## Grant Self-closing Hangers

The latest addition to our line. These combined hangers and closers are designed to effect economies in price and labor. They are complete factory built devices which offer many worthwhile advantages, viz.:

No toggle arms.
No detailing.
No erection difficulties.
No sill projection (push button type).
No special reinforcement required in doors.
No structural support required.



**This Type Is for Hollow Metal or Kalamein in Single, Two-speed or Bi-parting Doors**
With or without locks and interlocks for car switch or push button elevators



**This Type Is for Any Wood or Kalamein Door Not Over 100 Lbs.**
Single slide only. No lock or interlock

## Grant Door Hanger

A pioneer in the use of cold drawn steel shapes.
Three-way adjustments. Vertical, lateral and plumbing without removing door from hanger.

## Grant Door Closer

Strong two-spring closer, leakproof and with full bronze bushed joints on all closer arms.

## Grant Interlocks

Non-short-circuiting switches encased in Bakelite and fully approved by the Associated Casualty Companies.

## Grant Gate Operator (Self-closing)

For gates in bank and other partitions.
Cantilever Type—For low partitions.
Overhead Type—For high partitions.
Gates may be up to 3 ft. in width and 100 lbs. in weight. Guaranteed not to sag or fail to close and lock.

## Grant Quality

All of the Grant devices listed above are constructed of the best material obtainable, accurately and carefully made to insure satisfaction, service and long life. Grant products have been favorably received and have enjoyed a good reputation for the past 30 years.
A few instances of Grant quality are given herewith.

*Catalogs, Prices and Full Size Details of All Our Specialties Will Be Sent on Request*

# WAGNER MANUFACTURING COMPANY

## Manufacturers of Elevator Door Hangers and Operators

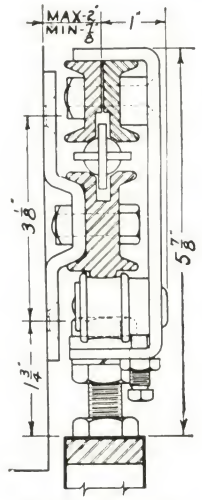
MAIN OFFICE AND WORKS

CEDAR FALLS, IOWA

SALES AGENCIES IN ALL LARGE CITIES

For Wagner Overhead Garage Door Hardware, see File Index

### Wagner Ball Bearing Elevator Door Hangers




Type 100 Section Single Sliding Hanger

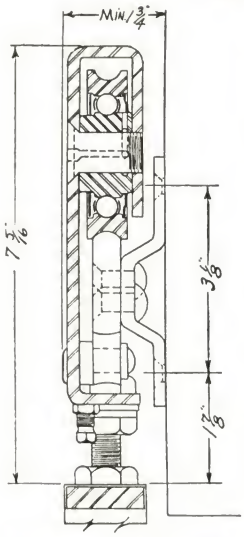
Hanger tracks are machined from a one-piece high carbon special I-beam section. Hanger bars are made from high carbon channel sections.

Ball raceways, track, hanger bars, and guide roller rails are milled, insuring true surfaces and smooth raceways. 5/8-in. diameter chrome nickel balls, spaced to provide at least a five-point bearing under the hanger bar at any point of its travel, are held in place by a heavy steel floating retainer bar.

Flanged adjustable guide rollers prevent derailing and absorb upthrust.

Guide thrust roller treads and guide roller rails are machined to a radius to coincide with distance from ball centers, which permits the hangers to automatically adjust themselves to irregularities in the enclosure construction.

### Atlas Sheave Hangers




Atlas Type "B-1" Sheave Hanger

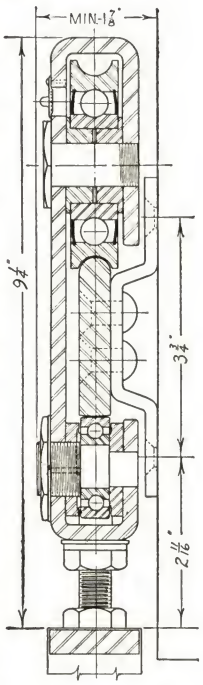
Atlas Type A-1 Sheave Hangers are intended for use with power door operators. Track is drawn from a special analysis high carbon steel. Both sheaves and stay rollers are equipped with high grade ball bearings, with provision for pressure lubrication.

Atlas Type A-1 Sheave Hangers are furnished with continuous or unit housings; one for each door panel, which are fastened to the top of the door panel by two pendant bolts. Vertical and lateral adjustment is provided.

The Atlas Type B-1 Sheave Hangers are intended for use in connection with manually operated door closers, and for other purposes where the heavier type is not required. These hangers are equipped with large sheaves and ball bearings to insure easy operation and long life. Provision is made for pressure gun lubrication. The track is drawn from high carbon steel.

Atlas Type B-1 Sheave Hangers are furnished with continuous or unit housings; one for each door panel, which are fastened to the top of the door panel by two pendant bolts. Vertical and lateral adjustment is provided.

### Wagner Elevator Door Closer and Check




Atlas Type "A-1" Sheave Hanger

The Wagner Elevator Door Closer insures automatic, noiseless and positive closing and locking of sliding elevator doors.

Wagner Car Door or Gate Closers for push button controlled elevators are of the counterweighted type and can be furnished with electric interlocks and electrically released hold open devices.

Wagner Electric Safety Interlocks, used in conjunction with Wagner Closers, insure the closing and locking of elevator enclosure doors before the car can be started.

Wagner Door Closers and Interlocks can also be provided with cam operated mechanical lock for push button operation.

### Wagner Electric Mechanical Barlock Interlock

The Wagner Electric Mechanical Barlock Interlock provides positive locking of sliding elevator doors where a door closer is not required. Doors must be locked before interlock circuit is closed and car can be started.

### Wagner Power Elevator Door Operators

**Vertical Type**—Air opening, spring closing.

**Overhead Type**—Air opening and closing.

**Master Pneumatic Operator**—Master air power unit on car, enclosure doors and car doors operated simultaneously, power opening, spring closing.

**Master Electric Operator**—Master electric power unit on car, enclosure doors and car doors operated simultaneously, power opening, spring closing, high speed or slow speed operation.

**Electric Car Gate or Door Operators**—For push button elevators.

### Underwriters' Labeled Hardware

Elevator Door Hangers, Closers and Power Operators can be furnished with Underwriters' Laboratories labels.

### Wagner Elevator Signal Equipment

Flashlight signal systems. Flashlight annunciator signal systems. Restrictive signal systems. Mechanical reset target type annunciator signal systems. Waiting passenger lanterns, mechanical and electric indicators.

### Boardman Elevator Traffic Control

The Boardman Elevator Traffic Control is an elevator dispatching system of the selective type, which, when applied to an elevator system, increases elevator efficiency and improves the elevator service.

Wagner-Boardman Traffic Engineers make a specialty of elevator traffic control and the results of years of study and experience are available to building owners and builders.

MEMORANDA

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## - SECTION - 23

Section Number 1/5 Catalog Number

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**General Electric Co.** ..... 23/10
See also ..... 23/2

### Varnished Cambric

**Anaconda Wire & Cable Co.** .... 23/1
**Crescent Insulated Wire & Cable Co.** ..... 23/2
G-E ..... 23/10
**General Electric Co.** ..... 23/10

### Weatherproof and Slow Burning

**Anaconda Wire & Cable Co.** .... 23/1
**Crescent Insulated Wire & Cable Co.** ..... 23/2
G-E ..... 23/10
**General Electric Co.** ..... 23/10
**Hazard Insulated Wire Works, Div. of Okonite Co.** ..... 23/3
Performite ..... 23/3
Safecote ..... 23/3
Specifications ..... 23/3

## WIRING DEVICES

### Electric

**Adam, Frank, Electric Co.** ... 23/13
**Arrow-Hart & Hegeman Electric Co.** ..... 23/8
**Bryant Electric Co.** ..... 23/9
F-A ..... 23/13
G-E ..... 23/10
**General Electric Co.** ..... 23/10
H & H ..... 23/8
**Hubbell, Harvey, Inc.** ..... 23/11
P & S ..... 23/12
P&S-Despard ..... 23/12
**Pass & Seymour, Inc.** ..... 23/12
See also ..... 24/13
Specifications ... 23/8; 23/10; 23/12

### Radio

**Arrow-Hart & Hegeman Electric Co.** ..... 23/8
**Bryant Electric Co.** ..... 23/9
**Capehart, Inc.** ..... 25/13
G-E ..... 23/10
**General Electric Co.** ..... 23/10
H & H ..... 23/8
Specifications ..... 23/8

ANACONDA
from mine to consumer
REG. U.S. PAT. OFF.

# Handbook

# OF ELECTRICAL WIRE AND CABLE

All materials and recommendations in this handbook conform to the National Electrical Code. Where local regulations are in excess of the National Electrical Code, consult local inspection authorities.

ANACONDA WIRE & CABLE COMPANY

GENERAL SALES DEPARTMENT • 25 BROADWAY, NEW YORK • • • CHICAGO • 20 NORTH WACKER DRIVE

# ANACONDA WIRING MATERIALS
# Recommended for Service Conditions

The following tables present a means of selecting the proper wire or cable for service conditions encountered in all types of buildings. All recommendations are based upon requirements of the National Electrical Code. Where code requirements are a minimum, a choice of more desirable materials is also given. Local authorities should be consulted in all cases.

| CONDITION | KIND OF JOB | ANACONDA PRODUCT |
|---|---|---|
| **1. SERVICE ENTRANCE** Overhead | Best | **Service Entrance Cable;** Types SC, SCF, SC-100, SCF-100 (without conduit; may be run through to range.) |
| | Desirable | **Service Drop Cable;** Types C, CF, (with conduit protection down wall of house to meter.) |
| | Inexpensive | **Weatherproof Wire;** Type URC. |
| Underground | Commercial, Industrial | **Lead-sheathed Cable;** Types RL or VC, in conduit or duct. |
| | Residences, other small buildings | **Duraseal Cable;** Type T if buried entire length; Type D if extended up to overhead lines. |
| **2. RUNS TO OUTBL'D'GS, GARAGES, GROUNDS** Overhead | Desirable | **Service Drop Cable;** Types C, CF, (with conduit protection down wall of building to meter.) |
| | Inexpensive | **Weatherproof Wire;** Type URC. |
| Underground | Residences, other small buildings | **Duraseal Cable;** Type T if buried entire length; Type D if extended up to overhead lines. |
| **3. OPEN WIRING** Industrial Installations, Residences, etc. | Dry Locations Normal conditions | **Rubber-insulated Braid-covered Wire;** Type R single conductors, solid or stranded. (Code, Intermediate, 30%, Duracode or Special Grades.) |
| | Dry Locations Liable to mechanical injury | Same; but protect by running in boards or in either Anaconda Flexible Steel Conduit or Duraduct Flexible Nonmetallic Conduit. |
| | Damp or Wet Locations | **Lead-sheathed** or **Rubber-jacketed Wire** or **Cable.** |
| | Corrosive Locations | **Weatherproof** or **Rubber-jacketed Wire** or **Cable** as directed by local authorities. |
| | Hazardous Locations | **Open Wiring not Permitted.** |
| | Hot Locations | **Rubber-insulated Braid-covered Wire;** Type R (spec. rubber compound) **Asbestos Wire and Cable;** Type AVC. |
| **4. CONCEALED KNOB-AND-TUBE WORK** | Dry Locations Normal conditions | **Rubber-insulated Braid-covered Wire;** Type R single conductors, solid or stranded. (Code, Intermediate, 30%, Duracode or Special Grades.) |
| | Dry Locations Liable to mechanical injury | Same; but protect by running in boards or in either Anaconda Flexible Steel Conduit or Duraduct Flexible Nonmetallic Conduit. |
| | Damp or Wet Locations | **Rubber-jacketed Wire or Cable.** |
| | Corrosive Locations | **Rubber-jacketed Wire or Cable.** |
| | Hazardous Locations | **Open Wiring not Permitted.** |
| | Hot Locations | **Rubber-insulated Braid-covered Wire;** Type R (special rubber compound) **Asbestos-covered Wire and Cable;** Type AVC. |

| CONDITION | KIND OF JOB | ANACONDA PRODUCT |
|---|---|---|
| **5. CONDUIT WORK AND ELECTRICAL METALLIC TUBING WORK** (Conductors larger than No. 0 shall not be used in electrical metallic tubing work) | Dry Locations | **Rubber-insulated Braid-covered Wire;** Type R single conductors, or Type RD duplex conductors. |
| | Wet or Damp Locations | **Rubber-insulated Braid-covered Wire;** Type R conductors may be used only if conduit system is water-tight; otherwise, **Lead-sheathed Wire and Cable;** Type RL. |
| | Corrosive Locations | **Rubber-insulated Braid-covered Wire;** Type R conductors may be used, but conduit should be corrosion-resisting, and system vapor-tight. |
| | Hazardous Locations | **Rubber-insulated Braid-covered Wire;** Type R conductors may be used, but conduit system must be installed with suitable protective equipment. |
| | Hot, Dry Locations Conduit work in boiler rooms, bakeries, steel mills, steam tunnels, etc. | **Rubber-insulated Braid-covered Wire;** Type R (special rubber compound) **Asbestos-covered Wire and Cable;** Type AVC. |
| **6. SURFACE METAL RACEWAY SYSTEMS** | Dry Locations | **Rubber-insulated Braid-covered Wire;** Type R conductors, not larger than No. 8 AWG. |
| **7. ARMORED CABLE WORK** Dry Locations | Exposed or concealed; buried in plaster | **Armored Cable;** Type AC (May be fished.) |
| Wet Locations | Underground runs, imbedded in masonry, concrete or fill in buildings under construction or exposed to moisture or destructive vapors | **Armored Leaded Cable;** Type ACL. |
| Hot or corrosive locations | | **Armored Cable not Used.** |
| **8. UNDERFLOOR RACEWAYS** | Open-bottom Types | **Rubber-insulated Braid-covered Wire;** Type RD, or Type R, with double braid. If open-bottom pads are imperfect, Type AC **Armored Cable** or **Durax Non-metallic Sheathed Cable** must be used. Conductors shall be not larger than No. 8, AWG. |
| | Fully enclosed Types | **Rubber-insulated Braid-covered Wire,** Type R or Type RD. |
| | Wet Locations | Underfloor raceways should exclude moisture. If in doubt, **Rubber-insulated Lead-covered Wire,** Type RL, or **Armored Leaded Cable,** Type ACL, should be used. |
| **9. NON-METALLIC SHEATHED CABLE SYSTEMS** | Dry Locations Exposed or concealed | **Durax Non-metallic Sheathed Cable;** (May be fished.) |
| | Wet, hot hazardous or corrosive locations | **Non-metallic Sheathed Cable Not Permitted** |



**ANACONDA WIRE & CABLE COMPANY**
***General Offices: 25 Broadway, New York*** ***20 North Wacker Drive, Chicago***

| CONDITION | KIND OF JOB | ANACONDA PRODUCT |
|---|---|---|
| **10. CAST-IN-PLACE RACEWAY WORK** | Dry Locations | **Rubber-insulated Braid-covered Wire;** Type R or Type RD wires or cables. |
| | Wet Locations | **Rubber-insulated Lead-covered Wire;** Type RL, or **Armored Leaded Cable;** Type ACL should be used. |
| | Hot, Dry Locations | **Rubber-insulated Braid-covered Wire;** Type R, or Type RD (special rubber compound.) |
| **11. UNDER-PLASTER EXTENSIONS** | Conduit, Flexible Conduit, Armored Cable | If runs are in conduit, follow rules under section 5 for "conduit work". If flexible conduit is used, specify "Anaconda" Flexible Steel Conduit, and follow wire rules under" conduit work". If armored cable is used, follow rules under Section 7 for "armored cable". |
| **12. WIREWAYS** | For distribution to motors, lighting, etc. | **Rubber-insulated Braid-covered Wire or Cable;** Type R. Not more than 30 conductors allowed in one wireway, except where all in excess of 30 are for signalling circuits or are control wires between a motor and its starter. No conductor larger than 500,000 c.m. shall be used. |
| **13. FIXTURE APPLIANCE AND PORTABLE TOOL WIRING** **Dry Locations** | Chain-drop fixtures | **Flexible Cord;** Type FF - Single conductor. |
| | Portable Lamps, Clocks, etc. | **Twisted Pair Lamp Cord;** Type C, or **Parallel Lamp Cord;** Type P O. |
| | Portable Tools, Drop-cord fixtures (Subject to hard usage) | **Two-conductor Reinforced Cord;** Type P. |
| | Portable Lamps, Drop-cord fixtures (Not subject to hard usage) | **Two-conductor Cord with Overall Braid;** Type PD. |
| | Portable Tools, Lamps, Pendants and Stage Applications (Normal conditions) | **Two-conductor** or **Multi-conductor Heavy-duty Cords;** Type K. |
| | Portable Tools, Lamps, Pendants and Stage Applications (Severe Service or where long life is essential | **DURACORD, SECURITYFLEX,** or **All-rubber Cords;** Type S or SJ. |
| | Radios, Portable Lamps (Appearance dominating factor) | **All-rubber Cord;** Type PO-SJ. |
| **Damp Locations** | Pendants (Not subject to hard usage) | **Reinforced Cord;** Type PWP. |
| | Portable Tools, Lamps, Pendants and Stage Applications (Normal conditions) | **Heavy-duty Cord;** Type K. |
| | Portable Tools, Lamps, Pendants and Stage Applications (Severe Service or where long life is essential) | **DURACORD, SECURITYFLEX,** or **All-rubber Cords;** Type S or SJ. Brewery Cord and Deck Cable are also designed for these applications. |
| **Corrosive Locations** | Portable tools, etc. (exposed to vapors, gasolene, etc.) | Always use **DURACORD.** |

| CONDITION | KIND OF JOB | ANACONDA PRODUCT |
|---|---|---|
| **13. (Continued) FIXTURE APPLIANCE AND PORTABLE TOOL WIRING** **Hazardous Locations** | Fixture Wiring in Class I, II, III Locations | **Rubber-insulated Braid-covered Wire,** Type R, with 3/64" insulation installed in conduit hangers. |
| | Portable Lamps or Tools in Class I, II, III, IV Locations | **DURACORD** or **All-Rubber Cord,** Type S with extra ground conductor. |
| | Fixture Wiring in Class IV Locations | **Rubber-insulated Braid-covered Wire,** Type R, enclosed in conduit, size not less than No. 14, AWG. |
| | Garages: Portable Lamps, Tools, Charging Cables, etc. | **DURACORD, SECURITYFLEX,** or **All-Rubber Cords,** Type S. |
| **Hot, Dry Locations (Where fixtures will be heated by lamps)** | Chain or Pipe-stem Fixtures | **Cotton-braid Cord,** Type CF, or **Asbestos-insulated Cord,** Type AF. |
| | Pendants | **Twisted, Braided Cord,** Type CFPD. |
| **Motion Picture Studios and Projection Rooms** | Portable Tools, Lamps, etc. | **DURACORD, SECURITYFLEX,** or **All-rubber Cords,** Type S. **Heavy-duty Cord** Type K or Stage Cable. |
| | Pendant Lamps | **Reinforced Cord,** Type P, or **Armored Cord,** Type CA. |
| **Theatres** | Border Cables | **DURACORD, All-rubber Cords,** Type S, **Heavy-duty Cords,** Type K. |
| | Pendants in Dressing Rooms | **Reinf'd Cord,** Type P, **Arm'd Cable,** Type AC, or **Arm'd Cord,** Type CA. |
| | General Stage Portable Use | **DURACORD, All-rubber Cords,** Type S, **Heavy-duty Cord,** Type K. |
| **14. LOW-TENSION SIGNALLING CIRCUITS** **In residences, low-cost apartments and small stores** | Best | **Rubber-insulated Braid-covered Wire,** Type R, in conduit **Armored Cable,** Type AC, or **Durax Non-metallic Sheathed Cable.** |
| | Desirable | **Rubber-insulated Telephone Wire;** Series 7560. |
| | Inexpensive | **Annunciator** or **Damp-proof Office Wire;** Series 9260 or 9270. |
| | Long Runs | **Rubber-insulated Braid-covered Wire;** Type R, or **Armored Cable;** Type AC. |
| | Outdoor Runs | **Outside Twisted Distributing Drop Rubber-insulated Telephone Wire;** Series 7562. |
| **In fine residences, apartments, office buildings, industrial plants, institutions, etc.** | In Conduit or Underfloor Raceways | **Rubber-insulated Braid-covered Wire;** Type R. |
| | Inexpensive Non-fireproof Const. | **Armored Cable;** Type AC. |
| | Underground Runs | **Rubber-insulated Lead-covered Wire;** Type RL, or Parkway Cable. |

# ANACONDA WIRING MATERIALS
# for Typical Occupancies

## PURPOSE

The following tabulations indicate the selection of wire and cables to be used under all conditions met in bank buildings and residences. Where a choice of materials is involved, the considerations governing their choice are outlined. Products are identified both by general type and specific Anaconda designation. Wire sizes and number of conductors available for each are also listed. All recommendations conform to the National Electrical Code. Local authorities should also be consulted.

Materials for use in apartment houses, hospitals, and monumental structures, such as cathedrals, auditoria, memorials, etc., are similarly tabulated on pages 6 and 7.

Anaconda Wiring Materials are manufactured in several grades, to meet all conditions encountered in all types of construction.





**BANKS**

| Utility | Requirements | Kind of Wire or Cable | ANACONDA Designation | Available in Sizes | Available in No. Conductors |
|---|---|---|---|---|---|
| **SERVICE ENTRANCE** | 2, 3 or 4 wire underground, in conduit or duct. | Rubber-insulated lead-covered, or varnished cambric lead-covered cable. | RL - Better than Code Grade desirable. See Page 8. | #14 to 2,000,000 C.M. | 1 |
| | | | | #14 to #4/0 | 2 (Twin) |
| | | | | #14 to 500,000 C.M. | 3 |
| **INTERIOR LIGHTING MAINS AND BUILDING POWER FEEDERS** | a. Wiring fully protected in conduit. | Rubber-insulated building wire or cable. | R - Better than Code Grade desirable. See Page 8. | #14 to 2,000,000 C.M. | 1 |
| | b. Ditto - wet locations. | Rubber-insulated lead-covered cable. | RL - Better than Code Grade desirable. See Page 8. | #14 to 2,000,000 C.M. | 1 |
| | | | | #14 to #4/0 | 2 |
| | | | | #14 to 500,000 C.M. | 3 |
| | c. Ditto - hot locations. | Slow-burning wire. Asbestos. | SB, AVC. | #14 to 2,000,000 C.M. | 1 |
| **BRANCH CIRCUITS** Light and Power | a. Wiring in conduit, normal conditions. | Rubber-insulated building wire. | R-Better than Code Grade desirable. See page 8. | #14 to 2,000,000 C.M. | 1 |
| | b. Ditto - wet locations. | Rubber-insulated lead-covered cable. | RL - Better than Code Grade desirable. See Page 8. | #14 or larger | 2 to 3 |
| | c. Ditto - hot locations. | Slow-burning wire. Asbestos. | SB, AVC. | #14 to 2,000,000 C.M. | 1 |
| | d. Vault lighting - in conduit. | Rubber-insulated lead-covered cable. | RL - Better than Code Grade desirable. See Page 8. | #14 or larger | 1 to 3 |
| **LOW VOLTAGE SYSTEMS** Feed for Vault; Hold-up Alarm and Vault Alarm | Wiring must be foolproof, and installed in conduit. | Rubber-insulated lead-covered wire or cable. | RL - Better than Code Grade desirable. See Page 8. | #14 or larger | 1 to 3 |
| Interior Telephones; Bell or Annunciator Systems and other low-voltage Signalling Systems. Watchman's Patrol System | Wiring in conduit, with minimum break-down risk. | Rubber-insulated building wire. | R. | #14 or larger | 1 or 2 |
| **OUTSIDE LIGHTS, SIGNS** | Water-tight wiring in conduit. | Rubber-insulated lead-covered wire. | RL - Better than Code Grade desirable. See Page 8. | #14 or larger | 1 to 3 |



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## RESIDENCES

| Utility | Requirements | Kind of Wire or Cable | ANACONDA Designation | Available in Sizes | Available in No. Conductors |
|---|---|---|---|---|---|
| **SERVICE ENTRANCE** | a. Overhead 2 or 3 wire service; weather-resistant; mechanically strong. | Service drop cables. | C, CF. | #12 to #2 | 2 or 3 |
| | | Service entrance cables. | SC, SCF, SC-100, SCF-100 | #12 to #2 | 2 or 3 |
| | | Armored service entrance cables. | ASEC. | #12 to #2 | 3 |
| | b. 2 or 3 wire service for burial directly in ground. | Underground service entrance cable. | Type T Duraseal if buried for entire length. | All | 2 or 3 |
| | | | Type D Duraseal if part of cable will be run up pole. | All | 2 or 3 |
| | c. 2, 3 or 4 wire service installed in conduit or duct underground. | Rubber-insulated lead-covered cable. | RL. | #14 to 2,000,000 C.M. | 1 |
| | | | | #14 to #4/0 | 2 |
| | | | | #14 to 500,000 C.M. | 3 or 4 |
| **INTERIOR LIGHTING MAINS AND POWER MAINS** | a. Inexpensive wiring, "Knob and tube," in non-fireproof buildings. | Rubber-insulated building wire or cable. | R. | #14 to 2,000,000 C.M. | 1 |
| | b. Ditto, where metal protection is desired. | Armored cable. | AC - for dry locations. | #14 to #2 | 1 to 4 |
| | | Armored leaded cable. | ACL - in wet locations, or if buried in masonry. | #14 to #4 | 2 or 3 |
| | c. Ditto, where metal-protected covering is not required. | Non-metallic sheathed cable. | Durax. | #14 to #4 | 2 or 3 with or without ground wire |
| | d. For wiring fully protected in conduit. | Rubber-insulated building wire or cable. | R. | #14 to 2,000,000 C.M. | 1 |
| | | | RD. | #14 to #6 | 2 |
| **BRANCH CIRCUITS** Light and Power | a. Inexpensive wiring, "Knob and tube," in non-fireproof buildings. | Rubber-insulated building wire or cable. | R. | #14 to 2,000,000 C.M. | 1 |
| | b. Ditto, where metal protection is desired. | Armored cable. | AC - for dry locations. | #14 to #2 | 1 to 4 |
| | | Armored leaded cable. | ACL - in wet locations, or if buried in masonry. | #14 to #4 | 2 or 3 |
| | c. Ditto, where metal protection is not desired, and the "Knob and tube," system is not desired. | Non-metallic sheathed cable. | Durax. | #14 to #4 | 2 or 3 with or without ground wire |
| | d. For wiring fully protected in conduit. | Rubber-insulated building wire or cable. | R. | #14 to 2,000,000 C.M. | 1 |
| | | | RD. | #14 to #6 | 2 |
| **OUTDOOR RUNS** To Garages, Driveway Lights, etc. | a. Inexpensive overhead wiring - with conduit protection up sides of buildings. | Rubber-insulated building wire or cable. | R. | #14 to 2,000,000 C.M. | 1 |
| | b. Ditto - for overhead span only, not inside of conduit. | Weatherproof wire or cable. | URC. | All | Single |
| | c. For wiring buried directly in ground. | Duraseal cable. | Type T Duraseal | All | Multiple |
| | d. For wiring in conduit or duct. | Rubber-insulated lead-covered cable. | RL. | #14 to 2,000,000 C.M. | 1 |
| | | | | #14 to #4/0 | 2 (Twin) |
| | | | | #14 to 500,000 C.M. | 3 |
| **LOW VOLTAGE SYSTEMS** Interior Telephones, Bell Wiring, Signalling Systems, etc. | a. Low-cost wiring; dry locations only; concealed. | Annunciator wire. | Annunciator wire. Series 9260 | #14 to #24 | 1 |
| | b. Ditto - but damp-resistant. | Damp-proof office wire. | Damp-proof office wire. Series 9270 | #14 to #20 | 1 or 2 |
| | c. Long-life service, in conduit or unprotected; also, for exposed wiring. | Rubber-insulated telephone wires. | Rubber-insulated telephone wires. Series 7560-7562 | #14 to #22 | Twisted pair |
| | d. Long-life service, non-metallic. | Non-metallic sheathed cable. | Durax. | #14 or larger | 2 or 3 |
| | e. Maximum protected wiring, in conduit. | Rubber-insulated building wire. | R. | #14 or larger | 1 |
| Antenna System | a. For outside antenna. | Antenna wire. | Antenna wire. Series 1510 | #12 to #15 | Bare, tinned or enameled |
| | b. For lead-in, preferably in conduit. | Rubber-insulated building wire. | R. | #14 or larger | 1 |

# ANACONDA WIRING MATERIALS
# for Typical Occupancies

The following tabulations indicate the selection of wire and cables to be used in apartment houses, hospitals and monumental structures.

Materials for use in bank buildings and residences are similarly tabulated on pages 4 and 5.

## APARTMENTS

| Utility | Requirements | Kind of Wire or Cable | ANACONDA Designation | Available in Sizes | Available in No. Conductors |
|---|---|---|---|---|---|
| **SERVICE ENTRANCE** | a. Overhead 2 or 3 wire service; weather-resistant. | Service drop cables. | C, CF. | #12 to #2 | 2 or 3 |
| | | Service entrance cables. | SC, SCF, SC-100, SCF-100. | #12 to #2 | 2 or 3 |
| | | Armored service entrance cables. | ASEC. | #12 to #2 | 3 |
| | b. 2 or 3 wire service for burial directly in ground. | Underground service entrance cable. | Type T Duraseal if buried for entire length. | All | 2 or 3 |
| | | | Type D Duraseal if part of cable will be run up pole. | All | 2 or 3 |
| | c. 2, 3 or 4 wire service for installation in conduit or duct underground. | Rubber-insulated lead-covered cable. | RL - Better than Code Grade desirable. See Page 8. | #14 to 2,000,000 C.M. | 1 |
| | | | | #14 to #4/0 | 2 |
| | | | | #14 to 500,000 C.M. | 3 or 4 |
| **INTERIOR LIGHTING MAINS AND BUILDING POWER** Elevators, etc. | a. Inexpensive wiring; in non-fireproof buildings; where metal protection is desired. | Armored cable. | AC - in dry locations. | #14 to #2 | 1 to 4 |
| | | Armored leaded cable. | ACL - in wet locations, or if buried in masonry. | #14 to #4 | 2 or 3 |
| | b. Ditto, where metal protective covering is not required. | Non-metallic sheathed cable. | Durax. | #14 to #4 | 2 or 3 with or without ground wire |
| | c. For rigid conduit wiring in fireproof buildings. | Rubber-insulated building wire or cable. | R - Better than Code Grade desirable. See Page 8. | #14 to 2,000,000 C.M. | 1 |
| **BRANCH CIRCUITS** Light and Power | a. Inexpensive wiring; in non-fireproof buildings; where metal protection is desired. | Armored cable. | AC - in dry locations. | #14 to #2 | 1 to 4 |
| | | Armored leaded cable. | ACL - in wet locations, or if buried in masonry. | #14 to #4 | 2 or 3 |
| | b. Ditto, where metal protective covering is not required. | Non-metallic sheathed cable. | Durax. | #14 to #4 | 2 or 3 with or without ground wire |
| | c. For rigid conduit wiring in fireproof buildings. | Rubber-insulated building wire or cable. | R - Better than Code Grade desirable. See Page 8. | #14 to 2,000,000 C.M. | 1 |
| | d. For wiring in hot locations - in conduit. | Slow-burning wire, Asbestos. | SB, AVC. | #14 to 2,000,000 C.M. | 1 |
| **OUTDOOR RUNS** To Garages, Driveway Lights, etc. | a. For wiring buried directly in ground. | Duraseal cable. | Type T Duraseal. | All | Multiple |
| | b. For wiring in conduit or duct. | Rubber-insulated lead-covered cable. | RL. | #14 to 2,000,000 C.M. | 1 |
| | | | | #14 to #4/0 | 2 (twin) |
| | | | | #14 to 500,000 C.M. | 3 |
| **LOW VOLTAGE SYSTEMS** Interior Telephones, Door Opener, Bells, Signalling Systems, etc. | a. Low-cost wiring; dry locations only; concealed. | Annunciator wire. | Annunciator wire. Series 9260 | #14 to #24 | 1 |
| | b. Ditto - but damp-resistant. | Damp-proof office wire. | Damp-proof office wire. Series 9270 | #14 to #20 | 1 or 2 |
| | c. Long-life service, in conduit or unprotected; also for exposed wiring. | Rubber-insulated telephone wires. | Rubber-insulated telephone wires. Series 7560-7562 | #14 to #22 | Twisted pair |
| | d. Maximum protected wiring, in conduit. | Rubber-insulated building wire. | R. | #14 or larger | 1 |
| Antenna System | a. For antenna. | Antenna wire. | Antenna wire. Series 1510 | #12 to #15 | Bare, tinned or enameled |
| | b. For lead-in, preferably in conduit. | Rubber-insulated building wire. | R. | #14 or larger | 1 |



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## MONUMENTAL STRUCTURES - CATHEDRALS, AUDITORIUMS, MEMORIALS

| Utility | Requirements | Kind of Wire or Cable | ANACONDA Designation | Available in Sizes | Available in No. Conductors |
|---|---|---|---|---|---|
| **SERVICE ENTRANCE** | a. 2, 3, or 4 wire underground, in conduit or duct. | Rubber-insulated lead-covered cable, or varnished cambric, lead-covered. | RL - Better than Code Grade desirable. See Page 8. | #14 to 2,000,000 C.M. | 1 |
| | | | | #14 to #4/0 | 2 (Twin) |
| | | | | #14 to 500,000 C.M. | 3 |
| **INTERIOR LIGHT AND POWER MAINS** | a. For circuits which will operate for many years, in conduit. | Rubber-insulated lead-covered wire or cable. | RL - Better than Code Grade desirable. See Page 8. | #14 to 2,000,000 C.M. | 1 |
| | | | | #14 to #4/0 | 2 (Twin) |
| | | | | #14 to 500,000 C.M. | 3 |
| **BRANCH CIRCUITS** Light and Power | | Varnished cambric, lead-covered cable. Note: Lead-covered cable should be thoroughly greased before pulling in, to permit easy removal after many years in conduit. | Varnished Cambric Cable. | All | Multiple |
| **LOW VOLTAGE SYSTEMS** Interior Telephones, Signalling Systems, etc. | | | | | |
| Loud Speaker Systems | b. For circuits, wiring of which will be replaced in a relatively few years. (In conduit). | Rubber-insulated building wire or cable. | R - Better than Code Grade desirable. See Page 8. | #14 to 2,000,000 C.M. | 1 |
| **OUTDOOR RUNS** To Driveway Lights, etc. | a. For wiring buried directly in ground. | Type T Duraseal cable. | Type T Duraseal. | All | Multiple |
| | b. For wiring in conduit or duct. | Rubber-insulated lead-covered cable. | RL - Better than Code Grade desirable. See Page 8. | #14 to 2,000,000 C.M. | 1 |
| | | | | #14 to #4/0 | 2 (Twin) |
| | | | | #14 to 500,000 C.M. | 3 |

## HOSPITALS

| Utility | Requirements | Kind of Wire or Cable | ANACONDA Designation | Available in Sizes | Available in No. Conductors |
|---|---|---|---|---|---|
| **SERVICE ENTRANCE** | a. 2, 3, or 4 wire underground, in conduit or duct. | Rubber-insulated lead-covered or varnished cambric, lead-covered cable. | RL - Better than Code Grade desirable. See Page 8. | #14 to 2,000,000 C.M. | 1 |
| | | | | #14 to #4/0 | 2 (Twin) |
| | | | | #14 to 500,000 C.M. | 3 |
| **INTERIOR LIGHTING MAINS AND BUILDING POWER FEEDERS** | a. Wiring fully protected in conduit. | Rubber-insulated building wire or cable. | R. | #14 to 2,000,000 C.M. | 1 |
| | b. Ditto - hot locations. | Slow-burning wire. Asbestos. | SB, AVC. | #14 to 2,000,000 C.M. | 1 |
| | c. Ditto - wet locations. | Rubber-insulated lead-covered cable. | RL - Better than Code Grade desirable. See Page 8. | #14 to 2,000,000 C.M. | 1 |
| | | | | #14 to #4/0 | 2 (Twin) |
| | | | | #14 to 500,000 C.M. | 3 |
| **BRANCH CIRCUITS** Light and Power | a. Wiring in conduit, normal conditions. | Rubber-insulated building wire | R - Better than Code Grade desirable. See Page 8. | #14 to 2,000,000 C.M. | 1 |
| | b. Ditto - hot locations. | Slow-burning wire. Asbestos. | SB, AVC. | #14 to 2,000,000 | 1 |
| | c. Ditto - wet locations. | Rubber-insulated lead-covered cable. | RL - Better than Code Grade desirable. See Page 8. | #14 or larger | 1 to 3 |
| **LOW VOLTAGE SYSTEMS** Bell or Annunciator Systems; Interior Telephones | a. Wiring in conduit. | Rubber-insulated building wire. | R. | #14 or larger | 1 |
| | | Multiple conductor cable. | Series 7560 | #19 and larger | Multiple |
| Nurses Call System; Fire Alarm System | a. Wiring in conduit. | Rubber-insulated building wire. | R. | #14 or larger | 1 |
| **OUTSIDE LIGHTS, SIGNS** | a. Water-tight wiring in conduit. | Rubber-insulated lead-covered cable. | RL - Better than Code Grade desirable. See Page 8. | #14 or larger | 1 to 3 |

# ANACONDA WIRE & CABLE
# TYPES and SIZES

## TYPES OF INSULATION

The following types of insulation, having flame-retarding finish standards, are for use under normal building conditions.

**Minimum Standard** — National Electrical Code Standard Rubber Insulation; acceptable where only minimum requirements must be met.

**25% Grade or "Intermediate"** (Rubber Insulation) — next higher quality; contains at least 25% new rubber; has longer life, greater resistance to abuse and improved electrical value.

**30% Grade** — at least 30% new rubber; superior to the 25%.

**DURACODE Grade** — special Anaconda specifications, designed to resist deterioration from heat, oxidation or moisture; possesses great durability; for high class construction.

Wire and cables with insulation for special requirements are supplied as follows:

**TYPE ACR** — high-voltage type for lighting and power service; ozone resistant; lasting physical and electrical properties.

**TYPE ANW** — for low-voltage network cables and special industrial uses; highly resistant to moisture, acids and alkalies; low susceptibility to combustion and explosion.

**TPYE AHR** — a heat-resisting long-aging compound for lighting, power, signaling and control cables operating in high temperature locations.

**PERFORMITE** — a high-grade compound for service such as fire alarm, signal and control cables, high insulation resistance, good aging and physical properties.

**Varnished Cambric Cable** — for generator leads, motor leads, bus structures, industrial power and lighting, etc.

**Asbestos Wire and Cable** — for use under exposure to excessive heat as in fixture wiring, boiler rooms, switchboards, etc.

In addition to the above types of insulation, Anaconda wire and cables are manufactured with insulation meeting Federal Specification Board Specifications JC-101a and JC-106.

## ANACONDA SERVICE

The Anaconda Wire & Cable Company maintains engineering and research laboratories to assist in solving difficult or unusual problems relating to wire and cable. The services of these staffs are available at all times for the solution of technical problems or for the development of special cables.

In addition to the general offices listed below, the Anaconda Wire & Cable Company maintains 22 district sales offices and 11 manufacturing plants, located throughout the country. Addresses of these local offices as well as assistance with special problems may be had by writing to the general offices.

## RUBBER INSULATED WIRES and CABLES

RUBBER-INSULATED AND BRAID-COVERED WIRE AND CABLE. Type R—600 volts—Single conductor. Solid or stranded.

Code, Intermediate, 30%, Duracode or special grades of rubber compound.



Used for building light and power wiring in dry, protected locations. This includes wiring in conduit, underfloor duct or other raceways, knob and tube wiring; open wiring with porcelain cleats along ceilings or walls; also desirable for long, low-tension or signalling circuits.

RUBBER-INSULATED AND BRAID-COVERED CABLE. Type RD—600 volts—Duplex conductors. Solid or stranded.

Code, Intermediate, 30%, Duracode or special grades of rubber compound.




Used for interior wiring in conduit or other metal raceways, but applications limited to circuits using wire sizes No. 14 to No 6. Also used for streamers for temporary light and power on construction jobs.

RUBBER-INSULATED, LEAD-COVERED WIRE AND CABLE. Type RL—600 volts—Single, duplex or three conductor. Solid or stranded.

Code, Intermediate, 30%, Duracode or special grades of rubber compound.




For use in moist locations where installed in raceway or otherwise protected from mechanical damage. Particularly useful for wiring in laundries, dye housing, dairies, creameries and in locations liable to be flooded. Also used for underground runs in conduit or other raceway to outlying buildings, yard lights, gasoline pumps, etc.

## SERVICE ENTRANCE CABLES

WEATHERPROOF WIRE AND CABLE. URC Type.



For use outdoors—*not in conduit*—or for open wiring in buildings where corrosive vapors exist.

NON-METALLIC ARMORED CABLE. Type T Duraseal. Made in any number of conductors and in all sizes. 30% or special grades of rubber compound.



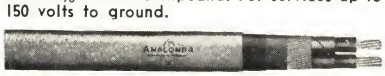
For power lighting or control circuits and for underground service entrance cable. No conduit needed.

SERVICE DROP CABLES. Types C, CF. Two and three conductors, No. 12 to No. 2 with 30% rubber compound. For services up to 150 volts to ground.




For service run from pole line to house. May also be run in conduit from weatherhead to meter (in some localities conduit is not required).

SERVICE ENTRANCE CABLE. Types SC, SCF, SC-100, SCF-100. Two and three conductors with 30% rubber compound. For services up to 150 volts to ground.




For service runs from pole to meter. Also for run direct to electric range. No conduit necessary.

TYPE ASEC—Armored Service Entrance Cable for unprotected locations. For services up to 150 volts to ground.

UNDERGROUND SERVICE ENTRANCE CABLE. Types T and D Duraseal. Single and multiple conductors in all sizes. For services up to 600 volts to ground.




For service runs from pole, or from transformers vault, underground to house, and into house to meter. Type T is intended to be buried for its entire length. Type D may be run up pole to overhead lines.

## ARMORED & SHEATHED CABLES

ARMORED CABLES. Type AC—600 volts. Single, two, three and four conductors—solid or stranded.




For general light and power wiring in non-fireproof homes, industrial plants and other buildings. May be run either concealed or exposed, in dry locations. Very useful for fishing work on remodeling jobs.

Type ACL—600 volts. Two and three conductors.




For use same as above, except that this cable resists moisture. It may therefore be used for connections to outdoor signs, runs up poles to floodlights and in any damp indoor location.

DURAX NON-METALLIC SHEATHED CABLE — 600 volts. Made with or without ground wire, in two or three conductors, sizes No. 14 to No. 4.



Widely used for interior concealed or exposed jobs, where moisture is not present and where there is no danger of mechanical injury. This cable may be fished. Particularly adopted to residential jobs.

ARMORED GROUND WIRE—Series 6040. No. 8 or No. 6 AWG, single conductor, solid.




Used for grounding interior wiring systems, where armor is required to protect the copper conductor from mechanical injury.



ANACONDA WIRE & CABLE COMPANY
General Offices: 25 Broadway, New York
20 North Wacker Drive, Chicago

## FLEXIBLE CONDUIT

FLEXIBLE STEEL CONDUIT. Inside diameter from 5/16" to 3"



For use in place of rigid conduit and for short runs where bends must be sharp or irregular; also for connections between motors and control devices. If used in damp locations, wires must be lead-sheathed.

DURADUCT FLEXIBLE NON-METALLIC CONDUIT. Inside diameter from 7/32" to 2½"



For protection of open wires in knob-and-tube or cleat work. Also used to protect wires which must be fished in a partition or ceiling.

## WIRES and CABLES for SPECIAL USES

ANTENNA WIRE. Solid or flexible, bare, tinned or enameled.



Used for radio receiving or transmitting antennas.

SLOW BURNING WIRE AND CABLE Type SB—Single conductor.



For use in switchboards, in wire towers, in hot locations generally. May be installed in conduit if location is permanently dry.

SIGNAL AND CONTROL CABLE. Multi-conductors sizes No. 19 to No. 8 AWG. Solid or stranded. 30%, Duracode or special grades of rubber compound. Weatherproof braided, rubber-jacketed or lead-sheathed.



For use in any type of signal or control circuits within or between buildings, in elevators, etc.

NEON SIGN AND OIL BURNER IGNITION CABLE. Single conductor.



For use with Neon signs and connections for oil burner ignition systems.

VARNISHED CAMBRIC CABLE. Made in single, two, three and four conductors in all sizes. Furnished with weatherproofed or flameproofed braid or lead sheath.



For inside power wiring; high-tension primary lines or low-voltage distribution. For damp locations use lead-sheathed cable only.

## WIRES for LOW-TENSION TELEPHONE & SIGNAL SYSTEMS

ANNUNCIATOR WIRE. Single conductor, or twisted pair wire. Cotton covering, saturated with paraffin.



For low-tension circuits, usually run unprotected in walls and ceilings. Not adapted for pulling into conduit or other raceways. Not serviceable in damp locations.

RUBBER-INSULATED TELEPHONE WIRE. Outside Twisted. Distributing Drop wire twisted conductors.



Particularly adapted for overhead telephone or other signalling runs between buildings.

INSIDE WIRE. Twisted conductors. Furnished with rubber insulation on each conductor and can be obtained in one or more pairs with weather proofed braid or lead sheath.



A most satisfactory wire for interior telephone systems, code calling systems, annunciator or bell systems.

## FIXTURE WIRES

RUBBER-COVERED FIXTURE WIRE. Type RF—300 volts—Single conductor. Solid or stranded.

Code, Intermediate, 30%, Duracode or special grades of rubber compound.



Used on fixtures, where operating temperature is not excessive.

FLEXIBLE CORD. Type FF—Single conductor.

Code, Intermediate, 30% or special grades of rubber compound.



For use on chain-drop fixtures, in dry locations.

FLEXIBLE HEAT RESISTING. Type CF—Cotton braid. Single conductor Fixture Wire.



For use on fixtures in dry places, operating at not over 300 volts.

Type CFPD—Two or three conductors. Twisted, braid overall.



For pendants not subject to hard usage.

## PORTABLE CORDS and LAMP CORDS

BRAID OVERALL. Type PD—Two conductor. Code grade.



For use on portable lamps, clocks, or for drop-lights, will not stand hard usage, or moisture.

REINFORCED CORD. Type P—Two conductor. Code grade.

REINFORCED CORD. Type PWP—Two conductor. Code grade.



Type P for use on portable tools, drop-cord fixtures, etc., where subject to hard usage in dry locations only. Type PWP for use on pendants not subject to hard usage. May be used in damp places.

ALL-RUBBER CORDS. Type S or SJ—Two or three conductor. 30% insulation, 40% jacket.

ALL-RUBBER CORD. Type PO-SJ—Two conductors-parallel. Furnished in Black, Green, Brown and Ivory-colored Rubber Jacket.

SECURITYFLEX CORDS. Single, two, three and four conductor; heavy duty or light-duty. 60%. Mold-cured.



Type PO-SJ for use on portable lamps, radios, clocks, etc. not subject to hard use. Others for use on all portable electric machines, cord fixtures, etc. subject to hard usage and dampness.

HEAVY-DUTY CORDS. Type K—Two conductor and three-conductor. Code grade.



For use on portable tools, lamps, pendants, and general stage use—Border Light Cable. Particularly designed to withstand hard usage and dampness.

ARMORED LAMP CORD. Type CA—Two conductors. Code grade.



For pendants in dry places where subject to hard usage, and in some hazardous locations. Also, for pendants in show windows.

DURACORD WIRE AND CABLE. Made in single, two, three and four conductors, in all sizes.



For heavy-duty portable cord service where extremely hard service is encountered, in industrial plants, mines, etc. such as connections to dental and medical equipment, tools, machines, stage applications, etc.

ANACONDA
from mine to consumer
REG U.S. PAT. OFF.

# DETERMINING WIRE SIZES

## PURPOSE

Sizes of conductors used in all normal electrical circuits in buildings may be determined from data presented on this and the following page, either on the basis of National Electrical Code requirements or on the basis of voltage drop and operating efficiency. In addition, conduit sizes, and the spaces required for conduits in chases or channels are given.

For the selection of wires and cables for any type of service condition in buildings, see pages 2 and 3. For selection of conductors according to service conditions, see pages 2 and 3. For recommended uses of Anaconda wires and cables in different types and occupancies of buildings, see pages 4 to 7. For data on specific Anaconda wiring materials, see pages 8 and 9.

## WIRE SIZES

National Electrical Code requirements as to wire sizes are founded wholly upon safety: that is, minimum sizes are established to keep temperatures within safe limits as a precaution against fire and destruction of insulation.

Since the larger the wire size in relation to the current carried, the less resistance and loss of power, it is normally advantageous to exceed N.E.C. requirements in order to minimize voltage drop and waste of current. An economic balance must be obtained between initial cost and loss of power due to inadequate wire sizes.

## SELECTION BASED ON N.E.C.

If minimum permissible wire sizes are desired, without regard for voltage drop or loss, select conductor sizes from Table I for circuits of any length.

## SELECTION BASED ON VOLTAGE DROP

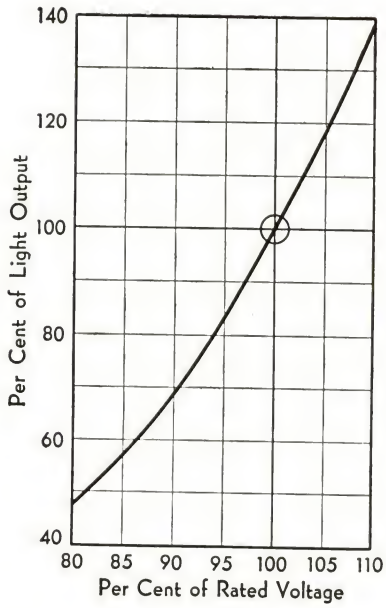
When economic factors, such as operating costs, performance of lighting and power equipment at rated capacities, and reserve capacity for temporary overloads govern design, select wire sizes from Table II according to length of circuit and permissible voltage drop. Use values in this table as follows:

**(a)** Measure length of circuit from distribution center to point of load along one side of circuit only; i. e., circuit length—not total wire length. In the case of branch circuits serving multiple outlets, measure from distribution center to center of load.

**(b)** Determine per cent permissible voltage drop for the circuit under consideration. The Industry Committee on Interior Wiring Design, in its handbook (1937) recommends the following voltage drops be considered minimum good practice: feeder currents for lighting, 2%; branch circuits 2%; circuits serving motors, overall from distribution center, 5%.

**(c)** Express the total allowable drop in volts and multiply the known circuit length by this figure. Example: Voltage supplied 115 v.; permissible drop 1½%; circuit length, as measured 72 ft. Then allowable volts lost equals $115 \times .015 = 1.725$ v. Circuit length equal to one volt drop is then $72 \times 1.725 = 124.2$ ft.

**(d)** In Table II find the smallest wire size (No. 12 or larger) which will carry the known load in amperes the distance thus found. (Note that Table II gives lengths for a 1 volt drop only.) Example, as above except load assumed to be 15 amps.: In column for 15 amps. note that No. 4 wire will serve 130 feet and No. 6 only 82 feet. Specify No. 4 wire or redesign circuit for shorter run or lighter load.




The economic value of adequate wire sizes is best demonstrated by the effect of subnormal voltages on the performance of lamps. For each drop of 1% in delivered voltage below the rating of a lamp there is a loss of about 3% or more in light emitted. If wire sizes are too small to deliver rated voltage to lamps, motors and appliances, building owners face very unsatisfactory performance of electrical equipment as well as excessive line losses.

ANACONDA
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### I - Wire Sizes Based on Safety Only (N.E.C.)

| Condr. Size | | Max. Load in Amp's | | |
|---|---|---|---|---|
| Awg. | Circ. Mils | Rubber Insulation | Varnished Cambric | Other Insul. or Bare |
| 14 | 4,107 | 15 | 18 | 20 |
| 12 | 6,530 | 20 | 25 | 30 |
| 10 | 10,380 | 25 | 30 | 35 |
| 8 | 16,510 | 35 | 40 | 50 |
| 6 | 26,250 | 50 | 60 | 70 |
| 4 | 41,740 | 70 | 85 | 90 |
| 3 | 52,630 | 80 | 95 | 100 |
| 2 | 66,370 | 90 | 110 | 125 |
| 1 | 83,690 | 100 | 120 | 150 |
| 0 | 105,500 | 125 | 150 | 200 |
| 2/0 | 133,100 | 150 | 180 | 225 |
| 3/0 | 167,800 | 175 | 210 | 275 |
| 4/0 | 211,600 | 225 | 270 | 325 |
| | 350,000 | 300 | 360 | 450 |
| | 500,000 | 400 | 480 | 600 |

ABOVE CURRENTS ARE MAXIMUM allowed by National Electrical Code. For high ambient temperatures or more than one cable in a conduit these values should be reduced. Sizes measured in circular mils are incomplete above 4/0 Awg.

### II - Wire Sizes Based on Performance - Lengths of A-C Circuits Permissible for Drop of One Volt

| Size Awg. or C.M. | Permissible Length of Run in Feet for Drop of One Volt Varying Loads in Amperes as Indicated | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 3 Amp | 5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 80 | 100 |
| 14 | 65 | 39 | 19 | 13 | | | | | | | | |
| 12 | 103 | 62 | 31 | 21 | 15 | | | | | | | |
| 10 | 164 | 98 | 49 | 33 | 25 | 20 | | | | | | |
| 8 | 258 | 155 | 78 | 52 | 39 | 31 | 26 | | | | | |
| 6 | 410 | 246 | 124 | 82 | 62 | 49 | 41 | 31 | 25 | | | |
| 4 | 650 | 390 | 195 | 130 | 98 | 78 | 65 | 49 | 39 | 32 | | |
| 3 | 815 | 488 | 245 | 163 | 122 | 98 | 81 | 60 | 49 | 41 | 31 | |
| 2 | 1020 | 612 | 306 | 204 | 153 | 122 | 102 | 76 | 61 | 51 | 38 | |
| 1 | 1270 | 762 | 380 | 254 | 191 | 153 | 127 | 95 | 76 | 64 | 48 | 38 |
| 0 | 1570 | 940 | 470 | 314 | 236 | 188 | 157 | 118 | 93 | 78 | 59 | 47 |
| 2/0 | 1930 | 1150 | 580 | 385 | 289 | 231 | 193 | 145 | 115 | 96 | 72 | 58 |
| 3/0 | 2340 | 1400 | 700 | 468 | 351 | 281 | 234 | 176 | 140 | 117 | 88 | 70 |
| 4/0 | 2800 | 1680 | 840 | 561 | 422 | 336 | 280 | 210 | 168 | 140 | 105 | 84 |
| *350 M | 3770 | 2270 | 1130 | 755 | 567 | 453 | 377 | 283 | 227 | 188 | 142 | 113 |
| *500 M | 4400 | 2640 | 1320 | 882 | 661 | 528 | 440 | 331 | 264 | 220 | 165 | 132 |

Table applies to single-phase, two-wire, 60 cycle A-C circuits in standard rubber and braid-covered wire and cable - 600 volt class and complies with N.E.C. requirements as to maximum allowable loads.

For other voltage drops, multiply above distances by desired drop. For other currents, multiply the distances in the table by the ratio of the current in the table to the new current. Example: The table shows a permissible circuit length of 561 feet for a 4/0 cable carrying 15 amperes. If it is desired to carry 150 amperes on the circuit the permissible length would be 561 feet times the ratio of 15 amperes to 150 amperes, or 56 feet.

* 350 M = 350,000 C.M.; 500 M = 500,000 C.M.

## CALCULATING WIRE SIZES

When it is desired to calculate wire size directly from known length, voltage drop and load in amperes, use the following rule: Multiply length of circuit in feet by load in amperes and this result by 21.5. Divide by allowable drop in volts. The quotient will be wire size in circular mils. Consult Table I for partial list of wire sizes expressed in circular mils and specify Awg. size equal to or larger than the computed size.

## CONDUIT SIZES

In the "Handbook of Interior Wiring Design," noted above, it is recommended that all circuits subject to possible increases in load or length of run should be installed in conduit or ducts having an ultimate carrying capacity substantially in excess of initial requirements. Alternative is to install feeders with capacity 50% in excess of initial requirements.

Allowable conduit capacities are given in Table III for wire sizes shown.

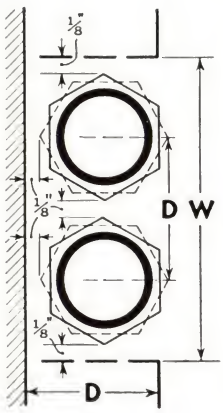
## CONDUIT SPACING

When two or more conduits are installed in chases, channels, pipe shafts or other constricted spaces, clearances must be allowed between conduits for using wrenches and other tools on couplings. These clearances have been computed in Table IV for two conduits with ⅛" minimum spacing. For single conduits dimension D equals dimension W. Clearances for any number of conduits can be found from these data.

### III - Minimum Conduit Sizes - (N.E.C.; Varnished Cambric or Rubber Insulated and Braid Covered Wire)

| Size of Conductor Awg. or C.M. | Number of Conductors in One Conduit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| | Minimum Size of Conduit in Inches | | | | | | | | |
| 14 | ½ | ½ | ½ | ½ | ¾ | ¾ | ¾ | 1 | 1 |
| 12 | ½ | ½ | ½ | ¾ | ¾ | 1 | 1 | 1 | 1¼ |
| 10 | ½ | ¾ | ¾ | ¾ | 1 | 1 | 1¼ | 1¼ | 1¼ |
| 8 | ½ | ¾ | 1 | 1 | 1¼ | 1¼ | 1¼ | 1¼ | 1½ |
| 6 | ½ | 1 | 1¼ | 1¼ | 1½ | 1½ | 2 | 2 | 2 |
| 4 | ¾ | 1¼ | 1¼ | 1½ | 2 | 2 | 2 | 2 | 2½ |
| 3 | ¾ | 1¼ | 1¼ | 1½ | 2 | 2 | 2 | 2½ | 2½ |
| 2 | ¾ | 1¼ | 1½ | 1½ | 2 | 2 | 2½ | 2½ | 2½ |
| 1 | ¾ | 1½ | 1½ | 2 | 2 | 2½ | 2½ | 3 | 3 |
| 0 | 1 | 1½ | 2 | 2 | 2½ | 2½ | 3 | 3 | 3 |
| 2/0 | 1 | 2 | 2 | 2½ | 2½ | 3 | 3 | 3 | 3½ |
| 3/0 | 1 | 2 | 2 | 2½ | 3 | 3 | 3 | 3½ | 3½ |
| 4/0 | 1¼ | 2 | 2½ | 2½ | 3 | 3 | 3½ | 3½ | 4 |
| 350,000 | 1¼ | 2½ | 3 | 3½ | 3½ | 4 | | | |
| 500,000 | 1½ | 3 | 3 | 3½ | 4 | 4½ | | | |

### IV - Space Requirements for Conduits - Dimensions in Inches




| Conduit Sizes → / ↓ | ½" | | ¾" | | 1" | | 1¼" | | 1½" | | 2" | | 2½" | | 3" | | 3½" | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | D | W | D | W | D | W | D | W | D | W | D | W | D | W | D | W | D | W |
| ½" | 1¼ | 2⅝ | 1⅜ | 2⅞ | 1½ | 3⅛ | 1 11/16 | 3½ | 1 13/16 | 3¾ | 2⅛ | 4⅜ | 2 7/16 | 5 | 2¾ | 5⅝ | 3⅛ | 6⅜ |
| ¾" | 1⅜ | 2⅞ | 1½ | 3⅛ | 1⅝ | 3⅜ | 1 13/16 | 3¾ | 1 15/16 | 4 | 2¼ | 4⅝ | 2 9/16 | 5¼ | 3 | 6⅛ | 3¼ | 6⅝ |
| 1" | 1½ | 3⅛ | 1⅝ | 3⅜ | 1¾ | 3⅝ | 1 15/16 | 4 | 2 1/16 | 4⅜ | 2⅜ | 4⅞ | 2 11/16 | 5½ | 3 | 6⅛ | 3⅜ | 6⅞ |
| 1¼" | 1 11/16 | 3½ | 1 13/16 | 3¾ | 1 15/16 | 4 | 2⅛ | 4⅜ | 2¼ | 4⅝ | 2 9/16 | 5¼ | 2⅞ | 5⅞ | 3¼ | 6⅝ | 3 9/16 | 7¼ |
| 1½" | 1 13/16 | 3¾ | 1 15/16 | 4 | 2 1/16 | 4¼ | 2¼ | 4⅝ | 2⅜ | 4⅞ | 2 11/16 | 5½ | 3 | 6⅛ | 3⅜ | 6⅞ | 3 11/16 | 7½ |
| 2" | 2⅛ | 4⅜ | 2¼ | 4⅝ | 2⅜ | 4⅞ | 2⅜ | 4⅞ | 2 11/16 | 5½ | 3 | 6⅛ | 3 5/16 | 6¾ | 3⅝ | 7⅜ | 4 | 8⅛ |
| 2½" | 2 7/16 | 5 | 2 9/16 | 5¼ | 2 11/16 | 5½ | 2⅞ | 5⅞ | 3 | 6⅛ | 3 5/16 | 6¾ | 3⅝ | 7⅜ | 3 15/16 | 8 | 4 5/16 | 8¾ |
| 3" | 2¾ | 5⅝ | 3 | 6⅛ | 3 | 6⅛ | 3¼ | 6⅝ | 3⅜ | 6⅞ | 3⅝ | 7⅜ | 3 15/16 | 8 | 4 7/16 | 9 | 4¾ | 9⅝ |
| 3½" | 3⅛ | 6⅜ | 3¼ | 6⅝ | 3⅜ | 6⅞ | 3 9/16 | 7¼ | 3 11/16 | 7½ | 4 | 8⅛ | 4 5/16 | 8¾ | 4¾ | 9⅝ | 5 | 10⅛ |



Write for More Detailed Information on Products of Particular Interest

ANACONDA WIRE & CABLE COMPANY

General Offices: 25 Broadway, New York — 20 North Wacker Drive, Chicago




# WIRE & CABLE COMPANY

## ENGINEERING SERVICES

At various district sales offices and at our engineering and research laboratories at Hastings-on-Hudson a staff of engineers is maintained who are qualified to give immediate assistance to specification writers having difficult or unusual problems in the design or application of wire and cable. The services of this engineering and research staff are available at all times for assistance in the solution of technical wire problems or for the development of special cables.

*General Sales Offices*
25 Broadway, New York

*Chicago Sales Office*
20 North Wacker Drive

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| | |
|---|---|
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| Cincinnati, Ohio . Chamber of Commerce Bldg. | New Orleans, La. . . . Carondelet Building |
| Cleveland, Ohio . Builders Exchange Bldg. | Philadelphia, Pa. . . . Architects Building |
| Dallas, Texas . . . Interurban Building | Pittsburgh, Pa. . . . . Oliver Building |
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| Des Moines, Iowa . . Des Moines Building | St. Louis, Mo. . . . 710 North 12th Blvd. |
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# SECTION 23

CONTINUED ⟶

# CRESCENT INSULATED WIRE & CABLE CO.

ESTABLISHED 1889

## Manufacturers of Electrical Wires and Cables

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ATLANTA, GA., Edgar E. Dawes, A-4 Rhodes Building Annex
BALTIMORE, MD., Electrical Sales Co., 111 Cheapside Street
BOSTON, MASS., C. C. Pierce, 241 Purchase Street
BUFFALO, N. Y., Crescent Sales Co., 294 Elm Street
CHICAGO, ILL., Crescent Electric Sales Corp., 624 W. Adams Street
CLEVELAND, OHIO, Henger-Fairfield Co., 1808 Columbus Road
*DALLAS, TEX., Royal Smith, 912 Commerce Street
DETROIT, MICH., Hemphill & Co., 517 E. Woodbridge Street
HARRISBURG, PA., Crescent Sales Co., 307 Arcade Building
INDIANAPOLIS, IND., A. Lee Clifford, 330 W. New York Street
*KANSAS CITY, MO., W. F. Howe & Co., 526 Law Building
LOS ANGELES, CAL., Henger-Seltzer Co., 130 So. Hewitt Street
*MINNEAPOLIS, MINN., R. H. Cupples, 324 First Street, No.
*NEW ORLEANS, LA., Paul Hogan, Jr., 1907 Jefferson Avenue
NEW YORK, N. Y., Kearton & Nagle, 555 W. 25th Street
PHILADELPHIA, PA., E. R. Blyler, The Bourse Building
PITTSBURGH, PA., Crescent Sales Co., 298 Duquesne Way
ST. LOUIS, MO., Leigh A. Doxsee, 815 So. 11th Street
SAN FRANCISCO, CAL., Hodges & Glomb, 1264 Folsom Street
*Do not carry stock

## PRODUCTS

A.B.C. Armored Cable
Aerial Cable
Annunciator Wire and Cable
Appliance Cords
Armored Cable, Leaded
Bare Copper Wire
Building Wire, Rubber Covered
Control Cable
Cord Sets
Flexible Steel Conduit
Heat Resisting Fixture Wire
Heater Cords
Lamp Cords
Lead Encased Cable
Magnet Wire
Metallic Parkway Cables

*Crescent Makes All Types of Special Wires and Cables*

Mining Machine Cable
Non-metallic Sheathed Cable
Non-metallic Trench Cable
Parkway Cable
Portable Cords and Cables
Radio Harness
Radio Wire
Rubber Jacketed Cords
Safecote Wire and Cable
Service Entrance Cable
Shipboard Cables
Signal Cable
Telephone Wire and Cable
Underground Wire and Cable
Varnished Cambric Cable
Weatherproof Wire and Cable

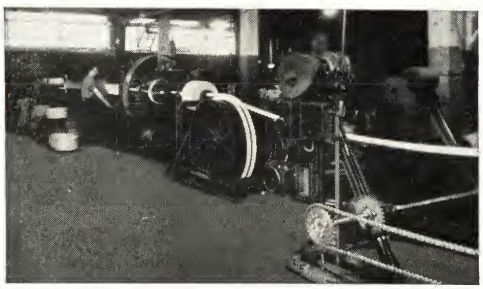
## THE COMPANY

The Crescent Insulated Wire & Cable Company has been manufacturing insulated wires and cables for electrical use for over forty-five years. The high quality of its products is insured by a staff of executives, engineers, and skilled workmen, developed with a background of almost a half century of experience devoted to this one field of manufacture.

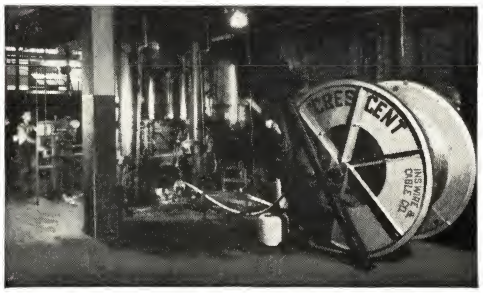
The factory at Trenton, N. J., is completely equipped with modern machinery to perform the following operations on the premises: Copper wire drawing, annealing, tinning, rubber compounding, mixing, rubber insulating, varnished cambric insulating, spooling of cotton, applying cotton and silk coverings, braiding, finishing, steel rolling, electro-galvanizing, armoring, cabling, taping, jute wrapping, steel taping on Parkway construction, and lead sheathing.

Exacting tests are conducted on the raw materials, and at each major step in manufacture. All finished wire and cable is given electrical tests, comprising High Voltage Breakdown test, and Insulation Resistance test to insure complete safety and permanence in use. Physical tests, chemical tests, artificial aging tests, and continuous research and development, carried on in a completely equipped laboratory by *Crescent* chemists, assures *Crescent* customers that they are receiving electrical wire and cable that embodies the highest quality and latest improvements.

The Company maintains adequate stocks of finished wire and cable, both at the factory and in principal cities, enabling prompt delivery to customers wherever located. See locations of warehouse stocks given above.



Applying Rubber Insulation and Tape to Power Cable




Large Hydraulic Press Extruding Lead Sheath on Cable

## GENERAL WIRE AND CABLE SPECIFICATIONS

**Copper Conductor**—The conductor shall consist of soft-annealed, electrolytic copper. Each individual wire shall be coated with a heavy, uniform coating of pure tin. The conductors shall fulfill the requirements of American Standards Association specification C8b2.

## RUBBER INSULATION

**Crescent Code Grade**—This is the standard grade of rubber insulation used for building wire and other low-voltage power and lighting applications. It is satisfactory for all ordinary conditions, and is less expensive. *"Crescent Code"* fulfills the requirements of the National Electrical Code, N.E.M.A.* and Underwriters Laboratories specifications.

**Crescent 30% Performance Grade**—This type of compound has been made possible by development in recent years of accelerators and anti-oxidents that greatly increase the electrical, physical, and long-aging characteristics of the rubber insulation. It is recommended for all applications of building, power, control, signal, parkway, mining, apparatus cables, and tree-wire where a high grade insulation is required to meet severe service conditions, and to assure maximum safety and service. This compound gives a long-life insulation, with superior electrical and physical properties, which meets all the requirements of the following specifications: A.S.T.M.* Class AO and D-353-35-T; N.E.M.A.* and I.P.C.E.A.* Performance Grade. This grade of insulation is extensively used in large buildings, in industrial plants, and by utilities and principal railroads.

* *N.E.M.A.—National Electrical Manufacturers Association.*

**Crescent 30% Moisture Resisting**—This compound is especially suited for use on wires and cables operating in wet locations, and on shipboard. Besides its superior resistance to moisture, it embodies all the desirable electrical, physical, and long-aging qualities of Crescent 30% Performance Grade. It is used to insulate non-leaded Secondary Network Cables, and Crescent Non-metallic Trench Cables.

**Crescent Endurite**—This super-aging insulation is designed to give the highest possible physical and electrical qualities, where the compound will be subjected to excessive heat, or where the ultimate in long life insulation is desired. This meets the requirements of Federal Specifications JC-106 and JC-121, which are required by the Government for installation in permanent Government buildings. It is also recommended for use in steel mills, power plants, and other locations where the cable will be subjected to operation in hot locations.

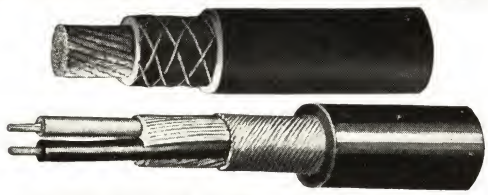
## INSULATION
### Thickness and Tests

The thickness of the rubber insulation shall conform to the requirements of the National Electrical Code to 3,000 volts working pressure, and to the I.P.C.E.A. Rubber Insulated Power Cable Standards for working voltages above 3,000. Each length of wire or cable shall be immersed in water for at least 12 hours and given a high voltage breakdown test and an insulation resistance test as specified for each grade of insulation.

## COVERINGS

The rubber insulated conductors shall be covered with at least one braid, sizes No. 8 A.W.G. and smaller; and with two braids or a tape and braid for sizes No. 6 A.W.G. and larger. In multi-conductor cables a single tape or braid is usually applied to each conductor. The braids shall conform to N.E.M.A. specifications for the grade of rubber insulation used. All braids shall be thoroughly impregnated with a moisture-resisting compound, and the outer braids finished with a weatherproof and flame-retarding finish meeting requirements of Underwriters' Laboratories.

## RUBBER JACKETED CORDS AND CABLES



**Imperial Crescord—Single and Two Conductor**

Where desired, one or more conductors insulated with 30% Grade insulation, may be covered with a jacket of 40% or 60% rubber compound. The resulting cable is highly resistant to the effects of rough handling, acids, alkali, water, etc.

For maximum service IMPERIAL CRESCORD is recommended as it has a "mould cured," tough, 60% rubber jacket similar to a tire tread. IMPERIAL CRESCORD is used extensively for portable cable to mining machines, portable tools, and as welding and ship cable.

## LEAD SHEATH

Where the cable will be subjected to continuous moisture, it should be provided with a lead sheath of commercially pure lead to I.P.C.E.A.* specifications.

## VARNISHED CAMBRIC



Varnished Cambric cable is used where the cable will be subjected to greater loading, higher temperatures, and where maximum safety is necessary, such as for use in primary networks and primary supply feeders and around power plants. Unless the Varnished Cambric insulated cable is to be continuously dry, it should be covered with a lead sheath as a protection against moisture.

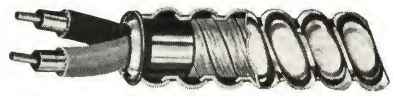
The Company makes a complete line of the highest quality Varnished Cambric insulated cables conforming to the rigid specifications of the Insulated Power Cable Engineers Association. A copy of the complete I.P.C.E.A. specifications for Varnished Cambric Insulated Cables will be sent upon request.

* *A.S.T.M.—American Society for Testing Materials.*
* *I.P.C.E.A.—Insulated Power Cable Engineers Assoc.*

## WEATHERPROOF WIRE AND CABLE

The conductors are furnished either as "Soft," "Medium Hard Drawn" (M.H.), or "Hard Drawn" (H.D.) copper wire covered with two (D.B.W.P.) or three (T.B.W.P.) heavy cotton braids, impregnated with asphalt and finished with flexible weather-resisting pitch to the exacting specifications of the Utilities Research Committee (U.R.C.).

## ARMORED BUSHED CABLE



Crescent manufactures the patented A.B.C. Armored Bushed Cable which employs a split fibre insulating bushing that can be readily inserted between the cut end of the galvanized steel protective armor and the rubber insulated conductors. Armored Cable and Armored Lead Cable is extensively used for home and apartment wiring, giving a safe and lowest-cost, grounded metallic wiring system.

## CRESFLEX



This is a factory assembled Non-metallic Sheathed Cable for use in house and farm wiring, which gives the safest and lowest-cost type of wiring where a water pipe system for grounding is not available.

## PARKWAY CABLE



Parkway type cables are designed for use buried in the ground, without the protection of ducts, and can be used for horizontal runs in tunnels or mines. Parkway Cable offers an economical type of installation, is well protected from injury, and insures long life and uninterrupted service. Cables of this type are used extensively for power distribution, street lighting, and for control and signal cables by Utilities, Railroads, Airports and Institutions.

**Steel Tape Parkway Cable, Type RLJFJ**—Employs two flat steel armor tapes protecting standard lead covered cable. This type is recommended where cables are exposed to possible mechanical injury from rocks, blows, and continuous moisture.

**Parkway Cable, Type RLJ**—Consists of two asphalted jute servings protecting a standard lead covered cable. This type is used where the danger from mechanical injury is remote, such as under a concrete curb for series street lighting, and gives a low-cost cable which can be used for wet locations.

**Non-metallic Trench Cable, Type RJ**—Where service requirements are not severe or are of a temporary nature, a cable of non-metallic construction can be furnished. On this type of Parkway Cable the lead sheath is omitted, and the insulation is 30% special moisture resisting rubber, sealed in and covered by tough, inert armor tapes and moisture seals of flexible, non-hardening asphalt. Crescent Trench Cable is lighter, more flexible, and less expensive than steel armor Parkway Cable, and is suitable for installations where continuous moisture does not exist. This cable is used extensively for airport lighting.

## SPECIAL CABLES

CRESCENT INSULATED WIRE & CABLE COMPANY manufacture all types of special electrical wires and cables to customers' specifications, and those of the Army, Navy, and Signal Corps. Crescent invites your inquiries, and a staff of specification engineers will be glad to suggest the most suitable cable for your needs.

* *Complete detail specifications for Insulated Wires and Cables will be furnished upon request.*

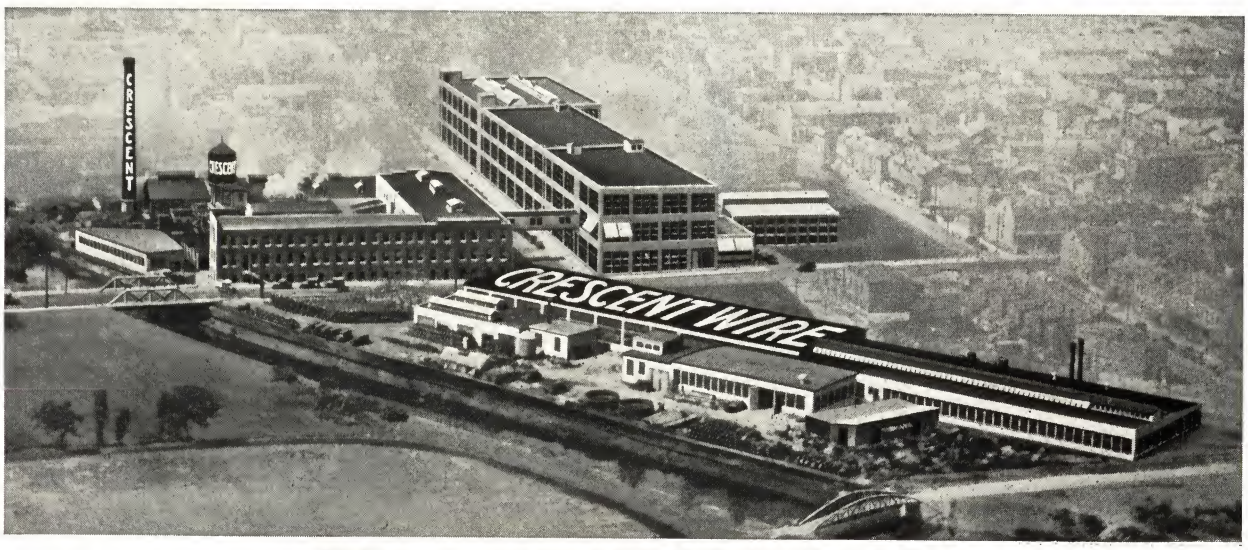
# CRESCENT BUILDING WIRE AND CABLE DATA

| A.W.G. Size or C.M. area | Stranding | | Diam. of conductor inches | Resistance ohms per 1000 ft. at 25°C. | National Electrical Code Standards 600 Volt | | | | | | Current carrying capacity Single conductor | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Rubber insulation thickness inches | Braided Cable | | Leaded Cable | | | | |
| | No. of wires | Diam. of wires mils. | | | | Approx. O.D. inches | Approx. net wt. lbs. per 1000 ft. | Thickness of lead inches | Approx. O.D. inches | Approx. net wt. lbs. per 1000 ft. | Rubber insulation | Varnish cambric insulation |
| | | | | | | **Single Braid** | | | | | | |
| *18 | 1 | 40.3 | .0403 | 6.51 | 2/64 | .130 | 12 | 2/64 | .190 | 92 | 3 | ..... |
| *16 | 1 | 50.8 | .0508 | 4.09 | 2/64 | .140 | 16 | 2/64 | .200 | 100 | 6 | ..... |
| 14 | 1 | 64.1 | .0641 | 2.58 | 3/64 | .190 | 26 | 2/64 | .250 | 135 | 15 | 18 |
| 14 | 7 | 24.2 | .0726 | 2.626 | 3/64 | .200 | 26 | 2/64 | .250 | 135 | 15 | 18 |
| 12 | 1 | 80.8 | .0801 | 1.62 | 3/64 | .210 | 35 | 2/64 | .270 | 153 | 20 | 25 |
| 12 | 7 | 30.5 | .0915 | 1.652 | 3/64 | .220 | 35 | 2/64 | .270 | 153 | 20 | 25 |
| 10 | 1 | 101.9 | .1019 | 1.02 | 3/64 | .230 | 49 | 3/64 | .320 | 260 | 25 | 30 |
| 10 | 7 | 38.5 | .1155 | 1.039 | 3/64 | .250 | 49 | 3/64 | .320 | 260 | 25 | 30 |
| 8 | 1 | 128.5 | .1285 | .641 | 4/64 | .300 | 80 | 3/64 | .380 | 320 | 35 | 40 |
| 8 | 7 | 48.6 | .1458 | .653 | 4/64 | .310 | 80 | 3/64 | .380 | 320 | 35 | 40 |
| | | | | | | **Double Braid** | | | | | | |
| 6 | 7 | 61.2 | .1836 | .411 | 4/64 | .390 | 126 | 4/64 | .470 | 520 | 50 | 60 |
| 4 | 7 | 77.2 | .2316 | .258 | 4/64 | .450 | 190 | 4/64 | .520 | 620 | 70 | 85 |
| 3 | 7 | 86.7 | .2601 | .205 | 4/64 | .480 | 230 | ..... | ..... | ..... | 80 | 95 |
| 2 | 7 | 97.4 | .2922 | .163 | 4/64 | .510 | 278 | 4/64 | .580 | 770 | 90 | 110 |
| 1 | 19 | 66.4 | .3320 | .129 | 5/64 | .590 | 364 | 4/64 | .640 | 930 | 100 | 120 |
| | | | | | | **Tape and Braid** | | | | | | |
| 1/0 | 19 | 74.6 | .3725 | .102 | 5/64 | .630 | 443 | 4/64 | .680 | 1060 | 125 | 150 |
| 2/0 | 19 | 83.7 | .4185 | .0811 | 5/64 | .670 | 540 | 4/64 | .730 | 1210 | 150 | 180 |
| 3/0 | 19 | 94.0 | .4700 | .0643 | 5/64 | .730 | 663 | 4/64 | .780 | 1370 | 175 | 210 |
| 4/0 | 19 | 105.5 | .5275 | .0510 | 5/64 | .780 | 814 | 4/64 | .840 | 1570 | 225 | 270 |
| 250/000 | 37 | 82.1 | .576 | .0432 | 6/64 | .860 | 962 | 5/64 | .950 | 2030 | 250 | 300 |
| 300/000 | 37 | 90.0 | .631 | .0360 | 6/64 | .910 | 1139 | 5/64 | 1.000 | 2270 | 275 | 330 |
| 350/000 | 37 | 97.2 | .682 | .0308 | 6/64 | .960 | 1300 | 5/64 | 1.060 | 2490 | 300 | 360 |
| 400/000 | 37 | 103.9 | .729 | .0270 | 6/64 | 1.000 | 1473 | 5/64 | 1.100 | 2720 | 325 | 390 |
| 500/000 | 37 | 116.2 | .815 | .0216 | 6/64 | 1.100 | 1815 | 5/64 | 1.190 | 3160 | 400 | 480 |
| 600/000 | 61 | 127.3 | .893 | .0180 | 7/64 | 1.190 | 2177 | 6/64 | 1.330 | 3980 | 450 | 540 |
| 700/000 | 61 | 107.1 | .965 | .0154 | 7/64 | 1.270 | 2512 | 6/64 | 1.400 | 4420 | 500 | 600 |
| 750/000 | 61 | 110.9 | .999 | .0144 | 7/64 | 1.310 | 2673 | 6/64 | 1.430 | 4620 | 525 | 630 |
| 800/000 | 61 | 114.5 | 1.031 | .0135 | 7/64 | 1.340 | 2848 | 6/64 | 1.470 | 4850 | 550 | 660 |
| 900/000 | 61 | 121.5 | 1.097 | .0120 | 7/64 | 1.410 | 3194 | 6/64 | 1.530 | 5265 | 600 | 720 |
| 1000/000 | 61 | 128.0 | 1.153 | .0108 | 7/64 | 1.510 | 3530 | 6/64 | 1.590 | 5690 | 650 | 780 |
| 1250/000 | 91 | 117.2 | 1.289 | .00863 | 8/64 | 1.640 | 4400 | 7/64 | 1.790 | 7233 | 750 | 900 |
| 1500/000 | 91 | 128.4 | 1.413 | .00719 | 8/64 | 1.760 | 5240 | 7/64 | 1.910 | 8269 | 850 | 1020 |
| 2000/000 | 127 | 128.5 | 1.632 | .00539 | 8/64 | 1.980 | 6890 | 7/64 | 2.130 | 10276 | 1050 | 1260 |
| | | | | | | **Two-Conductor Flat** | | | | | | |
| 14 | 1 | 64.1 | .0641 | 2.58 | 3/64 | .41x.22 | 62 | 2/64 | .250x.440 | 225 | 15 | 18 |
| 12 | 1 | 80.1 | .0801 | 1.62 | 3/64 | .45x.24 | 82 | 3/64 | .300x.510 | 360 | 20 | 25 |
| 10 | 1 | 101.9 | .1019 | 1.02 | 3/64 | .49x.26 | 114 | 3/64 | .320x.550 | 410 | 25 | 30 |
| 8 | 1 | 128.5 | .1285 | .641 | 4/64 | .60x.32 | 174 | 3/64 | .380x.660 | 540 | 35 | 40 |
| 8 | 7 | 48.6 | .1458 | .653 | 4/64 | .64x.33 | 186 | 3/64 | .380x.660 | 540 | 35 | 40 |
| 6 | 7 | 61.2 | .1836 | .411 | 4/64 | .72x.38 | 295 | 4/64 | .470x.810 | 852 | 50 | 60 |

* 300 Volts.

## CONDUIT SIZES FOR RUBBER COVERED BUILDING WIRE

| Wire Size A. W. G. or C. M. | Braided Finish — 600 Volts — Number of wires in one conduit — Minimum size of conduit in inches | | | | | | | | | Lead Covered Wire and Cable — 600 Volts — Size of conduit to contain not more than four cables | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Single conductor cable Cables in one conduit | | | | 2-Conductor cable Cables in one conduit | | | | 3-Conductor cable Cables in one conduit | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| 14 | ½ | ½ | ½ | ½ | ¾ | ¾ | ¾ | 1 | 1 | ½ | ¾ | ¾ | ¾ | ½ | 1 | 1 | 1¼ | ¾ | 1¼ | 1½ | 1½ |
| 12 | ½ | ½ | ½ | ¾ | ¾ | 1 | 1 | 1 | 1¼ | ½ | ¾ | ¾ | 1 | ¾ | 1 | 1¼ | 1¼ | 1 | 1¼ | 1½ | 2 |
| 10 | ½ | ¾ | ¾ | ¾ | 1 | 1 | 1¼ | 1¼ | 1¼ | ½ | ¾ | 1 | 1 | ¾ | 1¼ | 1¼ | 1½ | 1 | 1½ | 2 | 2 |
| 8 | ½ | 1 | 1 | 1¼ | 1¼ | 1¼ | 1½ | 1½ | 1½ | ½ | 1 | 1¼ | 1½ | 1 | 1¼ | 1½ | 2 | 1 | 2 | 2 | 2½ |
| 6 | ½ | 1 | 1¼ | 1¼ | 1½ | 1½ | 2 | 2 | 2 | ¾ | 1¼ | 1½ | 1½ | 1¼ | 1½ | 2 | 2½ | 1¼ | 2½ | 3 | 3 |
| 4 | ¾ | 1¼ | 1¼ | 1½ | 2 | 2 | 2 | 2 | 2½ | ¾ | 1¼ | 1½ | 1½ | 1¼ | 2 | 2½ | 2½ | 1½ | 3 | 3 | 3½ |
| 3 | ¾ | 1¼ | 1¼ | 1½ | 2 | 2 | 2 | 2½ | 2½ | ¾ | 1¼ | 1½ | 2 | 1¼ | 2 | 2½ | 3 | 1½ | 3 | 3 | 3½ |
| 2 | ¾ | 1¼ | 1½ | 1½ | 2 | 2 | 2½ | 2½ | 2½ | 1 | 1¼ | 1½ | 2 | 1¼ | 2 | 2½ | 3 | 1½ | 3 | 3½ | 4 |
| 1 | ¾ | 1½ | 1½ | 2 | 2 | 2½ | 2½ | 3 | 3 | 1 | 1½ | 2 | 2 | 1½ | 2½ | 3 | 3½ | 2 | 3½ | 4 | 4½ |
| 0 | 1 | 1½ | 2 | 2 | 2½ | 2½ | 3 | 3 | 3 | 1 | 2 | 2 | 2½ | 2 | 2½ | 3 | 3½ | 2 | 4 | 4½ | 5 |
| 00 | 1 | 2 | 2 | 2½ | 2½ | 3 | 3 | 3 | 3½ | 1 | 2 | 2 | 2½ | 2 | 3 | 3½ | 4 | 2½ | 4 | 4½ | 5 |
| 000 | 1 | 2 | 2 | 2½ | 3 | 3 | 3 | 3½ | 3½ | 1¼ | 2 | 2½ | 2½ | 2 | 3 | 3½ | 4 | 2½ | 4½ | 4½ | 6 |
| 0000 | 1¼ | 2 | 2½ | 2½ | 3 | 3 | 3½ | 3½ | 4 | 1¼ | 2½ | 2½ | 3 | 2½ | 3 | 3½ | 4½ | 3 | 5 | 6 | 6 |
| 250/000 | 1¼ | 2½ | 2½ | 3 | 3 | 3½ | | | | 1¼ | 2½ | 3 | 3 | | | | | 3 | 6 | 6 | |
| 300/000 | 1¼ | 2½ | 3 | 3 | 3½ | 3½ | | | | 1½ | 3 | 3 | 3½ | | | | | 3½ | 6 | 6 | |
| 350/000 | 1¼ | 2½ | 3 | 3½ | 3½ | 4 | | | | 1½ | 3 | 3 | 3½ | | | | | 3½ | 6 | 6 | |
| 400/000 | 1¼ | 3 | 3 | 3½ | 4 | 4 | | | | 1½ | 3 | 3 | 3½ | | | | | 3½ | 6 | 6 | |
| 500/000 | 1½ | 3 | 3 | 3½ | 4 | 4½ | | | | 1½ | 3 | 3½ | 4 | | | | | 4 | 6 | | |
| 600/000 | 2 | 3 | 3½ | 4 | 4½ | 5 | | | | 2 | 3½ | 4 | 4½ | | | | | | | | |
| 700/000 | 2 | 3½ | 3½ | 4½ | | | | | | 2 | 4 | 4 | 5 | | | | | | | | |
| 750/000 | 2 | 3½ | 3½ | 4½ | | | | | | 2 | 4 | 4 | 5 | | | | | | | | |
| 800/000 | 2 | 3½ | 4 | 4½ | | | | | | 2 | 4 | 4½ | 5 | | | | | | | | |
| 900/000 | 2 | 3½ | 4 | 4½ | | | | | | 2½ | 4 | 4½ | 5 | | | | | | | | |
| 1000/000 | 2 | 4 | 4 | 5 | | | | | | 2½ | 4½ | 4½ | 6 | | | | | | | | |
| 1250/000 | 2½ | 4½ | 4½ | 6 | | | | | | 3 | 5 | 5 | 6 | | | | | | | | |
| 1500/000 | 2½ | 4½ | 5 | 6 | | | | | | 3 | 5 | 6 | 6 | | | | | | | | |
| 1750/000 | 3 | 5 | 5 | 6 | | | | | | 3 | 6 | 6 | | | | | | | | | |
| 2000/000 | 3 | 5 | 6 | | | | | | | 3½ | 6 | 6 | | | | | | | | | |




The Crescent Insulated Wire & Cable Co. Plant at Trenton, N. J.

# HAZARD INSULATED WIRE WORKS

DIVISION OF THE OKONITE COMPANY

WORKS

WILKES-BARRE, PA.

SALES OFFICES

ATLANTA, GA. BOSTON, MASS. BUFFALO, N. Y. CHICAGO, ILL. DALLAS, TEX. DETROIT, MICH. LOS ANGELES, CALIF. NEW YORK, N. Y. PHILADELPHIA, PA. PITTSBURGH, PA. ST. LOUIS, MO. SAN FRANCISCO, CALIF. SEATTLE, WASH. WASHINGTON, D. C.

For many years there have been three grades of electrical building wire:

(1) "Code" Wire, the rubber insulating compound containing about 20% of rubber. "Code" is the minimum grade that may be used under the rulings of the National Board of Fire Underwriters.

(2) "Intermediate" Wire, with insulation compounded with about 25% of rubber. A little higher in quality than "Code" wire.

(3) "30%" or "Performance Grade" Wire—the insulation containing 30% of pure rubber—used extensively in large office buildings, high class residences and other structures where the best type of electrical wires and cables are desired.

## PERFORMITE INSULATION

Now there is available a higher type of rubber insulation which affords longer life and greater safety. *Performite* rubber insulation is tougher and stronger than any in common use heretofore, and has greater life, making it preferable for monumental buildings, public institutions and high class residences.

It is generally accepted that oxidation is the principal cause of the deterioration of rubber compounds.

*Performite* is made highly resistant to oxidation by limiting the sulphur content and by adding certain other ingredients. Working along the lines of the mechanical goods manufacturers and particularly automobile tires, new complex chemical ingredients are employed in *Performite* to prolong the life of the insulation with, of course, proper regard for maintaining the necessary electrical properties.

*Performite* Building Wires and Cables with braided coverings are always made with the well-known "Safecote" weatherproof and flame-retarding finish.

### Specification

To insure the use of this safer, better and more durable wire, it should be specified as follows:

All electrical conductors shall have standard Performite rubber insulation. Braided wires and cables shall have "Safecote" weatherproof and flame-retarding finish.

Wires and cables shall also meet all requirements of the National Electrical Code.

## HAZARD ARMORED CABLE, Type AC

Distinction for Hazard Armored Cable is gained by the use of flame-resisting moisture-proof paper sheath between the conductors and spiral interlocked steel armor; by the ripcord underneath the paper which facilitates installation, and by the double protection afforded by the insulating bushing which is inserted at the cut ends *over* the paper sheath instead of removing the paper as is ordinarily done.

These things make Hazard Armored Cable better and safer.

## HAZARD SERVICE ENTRANCE CABLES, Type SE

Type SE with uninsulated neutral conductor makes possible low cost service entrances because the cable may be strapped to the house—no conduit required—a weathercap attached at top end where drop cable or wires are joined to it, and the lower end led directly through the foundation to the entrance switch,—or, if an outdoor meter is used, cable goes into the meter case through an approved watertight connector.

These modern cables with covered neutral conductor especially fit in with the new sequence arrangement of meter, switch and fuse. Their low cost, ease of installation. insurance against current diversion and practically zero maintenance cost, make them particularly attractive.

## TRIAL INSTALLATION CABLE FOR INTERIOR WIRING SYSTEMS

CNX Covered Neutral Cable is designed for use in houses, buildings of frame construction, and all types of farm buildings, including barns, garages, stables, etc.

The rules which govern the installation of non-metallic sheathed cable also apply in a general way to the installation of CNX Covered Neutral Cable.

## HAZARD PERMEX MULTI CONDUCTOR CABLES

Thin-wall rubber insulation provides a means of constructing cables containing a maximum number of separately insulated conductors with minimum diameter and weight. It finds wide use for multi-conductor telephone cables, for supervisory control, fire alarm, police signal or other low voltage circuits requiring many conductors in small compass because of limited duct space or other considerations.

# DAHLSTROM METALLIC DOOR COMPANY

EXECUTIVE OFFICES AND FACTORIES
JAMESTOWN, N. Y.
NEW YORK OFFICE: 475 FIFTH AVENUE
REPRESENTATIVES IN PRINCIPAL CITIES

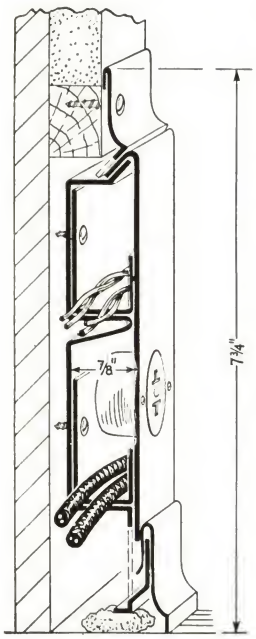
For Dahlstrom Metal Doors and Adjustable Steel Partitions, see File Index

## DAHLSTROM CONDUO BASE

Dahlstrom Conduo Base is a combination base and wire raceway for the distribution of telephone, signal and light wires.

It is manufactured in three standard types: Junior, Senior and Bank Counter Top—each displacing the necessity of running exposed wires along walls at ceilings, etc.

Special types are designed to meet unusual conditions and requirements.




Junior Conduo Base

Plain baseboard members (minus wire raceways) of a profile to match the Conduo Base Designs are also available.

Every modern building should be equipped with Dahlstrom Conduo Base and plain base to match (where raceways are not required), not alone from a service standpoint and their low initial costs, but also for permanency and pleasing appearance.

### Features

**(1) A Two-purpose Base**—A combination base and wire raceway.

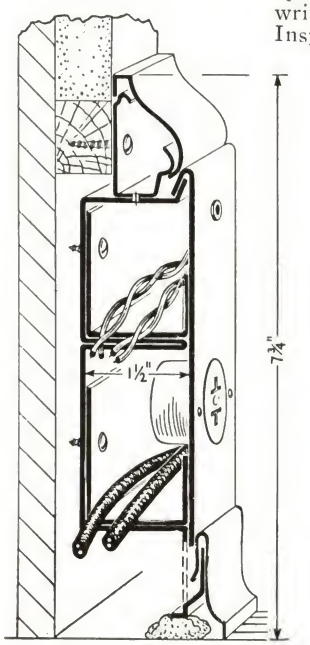
**(2) A permanent wiring necessity**—Meeting the variable demands for electrical service.

**(3) Convenience**—Ready access to all wires by removal of face plate only.

**(4) Flexibility in Design** — Three different designs to suit the needs for maximum as well as minimum service requirements.

**(5) Economical** — Eliminates cutting of floors and walls for wired conduits otherwise necessary when change-overs are made to meet the electric service demands.

**(6) Underwriters' Label**—Each respective base section bears the Underwriters' Laboratories, Inc. Label of Inspection.




Senior Conduo Base

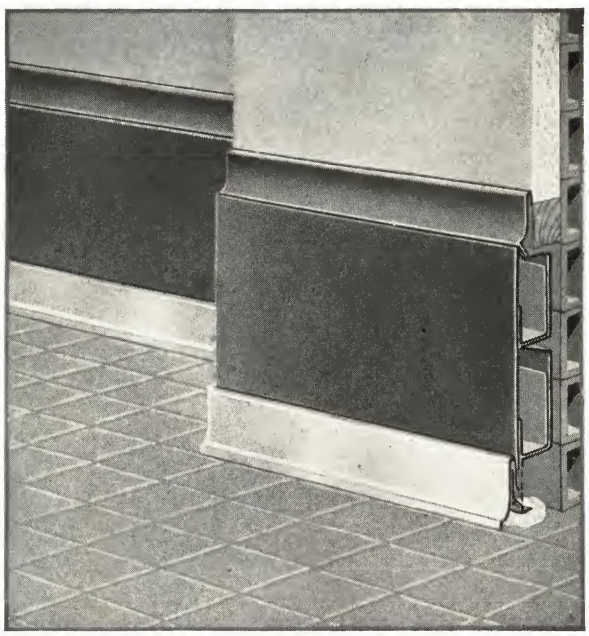
### Specifications For Conduo Base

The following specification should be incorporated under the "Electric Wiring" section, inasmuch as Conduo Base is primarily an extension to the electrical distribution system.

This Contractor shall furnish and install all (either Junior or Senior) Conduo Base complete with all necessary appurtenances, such as junction boxes, inside and outside raceway corner, bonding clips, alignment plates, receptacle sections, bushed telephone sections, etc., in all rooms throughout the building where designated on Architect's plans. Base shall be DAHLSTROM METALLIC DOOR COMPANY'S standard "Conduo Base", each section bearing Underwriters' Label.

**Conduit Connections**—Furnish and install and connect all conduits of proper size as indicated on electrical plans. These cover requirements of home-run feeder conduits for light or signal, and door jumper or floor outlet conduits as indicated. All such conduits shall terminate in junction boxes.

The Conduo Base junction boxes, floor type, shall have knockouts provided for both ¾ and 1-in. conduits into each respective compartment from front, rear, or ends, enabling ready access for conduit connections.



Conduo Base

(*Note*: It is recommended that the above junction boxes and conduits be located at columns, outside walls, or permanent partitions, where they are not likely to be removed by changes or re-arrangements of office areas.)

At each door opening or low set radiator and all other points where a continuous run of Conduo Base is intercepted, connect both raceways of Conduo Base with ¾-in. conduits across the opening or obstruction terminating each end of conduit in a standard Conduo Base junction box, so isolated runs of Conduo Base in all rooms are properly connected with the section of Conduo Base equipped with the feeder conduits.

**Wiring**—All sub-feeds shall be of size stipulated on plans terminating in Conduo Base junction boxes and subsequently connection to circuits feeding receptacles, ceiling and wall outlets as indicated.

**Finish**—All concealed raceway members shall be finished with rust-inhibiting pigment and painted a second coat of solid color, oven baked. All exposed members, i.e., the face plate and plaster moulding shall be finished to Dahlstrom Standards of (solid or grained colors) to match the trim as specified elsewhere. The bronze mop mould shall be pumice-cleaned.

(*Note*: Shallow receptacles must be used with Junior Conduo Base. These can be Bryant Electric Co. receptacles No. 790 and No. 792 or No. 4831 and 4832 or any make of receptacle that is less than ⅞ in. in depth.)

*Dahlstrom Conduo Base Catalog has complete construction and wiring data. It's yours on request.*

# H. H. ROBERTSON COMPANY

## Robertson World-Wide Building System

## PITTSBURGH, PA.

FACTORIES: AMBRIDGE, PA.; SARNIA, ONT., CANADA; ELLESMERE PORT, CHESHIRE, ENG.

DISTRICT OFFICES, AGENCIES AND BRANCH OFFICES

ALLENTOWN, PA., H. N. Crowder, 446 Union St.
ATLANTA, GA., H. H. Robertson Company, 413 Bona Allen Bldg.
BALTIMORE, MD., H. H. Robertson Company, 1635 Baltimore Trust Bldg.
BIRMINGHAM, ALA., H. H. Robertson Company, 2019 Sixth Ave., No.
BOSTON, MASS., H. H. Robertson Company, 14 High School Ave. (Quincy, Mass.)
BUFFALO, N. Y., H. H. Robertson Company, 602 Jackson Bldg.
BUTTE, MONT., Archie W. Adams, 618 Metals Bank Bldg.
CHARLESTON, W. VA., Fireproof Products Co., 422 Professional Bldg.
CHARLOTTE, N. C., Edwin C. Boyette, Jr., 1025 Arosa Ave. (Box 27)
CHICAGO, ILL., H. H. Robertson Company, 360 No. Michigan Ave.
CINCINNATI, OHIO, H. H. Robertson Company, 1315 American Bldg.
CLEVELAND, OHIO, H. H. Robertson Company, 1526 Hanna Bldg.
DENVER, COLO., J. Q. Lalor, 1125 So. Vine St.
DETROIT, MICH., H. H. Robertson Company, 635 New Center Bldg.
EASTON, PA., H. N. Crowder, 103 No. Fourth St.
EAST ORANGE, N. J., H. H. Robertson Company, 25 No. Harrison St.
JACKSONVILLE, FLA., H. H. Robertson Company, P. O. Box 4523
KNOXVILLE, TENN., R. G. Jeffries, 409 W. Clinch Ave. (P. O. Box 2023)
LITTLE ROCK, ARK., Wherry & Company, 115 Center St.
LOS ANGELES, CALIF., H. H. Robertson Company, 816 W. Fifth St.
MARQUETTE, MICH., C. H. Cooper
MINNEAPOLIS, MINN., Hauenstein & Burmeister, 614 Third Ave., So.
NEW HAVEN, CONN., H. H. Robertson Company, 207 Orange St.
NEW ORLEANS, LA., H. H. Robertson Company, 736 Whitney Bank Bldg.
NEW YORK, N. Y., H. H. Robertson Company, 475 Fifth Ave.
PHILADELPHIA, PA., H. H. Robertson Company, 1307 Real Estate Trust Bldg.
PITTSBURGH, PA., H. H. Robertson Company, 2000 Grant Bldg.
PORTLAND, ME., W. O. Hutchins, 193 Middle St.
PORTLAND, ORE., Mercer Steel Company, 838 N. W. 13th Ave.
RICHMOND, VA., R. M. Nolting, 1103 E. Main St. (P. O. Box 1011)
ST. LOUIS, MO., H. H. Robertson Company, 1218 Olive St.
SALT LAKE CITY, UTAH, L. Brandenburger, 153 W. Second South St.
SAN FRANCISCO, CALIF., H. H. Robertson Company, 50 Hawthorne St.
SCRANTON, PA., F. H. Coffin, 210 Brooks Bldg.
SEATTLE, WASH., Arthur A. Dally, 332 Pioneer Bldg.
SOUTH BOSTON, MASS., Northeastern Metals Co., 307 Dorchester Ave.
SYRACUSE, N. Y., F. J. Ludwick, 1126 Chimes Bldg.
TULSA, OKLA., Murray R. Womble, 316 Atco Bldg.
WASHINGTON, D. C., J. R. Nichols, 428 Woodward Building

For England: H. H. ROBERTSON CO., MERSEY IRON WORKS, Ellesmere Port, Cheshire

FOR CANADA: H. H. ROBERTSON CO., LTD.

TORONTO (MAIN OFFICE), 611 Metropolitan Building — MONTREAL OFFICE, 526 Confederation Building

**Products**

ROBERTSON STEEL FLOOR WIRING METHOD.

For Robertson Protected Metal (RPM), corrugated roofing, siding, building trim and steel decks; Robertson Steel Floor; Robertson Ventilators, gravity and fan types; Robertson Louvres, Hoods and Ducts, and Robertson Weatherproof Skylights and Sash (puttyless type), see File Index.

RPM TRADE-MARK

*Patents: Robertson Steel Floor is protected by United States Patents Nos. 1,855,082; 1,867,433; 1,986,121; 1,986,122; 1,994,113; 2,029,393; 2,041,965, and 100,082. Other United States and foreign patents pending.*

## ROBERTSON STEEL FLOOR WIRING METHOD

The basic element of these systems is Robertson Steel Floor, which acts as the load-carrying member of the building in which it is installed. For structural details, see File Index for pages on Robertson Steel Floor. When installed, floor provides a steel enclosed raceway or wiring channel every 6 in. across its entire area. To gather up wiring installed in the cells and terminating at various outlets, a member (header) is installed at right angles to the run of the cells. Provision is made for connections to panel, cabinet or other wire center, as conditions require.

Robertson Steel Floor Wiring Method can be laid out by the electrical engineer to fit individual requirements as to density, load, number of distribution systems, etc., in an economical manner. System is installed as a whole and wire is pulled in after mechanical work is completed. In use, outlets are cut in at desired locations and the necessary wire installed. Only needed outlets are placed in the original installation. Thus, in contrast to conventional fixed outlet systems, a small proportion of possibly unused wiring is installed originally.

The two available headers are known as "Topside Header" and "Underside Header." The former is used on top of units RK and K (see pages on Robertson Steel Floor) and the latter is used on the flat underside of the inverted FK unit, where a flat steel ceiling is desired. Both systems have the same ultimate end, the provision of complete electrical availability. Typical installations are shown on the following page.



**A Desk Installation**

With the Robertson System of distribution, outlets are under the drawer portion of the desk and out of the way. These outlets are rugged, neat and inexpensive

### Advantages of the Robertson Steel Floor Wiring System

**Safety**—It is, first of all, a form of steel construction and possesses all the advantages inherent in the steel.

When installed on the structural steel frame, an integrated steel mass results that provides adequate grounding. The ample internal area of the cells discourages the use of lubricants that are often harmful to wire insulation and provides for the use of relatively large size cables. The large surface area of the floor units in place dissipates heat.

**Economy**—There is available a steel enclosed wiring member every 6 in. across the entire floor area. These members can be segregated for different systems and any or all made available for wiring. These steel enclosed wiring members also constitute a load-bearing floor, and as such add no cost to the building wiring system.

**Availability for Future Changes**—Modern occupancy practice shows need for being able to obtain electrical outlets practically anywhere in floor area. Robertson Steel Floor Wiring System fully meets requirements.

**Neatness and Appearance**—Wiring is installed easily in the protecting floor members, eliminating long exposed runs of wiring now common. This feature makes for permanence, safety, neatness and less maintenance cost.

# TYPICAL INSTALLATIONS OF ROBERTSON STEEL FLOOR WIRING METHOD



*This view of part of the office area of a large office and service building erected for the Scranton Electric Co. (American Gas & Electric Co.), Scranton, Pa., shows floor outlets installed under the drawer portion of desks, to give telephone service. Outlets for 110-v. service may be installed when required. The "Topside Header" method is used in this installation.*



*Part of ceiling of third floor of large office building of a prominent automobile manufacturer, in which Robertson Steel Floor (FKX with flat underside) was used throughout. Note the "Underside Header" which feeds cells. It was painted later to match acoustical tile applied directly to the underside of the Robertson Floor.*



*Room in an office building for Ohio Edison Co., Springfield, Ohio. Note neat appearance of the painted ceiling. Ceiling lights are fed through cells of the Robertson Floor. Outlets may be installed on floor above when needed. Another example of the "Underside Header" method.*

# STEEL AND TUBES, INC.

(ELECTRICAL DIVISION)

SUBSIDIARY OF REPUBLIC STEEL CORPORATION

224 East 131st Street, CLEVELAND, OHIO

SALES OFFICES

ATLAITA, GA., 307 Haas-Howell Bldg.—Walnut 9300
BALTIMORE, MD., 4201 Elsa Terrace—University 9223
BOSTON, MASS., 250 Stuart St.—Liberty 3622
CHICAGO, ILL., 1224 McCormick Bldg.—Harr. 0010
CINCINNATI, OHIO, 2701 Carew Tower—Main 3965
DETROIT, MICH., Turrel & Benfield, Inc., Architect's Bldg.—Temple 1-1110
KANSAS CITY, MO., 1209 Fairfax Bldg.—Harr. 0925
LOS ANGELES, CAL., 915 Edison Bldg.—Michigan 5146
MILWAUKEE, WIS., 2148 No. 70th St., Wauwatosa—Blue Mound 0125
NEW ORLEANS, LA., Hutson Colcock, 822 Perdido St.—Raymond 3553
NEW YORK, N. Y., Heron Electric Sales Corp., 300 Rockefeller Plaza—Circle 7-5710
PHILADELPHIA, PA., 769 Broad Street Station Bldg.—Rittenhouse 8900
ST. LOUIS, MO., 822 Paul Brown Bldg.—Chestnut 8133
SALT LAKE CITY, UTAH, 401 Atlas Bldg.—Wasatch 7078
SAN FRANCISCO, CAL., 718 Rialto Bldg.—Gar. 0977
SEATTLE, WASH., 6638 White Henry Stuart Bldg.—Main 8583

# ELECTRUNITE

(REG. U. S. PAT. OFF.)

# Steeltubes

## Qualities

Here in a single product are all the fine qualities that building and plant owners, engineers, architects and electrical contractors have wished for in electrical conduit: light weight, ease of handling and installation, elimination of threading, simplicity in fittings, ease in cutting, effortless, accurate bending, a patented inside surface that makes wire pulling easier, adequate electrical and mechanical protection for wiring, full approval—low cost.

## What Is Electrunite Steeltubes?

ELECTRUNITE STEELTUBES is the original Electrical Metallic Tubing. High quality open hearth steel is cold-rolled to the desired gauge, rolled cold through the machine that produces the knurled inside finish, cold-formed into a tube, electric resistance welded at the seam to produce a weld as strong as the wall, then straightened and sized while still cold.

The result of this series of cold operations gives the finished product a fine-grained steel structure and a tight-skinned surface that is, in itself, resistant to corrosion. To make it even more corrosion-resistant, ELECTRUNITE STEELTUBES is galvanized with pure zinc. The inside surface is coated with baked-on enamel.

## Electrunite Steeltubes Costs Less

In most distribution areas, the initial cost of ELECTRUNITE STEELTUBES plus the necessary couplings, connectors and adapters needed to make a complete installation, is approximately 5% to 15% below the initial cost of ordinary threaded conduit.




*(See Current Edition National Code)*

### Approval for Use

ELECTRUNITE STEELTUBES is listed by the Underwriters Laboratories, Inc., sanctioned for use in the National Electrical Code and municipal ordinances for installation on exposed or concealed jobs where voltage between conductors does not exceed 600 volts or require conductors larger than No. 0.

### Knurled Inside Finish

(Patent No. 1,962,876)

Thousands of tiny rounded knobs are rolled into the steel. Conductors glide over the tops of these knobs with ball-bearing smoothness.

## Specify "Genuine" Electrunite Steeltubes

Be sure to specify and use "Genuine" ELECTRUNITE STEELTUBES for industrial plant, central station and house wiring installations—for only then will you be assured of obtaining all of the combined advantages described and illustrated herewith. Carried in stock by leading electrical wholesalers everywhere.

## Recommended Architects' Specifications

Electrical conductors shall be enclosed in ELECTRUNITE STEELTUBES conduit, as manufactured by STEEL AND TUBES, INC., Cleveland, Ohio, sizes ½ to 2 in. inclusive. Tubing shall be made from S.A.E. 10-10 specification cold rolled open hearth strip steel, galvanized, and manufactured in accordance with Underwriters Laboratories Standards, and so labeled.

ELECTRUNITE STEELTUBES shall have electrically welded seams and shall be installed in accordance with the regulations of the National Electrical Code.

Compression couplings and box connectors shall be Underwriters approved type and so listed.

TABLE OF SIZES

| Size, In. | Approx. wt. per 1000 ft. without couplings | B.W. gauge | Diameter, In. | |
|---|---|---|---|---|
| | | | Internal | External |
| ⅜ | 250 lbs. | 19 | .493 | .577 |
| * ½ | 320 lbs. | 19 | .622 | .706 |
| * ¾ | 480 lbs. | 18 | .824 | .922 |
| *1 | 688 lbs. | 17 | 1.049 | 1.163 |
| 1¼ | 1000 lbs. | 16 | 1.380 | 1.508 |
| 1½ | 1180 lbs. | 16 | 1.610 | 1.738 |
| 2 | 1500 lbs. | 16 | 2.067 | 2.195 |

Elbows made in sizes 1, 1¼, 1½ and 2 in.
*Available with knurled inside finish.



### Easy to Cut

Clean, fast cuts are easily made with an ordinary hacksaw. A 32-tooth blade is desirable. Practically no burr remains. May be reamed with a file or pocket knife



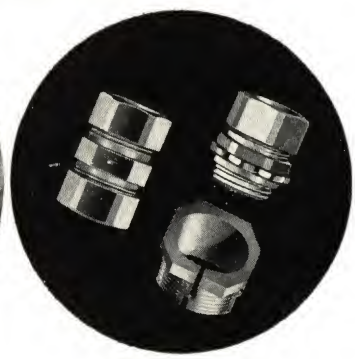
### Easy to Bend

Because ELECTRUNITE STEELTUBES is made cold, it bends cold perfectly. It may be straightened and rebent just as easily. A simple roll-type tool makes accurate bends—90° or less in one sweep. See bending tags on each bundle.



### No Threads

Connections are made with compression fittings. Effort required in threading and expensive equipment are eliminated. Makes possible lighter wall thickness and reduced weight.



### 3 Simple Fittings

(1) Coupling, (2) Box Connector, (3) Adapter, make positive (watertight) joints, simplify installation and adapt tube to existing heavy wall conduit installations without creating obsolescence in stock of threaded fittings.

*More than 150,000,000 Feet Installed*

# STEEL AND TUBES, INC., ARE SOLE SALES AGENTS FOR FRETZ-MOON RIGID STEEL CONDUIT, COUPLINGS AND ELBOWS

## Fretz-Moon Rigid Steel Conduit

Because it is made of soft, ductile steel by the exclusive, scientifically-controlled "continuous" process, Fretz-Moon Conduit offers a number of outstanding features to the architect or engineer who wishes to specify a quality product for the protection of electrical systems.

1. A high degree of uniformity not found in ordinary rigid steel conduit.
2. Extraordinarily high ductility. Laboratory tests prove that Fretz-Moon Conduit bends and threads approximately 25% easier than the average rigid steel conduit. Tests also prove that there is no distortion or flattening at bends.
3. Absolute freedom from "burnt" or hard spots in the metal that might cause cutting, threading or bending troubles.
4. Threads are unusually clean, sharp and free-running.
5. Fretz-Moon Conduit cuts and threads easily and cleanly.
6. Welds are smooth and strong, and will not open even under severe abuse.
7. The inside surface is smooth, clean and free from burrs and rough spots.
8. Hot-dipped galvanized brand is heavily galvanized inside and out. The galvanizing will not peel or flake off under severe bending, and will last for the entire life of the installation.
9. Fretz-Moon Conduit, with all these advantages costs no more than ordinary rigid steel conduit.

**Finishes**—Fretz-Moon Rigid Steel Conduit is available in two finishes, as follows:

*"Enamelite"* (orange label) is protected both inside and out by a tough coating of special baked-on black enamel.

*"Galvite"* (blue label) is hot-dipped galvanized both inside and out and has galvanized threads. In addition a special coating of baked-on lacquer is applied both inside and out to further insure the corrosion-resisting properties of this high quality product.

**Inspection**—Fretz-Moon Conduit is made under rigid control and strict supervision. Every length must not only pass close inspection and many tests (including hydrostatic test to insure perfect weld) but also inspection of Underwriters' Laboratories, Inc., before it can receive the seal of Underwriters' standard. Fretz-Moon Conduit is guaranteed to give positive satisfaction.

## Coupling

Finished outside to correspond with conduit. So cleanly threaded inside that they can be spun up on the conduit with the fingers. Fretz-Moon Conduit and Couplings are noted for ease and speed in fitting.

## Shipments

Fretz-Moon Conduit ¼ to 1½ in. is supplied in bundles, each piece 10 ft. long; other sizes up to 6 in. shipped loose. One end of each length is fitted with a coupling, the other end with a thread protector.

## Prompt Delivery

Complete stocks of conduit, elbows and couplings are carried in all large jobbing centers making for prompt delivery.



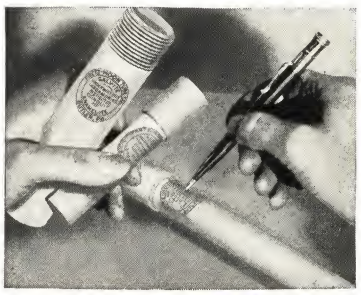
Coil of Stock Length—Shows Easy Bending Properties




Hot Galvanized




Black Enamel



Look for the Fretz-Moon Label It Is Your Protection

SIZES AND DIMENSIONS OF FRETZ-MOON RIGID STEEL CONDUIT

| Conduit | | | | | | Couplings | Elbows | | |
|---|---|---|---|---|---|---|---|---|---|
| Size, in. | Weight per foot, lb. | Diameters, in. External | Diameters, in. Internal | Thickness, in. | Threads per inch | Weight lbs. per 100 | Weight lbs. per 100 | Radius, in. | Offset, in. |
| ¼ | .425 | .540 | .364 | .088 | 18 | 6.0 | 41 | 3.000 | 5.625 |
| ⅜ | .568 | .675 | .493 | .091 | 18 | 9.5 | 55 | 3.000 | 5.625 |
| ½ | .852 | .840 | .622 | .109 | 14 | 11.6 | 82 | 4.000 | 7.000 |
| ¾ | 1.134 | 1.050 | .824 | .113 | 14 | 20.9 | 109 | 4.500 | 7.500 |
| 1 | 1.684 | 1.315 | 1.049 | .133 | 11½ | 34.3 | 201 | 5.750 | 9.500 |
| 1¼ | 2.281 | 1.660 | 1.380 | .140 | 11½ | 53.5 | 313 | 7.250 | 10.875 |
| 1½ | 2.731 | 1.900 | 1.610 | .145 | 11½ | 74.3 | 441 | 8.250 | 12.625 |
| 2 | 3.678 | 2.375 | 2.067 | .154 | 11½ | 120.8 | 707 | 9.500 | 15.250 |
| 2½ | 5.819 | 2.875 | 2.469 | .203 | 8 | 172.0 | 1411 | 10.500 | 17.375 |
| 3 | 7.616 | 3.500 | 3.068 | .216 | 8 | 249.8 | 1850 | 13.000 | 19.500 |
| 3½ | 9.202 | 4.000 | 3.548 | .226 | 8 | 424.1 | 2979 | 15.000 | 21.250 |
| 4 | 10.889 | 4.500 | 4.026 | .237 | 8 | 474.1 | 3528 | 16.000 | 22.500 |
| 4½ | 12.642 | 5.000 | 4.506 | .247 | 8 | 550.0 | 4310 | 18.000 | 24.375 |
| 5 | 14.810 | 5.563 | 5.047 | .258 | 8 | 700.0 | 6575 | 24.000 | 32.000 |
| 6 | 19.185 | 6.625 | 6.065 | .280 | 8 | 750.0 | 9645 | 30.000 | 39.750 |

Conduit is furnished in 10-ft. lengths, threaded both ends, with coupling screwed on one end.
Conduit is always designated by its nominal inside diameter. All weights and dimensions shown above are nominal.

# THE WIREMOLD COMPANY

## Manufacturers of Electrical Products

## HARTFORD, CONN.

SALES REPRESENTATIVES

ATLANTA, H. C. Biglin, 138 Marietta St.—Jackson 2306
BOSTON, Edward Rigby, 10 High St.—Liberty 8612-13
*CHICAGO, M. B. Austin & Co., 108-16 So. Desplaines St.—Haymarket 4070
*DALLAS, O. T. Jenkins, Santa Fe Bldg.—2-5936
DETROIT, R. J. Thorne, 7720 Woodward Ave.—Trinity 2-7618
*LOS ANGELES, Frank J. Airey Co., 1855 Industrial St.—Michigan 7981
*NEW YORK, Geo. W. Sundstrom, 29-31 E. 22nd St.—GRamercy 7-2332-2333
PHILADELPHIA, Walter S. Beckett, 602 E. Moreland Ave., Chestnut Hill, Pa.—Chestnut Hill 2775
PITTSBURGH, H. C. Moran, 1724 Grant Bldg.—Atlantic 4677
*SAN FRANCISCO, George A. Gray, 1250-52 Folsom St.—Hemlock 1527-28
SEATTLE, F. A. Strohecker, 2207 First Avenue, So.—Elliott 0350
*Complete Warehouse Stocks Carried

## WIREMOLD RACEWAY SYSTEMS
### 7 INTERCONNECTING SIZES—4 TYPES—WITH FITTINGS

*All Sizes and Types of Wiremold Raceway and Fittings may be used for panel, cove, luminous box, or built-in lighting.*

### (1) WIREMOLD SURFACE RACEWAY

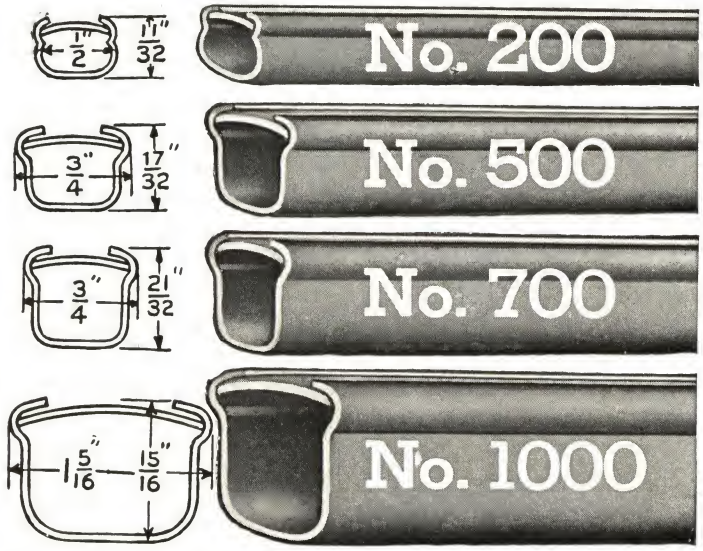


*There is a Wiremold Fitting ideally adapted to every surface wiring requirement.*

| Size of Wiremold | Wire capacity—single conductor | | | | | |
|---|---|---|---|---|---|---|
| | No. 8 | No. 10 | No. 12 | No. 14 | No. 16 | No. 18 |
| No. 200 | ..... | ..... | ..... | 2 | 4 | 4 |
| No. 500 | ..... | 2 | 2 | 3 | 6 | 6 |
| No. 700 | ..... | 2 | 4 | 4 | 10 | 10 |
| No. 1000 | 5 | 6 | 10 | 10 | 24 | 24 |

Standard of the electrical industry, as to installation method and quality of product, for 20 years. Provides an easy, simple, practical and economical method of relocating or extending existing circuits, of installing additional lighting facilities or service outlets, of modernizing the wiring layouts in old buildings without channelling walls or ceilings and without marring wood work or plaster surface.

Made in 4 interconnecting sizes (with fittings to correspond) affording a complete surface wiring system "from panel box to outlet." Also connects with Wiremold Lighting Strip, Pancake Wiremold and Plugmold Outlet Systems described below.




### (2) WIREMOLD "SIMPLIFIED" LIGHTING STRIP

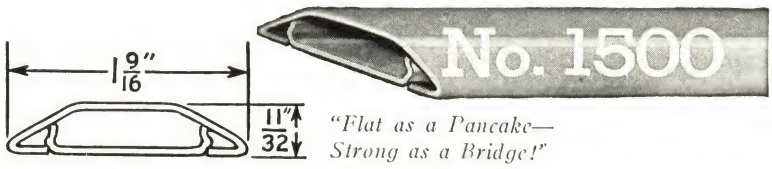
For Window and Show Case Lighting
For Cove and Panel Lighting
For Lumiline Lighting

Easily installed. May be assembled in shop and taken to job if desired. Only a few simple fittings required to meet any condition. See plate "A" following page for illustration of lumiline usage. Send for special literature describing all applications and methods of use.




### (3) "PANCAKE" WIREMOLD OVERFLOOR RACEWAY

"On the floor but out of the way—and almost out of sight," wrote one pleased customer, because it is so neat and inconspicuous. Ends loose cord nuisance—by providing safe and adequate connection for desks and appliances at a distance from wall outlet. Equally useful in new and old buildings. See illustrations in plate "B."




*"Flat as a Pancake—Strong as a Bridge!"*

### (4) "PLUGMOLD" CONTINUOUS OUTLET SYSTEM

Here at last is a continuous outlet system that meets every architectural requirement, for new or old buildings. Provides for future growth and development of electric service—without adding to present investment—because you can always add new outlets when needed, installing only what you need for today's usage. See illustrations in plate "C."

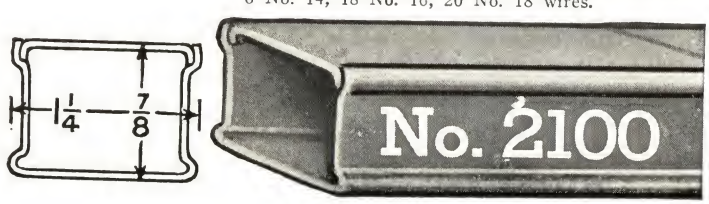
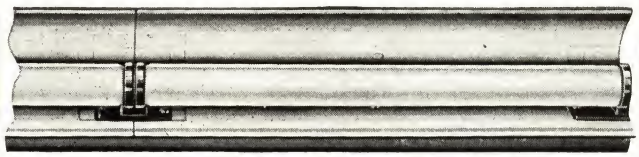


PLATE A

## WIREMOLD LUMILINE LIGHT STRIP SYSTEM



**Wiremold Lumiline Light Strip**

Wiremold Directional Reflector (shown above) may be set to reflect the light from Lumiline lamps in any direction. (See cross-section below.)

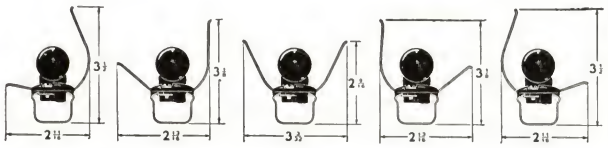


PLATE B

## PANCAKE WIREMOLD OVERFLOOR RACEWAY SYSTEM



Provides a simple, fool-proof method of connecting light and power circuits—and buzzer and signal systems—with desks and office equipment standing away from wall or baseboard outlets.

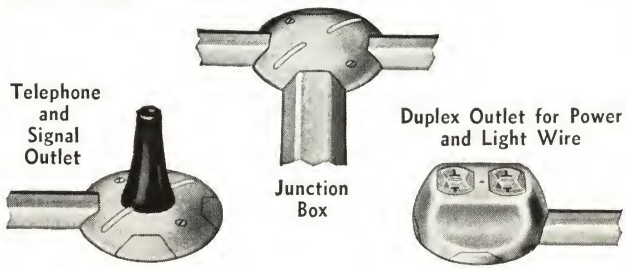
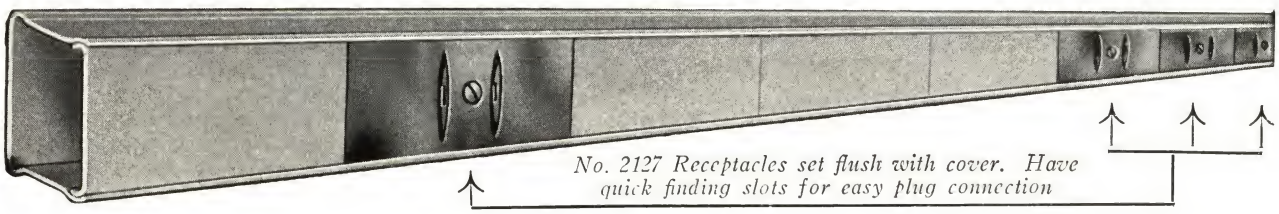
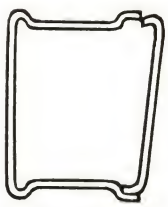



PLATE C

## "PLUGMOLD"—THE WIREMOLD CONTINUOUS OUTLET SYSTEM



*How Cover No. 2100C Snaps into Bead of Channel No. 2100B*

### "A Soundly Engineered Outlet System—Designed to Meet Architectural Standards"

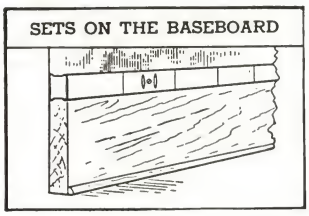
Plugmold Raceway consists of a channel No. 2100B with a snap-in cover No. 2100C, scored in sections equal in length to receptacles No. 2127.

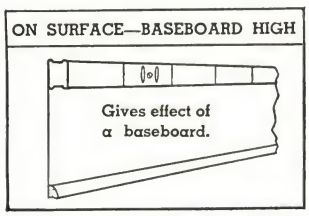
By breaking off scored sections, outlets may be placed anywhere, any time—singly or in groups on 3-in. centers and up.

No. 2100B channel has knockouts for ½-in. conduit and cable, also knockouts for screw holes every 8 inches.

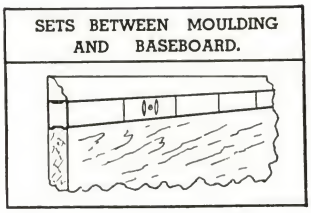
No. 2100C cover is flush mounted and easily snapped into position between the beads of channel No. 2100B.

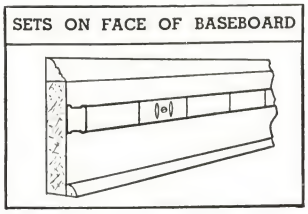
Capacity: Up to 6 No. 12 wires with receptacles in place.




*Plugmold provides a Simple and Practical Answer to Every Outlet Problem*




*Wiremold blue prints furnished free to architects—Suggestive layouts showing applications and use of Wiremold Lighting Strip, Pancake Wiremold, Plugmold and other Wiremold Raceways will be sent upon request—without obligation of any sort. Address*—THE WIREMOLD COMPANY, *Engineering Department, Hartford, Conn.*

# THE ARROW-HART & HEGEMAN ELECTRIC CO.

Manufacturers of Wiring Devices and Electrical Control Apparatus
Trade Names: "H & H", "Hart", "Arrow"

HARTFORD, CONN.

SALES OFFICES

ATLANTA BOSTON LOS ANGELES, CAL. CHICAGO NEW YORK DALLAS, TEXAS PHILADELPHIA DENVER, COL. SAN FRANCISCO, CAL. SYRACUSE DETROIT

### Products

Since 1890, ever since wiring devices were first used, this company has made a complete line of high quality, dependable articles. Owing to recent competitive conditions we have made two lines, competitively priced and sold under the trade names "Mohican" and "Relyon." These brands should not be confused with our standard lines, "H & H" and "Arrow."

### New Devices

To make the use of electricity more convenient in all types of buildings, many new devices are now available. Some of the more recent are "Timesaver" Switches, Receptacles and Warning Lights in practically any desired arrangement.

"Ivorylite" Switches, Receptacles and Plates. This is a white, cream tinted moulded material ivorylike in appearance.

*Send for General Catalog illustrating other new devices and the complete line*

H&H-ARROW

## SUGGESTED SIMPLE SPECIFICATIONS
## For Wiring Devices in Residences

### 1. General

The contractor shall base his bid on furnishing all wiring devices in the particular make or grade herein mentioned.

Where the words "approved equal" are inserted it shall be understood that any substitutions shall be formally approved by the Architect. Otherwise, if no such formal approval is given, the Architect will require that all wiring devices shall be installed in the exact type and grade herein specifically mentioned.

In cases where certain types of devices, such as "Clock Hanger Outlets," "Fan Hanger Outlets," are specified but not shown on plans, such outlets or devices will not be required to be furnished unless definitely indicated.

The specifications covering attic lights, basement, closet, and bathroom lights shall be for all outlets indicated in such areas, and not otherwise specified to be included in the lighting fixtures allowance or contract.

### 2. Convenience Outlets—Inside

All inside convenience outlets shall be furnished in Arrow-H & H No. 1913* duplex type or approved equal unless two-circuit type is called for, which shall be furnished in Arrow-H & H No. 1915, two-circuit type. In cases where the latter type is called for, provide single pole, three-way control switch in Arrow-H & H No.-TL-13 or approved equal.

### 3. Convenience Outlets—Outdoor

All outdoor convenience outlets shall be furnished in Arrow-H & H No. 7792 or approved equal, complete with cover. This shall include all outlets on outdoor porches, etc.

### 4. Floor Convenience Outlets

All floor convenience outlets shall be furnished in Arrow-H & H No. 7797 or approved equal, complete with flush screw cover and plate, and also provide extra single hole brass cover.

### 5. Fan Hanger Outlets

Where fan outlets are indicated, furnish fan hanger outlets in Arrow-H & H No. 7750 complete with plate, or approved equal. These outlets shall be located at height as directed by the Architect.

### 6. Clock Hanger Outlet

Where clock outlets are indicated, furnish clock hanger outlet in Arrow-H & H No. 7707 complete with plate, or approved equal. Exact location to be as directed by the Architect.

### 7. Radio Outlets

Furnish and install separate antenna properly supported with insulators and grounded for each radio outlet indicated. Connect separate lead-in from aerial and run into attic through insulators. In attic, run separate lead-in knob and tube construction to each radio outlet indicated on plans. In each case, provide approved lightning arrester and install separate ground wire, also provide ground for each radio outlet.

At each radio outlet indicated install one Arrow-H & H No. 2146 with plate. Radio outlet complete with special cap, ready for connection of radio set, ground and aerial.

The entire radio installation shall be complete, and ready for operation for separate sets at each point where radio outlet is indicated on plans. Entire radio system shall be installed in strict conformity with National Electrical Code and with the Insurance Company having jurisdiction.

*Ivorylite optional.

### 7-A. Alternate Radio System

(*Where more than two radio outlets are indicated on plans.*) Furnish and install a doublet antenna and lead-in, including lightning arrester and furnish one antenna transformer, Arrow-H & H No. 3082. Run distribution leads to each radio outlet indicated on plans, consisting of No. 18—$3\frac{1}{2}$-in. R. C. twisted pair, run in knob and tube. At each radio outlet indicated, furnish one Arrow-H & H No. 3093 combination radio and power outlet with plate to match other switch and receptacle plates. Complete radio installation shall be made in accordance with Arrow-H & H All-Wave Multicoupler Instructions.

### 8. Laundry Unit

Furnish in laundry, where indicated, one combination outlet, pilot and switch with durachrome plate in Arrow-H & H No. 5350 or approved equal located about 4 ft. above floor or as directed by Architect.

### 9. Switches

The contractor shall furnish at each point indicated tumbler switches in Arrow-H & H or approved equal in the following types: Single pole switches No. 8601*; double pole No. 8602*; 3-way No. 8603*; 4-way No. 8604.* Closet door switches No. 2022. Where single pole and 3-way switches are located adjacent to each other, use single pole and 3-way combination TL-13. For control of at least one basement light, use one switch pilot combination TL-61. All stairways between first and second floors shall be provided with at least two 3-way switch control points, and if more than 2-point control is shown, use two 3-way switches and one 4-way switch for each additional control.

### 10. Weatherproof Switches

If any outdoor switches are indicated for porch, patio or garage lighting, furnish Arrow-H & H No. 7981 weatherproof switch or approved equal.

*See Catalog Data on following pages, indexed according to paragraphs*

# H&H-ARROW Wiring Devices

## 11. Range Outlet

Furnish range outlet flush type in Arrow-H & H No. 7991 or approved equal and install in 4-in. standard box with a standard 2-gang raised cover. Outlet to have rating of 50 amperes, at 250 volts.

## 11-A. Alternate Range Outlet

Where indicated to be of surface type, furnish range outlet in Arrow-H & H No. 7950 or approved equal. Rating 50 amperes, at 250 volts.

## 12. Plates

All plates shall be furnished in brass, .060-in. thickness in Arrow-H & H or approved equal, with finish as approved by the Architect, except in kitchen, bathrooms and lavatories, where switch and receptacle plates are to be No. 4151 and No. 4150, respectively, in "Duracrome" finish. All other rooms to be Arrow-H & H No. 8861 and No. 8661, respectively, unless otherwise specified. Plates for fan hangers and clock outlets to be as specified elsewhere herein.

## 12-A. Alternate for Plates

If bakelite plates are specified or shown on plans same shall be furnished in Arrow-H & H No. 9040 for receptacles and No. 9021 for switches. (Ivorylite optional.)

## 13. Lighting Fixtures Not Included Under Fixture Allowance or Fixture Contract

Furnish all attic, closet, garage, and cellar service lights in Arrow-H & H or approved equal as follows: On switched outlets No. 5965 keyless receptacle, or unswitched lights in attic and closet No. 7423 porcelain pull ceiling receptacle.

## 14. Bathroom Fixtures

Furnish all bathroom wall brackets in Arrow-H & H No. 270 or approved equal porcelain wall bracket.

Where overhead lights are indicated, furnish Arrow-H & H No. 276 or approved equal porcelain beam light.

# CATALOG DATA



No. 1913-G

### (2)
### Convenience Outlets

15 amperes 125 volts, 10 amperes 250 volts.

Regular Duplex has 2 double T-slot outlets, wide plaster ears and 4 contact screws. Two-circuit style has 1 outlet always on for appliances; other outlet for lamps is controlled by wall switch.

| Duplex | | |
|---|---|---|
| 1913 | Brown bakelite | $32.00 C. |
| 1913-I | Ivorylite | 39.00 C. |
| 1915 | Brown bakelite, 2-circuit | 42.50 C. |



No. 7792

### (3)
### Outdoor Convenience Outlet

15 amperes 125 volts, 10 amperes 250 volts.

A permanent, weatherproof outlet for plugging in outdoor lighting connections or appliances. Saves the nuisance of temporary wiring from the inside.

| | | |
|---|---|---|
| 7792 | Has brass plate, cadmium plated and rubber weatherproof mat under the plate. A metal cap screws over opening when not in use. | $172.00 C. |



No. 7797

### (4)
### Floor Convenience Outlet

15 amperes 125 volts, 10 amperes 250 volts.

To plug in lamps without the nuisance of running long cords from the wall. Receptacle is recessed so the plug is sunk flush with the floor. Two threaded solid brass covers are supplied, also bevel edge plate. Designed for wood floors, not waterproof.

| | | |
|---|---|---|
| 7797 | Complete with receptacle, plate and 2 covers | $148.50 C. |



No. 7750

### (5)
### Fan Hanger Outlet

15 amperes 125 volts, 10 amperes 250 volts.

Provides electrical connection and mechanical support for fans. Supports a weight many times greater than a fan. Hangs the fan on the wall out of the way.

| | | |
|---|---|---|
| 7750 | Complete with plate | $260.00 C. |



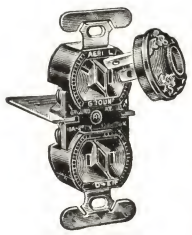
No. 7707

### (6)
### Clock Hanger Outlet

15 amperes 125 volts, 10 amperes 250 volts.

A double service device providing mechanical support for the electric clock and electrical connection. Receptacle is recessed so the plug cap goes flush with the plate. This allows the clock to hang flat over the outlet, entirely covering it with all wiring concealed. May be installed in a mantel for shelf clocks.

| | | |
|---|---|---|
| 7707 | Complete with plate | $151.00 C. |



No. 2145

### (7)
### Radio Outlet

Provides aerial, ground and power from one flush outlet. Has special polarized cap for aerial and ground and cannot be inserted in power outlet.

Eliminates straggling wires around radio and is easily connected to inside concealed or outdoor aerial.

| | | |
|---|---|---|
| 2146 | Complete with receptacle, plate and radio cap | $116.50 C. |

### (7-A)
### Alternate Radio System
### All-Wave Multicoupler Antenna System



No. 3091



No. 3093



No. 3082

Permanently wired in system provides for as many as 20 radio sets from one aerial, long and short wave. No maintenance expense, no reaction or interference between sets. Suitable for all types of buildings. Brass wall plates are standard. Brown bakelite plates if desired add "-B" to number; or Ivorylite plates add "-I" to number. Free engineering and layout service on receipt of plans.

| | | |
|---|---|---|
| 3091 | Radio and 2-power outlets | $8.50 each |
| 3093 | Radio and 1-power outlet | 7.90 each |
| 3082 | Aerial transformer | 6.00 each |

Send for special Multicoupler Specification Folder.

# H&H-ARROW WIRING DEVICES



No. 5350

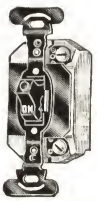
## (8)

### Laundry Unit

15 amperes, 125 volts, 10 amperes, 250 volts.

For laundry and kitchen equipment. Switch controls outlet and warning light glows red when current is being used in washing machines, ironers, dryers, etc. Comes complete with chromium finished plate. Made in a wide variety of styles for other uses.

| | | |
|---|---|---|
| 5350 | Standard unit | $392.50 C. |



No. 8601

## (9)

### Switches

These are standard switches suitable for general use in all types of buildings. They are thoroughly dependable and will give lasting years of service. Supplied also in lock style. If desired add "L" to the number and $0.70 each additional for lock feature.

| | | |
|---|---|---|
| 8601 | Single pole, 10 amp. 125 v. | $ 35.00 C. |
| 8602 | Double pole, 10 amp. 250 v. | 89.50 C. |
| 8603 | 3-way, 10 amp. 125 v. | 57.50 C. |
| 8604 | 4-way, 5 amp. 125 v. | 297.00 C. |




No. 7981

## (10)

### Weatherproof Switches

For installations exposed to weather, dampness and special atmospheric conditions, as on porches, garages, patios, industrial plants and other exposed locations. Complete with cadmium finished plate, rubber weatherproof mat, and switch, with indicating operating lever on plate.

| | | |
|---|---|---|
| 7981 | Single pole, 10 amp. 125 v. | $174.00 C. |
| 7982 | Double pole, 10 amp. 250 v. | 228.00 C. |
| 7983 | 3-way, 10 amp. 125 v. | 196.50 C. |
| 7984 | 4-way, 5 amp. 125 v. | 436.00 C. |



No. 7991

## (11)

### Flush Range Outlet

50 amperes, 250 volts, 3-wire.

| | | |
|---|---|---|
| 7991 | Complete with plate. Made of black bakelite for 3-wire straight-in wiring. Fits 4 or 4 11/16-in. box | $339.50 C. |



No. 7950

## (11-A)

### Alternate, Surface Range Outlet

50 amperes, 250 volts, 3-wire.

Made of black bakelite designed for straight-in wiring. If metallic cable is used, ground strap No. 7951 should be specified.

| | | |
|---|---|---|
| 7950 | Surface outlet | $193.00 C. |
| 7951 | Ground strap | 43.00 C. |



No. 8861



No. 9040

## (12, 12-A)

### Flush Plates

These plates are made of brass, .060 in., brown bakelite or Ivorylite. Only the more generally used plates are listed, but special or combination plates are also made.

**BRASS .060 IN.**

| | | |
|---|---|---|
| 8861 | For tumbler switch | $23.50 C. |
| 8661 | For duplex convenience outlet | 23.50 C. |

**"DURACROME," BRASS, CHROMIUM FINISH**

| | | |
|---|---|---|
| 4151 | For tumbler switch | $32.00 C. |
| 4150 | For duplex convenience outlet | 32.00 C. |

**BROWN BAKELITE**

| | | |
|---|---|---|
| 9021 | For tumbler switch | $11.00 C. |
| 9040 | For duplex convenience outlet | 7.00 C. |

**IVORYLITE**

| | | |
|---|---|---|
| 9021-I | For tumbler switch | $13.00 C. |
| 9040-I | For duplex convenience outlet | 13.00 C. |



No. 7423



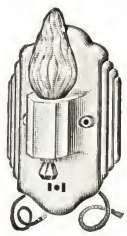
No. 5965

## (13)

### Lighting Fixtures

Not included under Fixture Allowance or Fixture Contract. Made of white glazed porcelain. Pull 250 watts, keyless 660 watts, 250 volts.

| | | |
|---|---|---|
| 5965 | Keyless, for 3¼-in. outlet box | $18.50 C. |
| 7423 | Pull, for 3¼-in. outlet box | 20.00 C. |



No. 270



No. 276

## (14)

### Bathroom Fixtures

| | | |
|---|---|---|
| 270 | Porcelain bracket with plug outlet | $1.24 ea. |
| 276 | Porcelain ceiling light for 3¼ or 4-in. outlet box. Keyless for wall switch control | .70 ea. |

## Additional Devices Not Included in the Preceding Simplified Specifications or Listed in the Above Data



No. 2022

### Automatic Door Switches

6 amperes, 125 volts; 3 amperes, 250 volts.

These switches are installed in the door jamb and automatically control the light as the door is opened or closed.

| | | |
|---|---|---|
| 2022 | On when door is open | $3.40 ea. |
| 2023 | On when door is closed | 3.40 ea. |

Hole in jam 1 1/16 in. wide, 3/8 in. long, 1½ in. deep. Plate dimensions 3¾ x 1¼ in.



No. 1281 with No. 1285 Plate

### Rotary Lock Switches, with Corbin Lock

| | | |
|---|---|---|
| 1281 | Single pole, 10 amp. 125 v. | $3.70 ea. |
| 1282 | Double pole, 10 amp. 250 v. | 4.38 ea. |
| 1283 | 3-way, 10 amp. 125 v. | 4.38 ea. |
| 1284 | 4-way, 10 amp. 125 v. | 4.96 ea. |
| 1285 | Brass plate | .60 ea. |

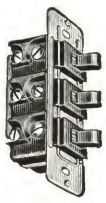
1 key is furnished each switch. Additional keys may be ordered; and on special order, a master lock system will be supplied.

# H&H-ARROW WIRING DEVICES

## Timesaver Line

This new standard provides one, two or three switches, receptacles or warning lights or combinations of these units, in a single gang wall case. Combinations come all assembled ready for installation on the job. They are made of brown bakelite or Ivorylite. If Ivorylite is desired, add "-I" to the catalog number. Prices for Ivorylite are slightly higher than bakelite.


TL-1


TL-111


TL-115


TL-617-1

| SINGLE SWITCHES | | |
|---|---|---|
| TL-1 | Single pole, 10 amp. 125v | $35.00 C. |
| TL-2 | Double pole, 10 amp. 250v | 89.50 C. |
| TL-3 | 3-way, 10 amp. 125v | 57.50 C. |
| TL-4 | 4-way, 5 amp. 125v | 297.00 C. |

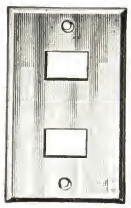
These single switches fit standard tumbler plates.

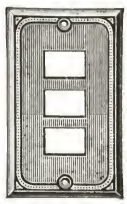
| SWITCH COMBINATIONS | | |
|---|---|---|
| TL-11 | 2 single pole | $70.00 C. |
| TL-13 | Single pole and 3-way | 92.50 C. |
| TL-111 | 3 single pole | 105.00 C. |
| TL-113 | 2 single pole, 1 3-way | 127.50 C. |

| SWITCH AND RECEPTACLE COMBINATIONS | | |
|---|---|---|
| TL-15 | Single pole switch and receptacle | $49.00 C. |
| TL-115 | 2 single pole switches and receptacles | 84.00 C. |
| TL-155 | Single pole switch and 2 receptacles | 63.00 C. |

| WARNING LIGHT COMBINATIONS with (see description) | | |
|---|---|---|
| TL-615 | Single pole switch and receptacle | $144.50 C. |
| TL-617* | Single pole switch and receptacle | 154.50 C. |
| TL-67* | Receptacle | 119.50 C. |
| TL-677* | 2 receptacles | 143.50 C. |
| TL-61 | 1 single pole switch | 130.50 C. |
| TL-611 | 2 single pole switches | 165.50 C. |

* Receptacles and warning lights are connected.
Timesaver combinations require Timesaver plates.


No. 3232


No. 9061


No. 9060-I

## Timesaver Plates

Brass .060 in., brown bakelite or Ivorylite. If Ivorylite is desired, add "-I" to the bakelite numbers. Price slightly higher.

| SINGLE GANG | | |
|---|---|---|
| 3232 | Brass, 2 openings | $28.50 C. |
| 3233 | Brass, 3 openings | 28.50 C. |
| 9060 | Bakelite, 2 openings | 16.00 C. |
| 9061 | Bakelite, 3 openings | 16.00 C. |

Supplied also for 2 and 3 gangs.


No. 1531

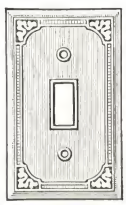
## Type "C" Tumbler Switches

Designed to handle the initial current surge of Type "C" lamps. Also supplied for 20 and 30-ampere capacity. Switches take standard tumbler plates.

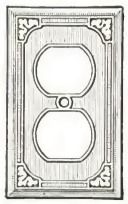
| | | | |
|---|---|---|---|
| 1531 | Single pole, 10 amp. 125v. | Enclosed bakelite base | $85.00 C. |
| 1532 | Double pole, 10 amp. 250v. | | 138.00 C. |
| 1533 | 3-way, 10 amp. 125v. | | 106.00 C. |
| 1534 | 4-way, 5 amp. 125v. | | 339.50 C. |

## Ivorylite Devices


No. 8601-I


No. 9021-I


No. 1913-I


No. 9040-I

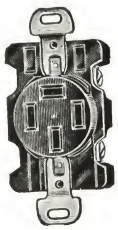
Ivorylite is a cream tinted, white moulded material, ivory-like in appearance and of solid color throughout. It is not a finish and will not chip, flake or wear off. If soiled it may be cleaned with a damp cloth.

| | | |
|---|---|---|
| 8601-I | Single pole switch, 10 amp. 125v | $45.00 C. |
| 8602-I | Double pole switch, 10 amp. 250v | 99.50 C. |
| 8603-I | 3-way switch, 10 amp. 125v | 67.50 C. |
| 8604-I | 4-way switch, 5 amp. 125v | 307.00 C. |
| 9021-I | Tumbler plate | 13.00 C. |
| 1913-I | Duplex receptacle | 39.00 C. |
| 9040-I | Duplex plate | 13.00 C. |

## Polarized Devices

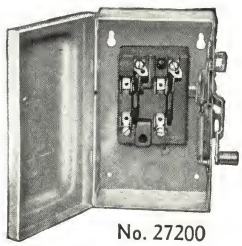

No. 7089


No. 7310


No. 7408

2, 3 or 4-wire, 10, 20, 30, 50 amperes. A condensed listing is given below. For the complete line, see general catalog illustrating plug caps and surface devices. Receptacles take standard plates, except No. 7438 which requires plate No. 7439.

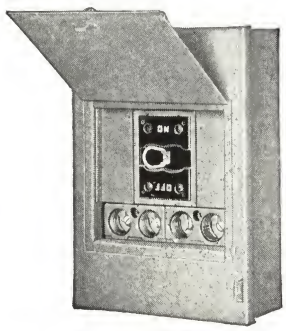
| | | |
|---|---|---|
| 7960 | Flush receptacle, 2-wire, 10 amp | $58.50 C. |
| 7089 | Flush receptacle, 2-wire, 20 amp | 106.00 C. |
| 7438 | Flush receptacle, 2-wire, 30 amp | 141.00 C. |
| 7310 | Flush receptacle, 3-wire, 10 amp | 115.00 C. |
| 7445 | Duplex receptacle, 3-wire, 10 amp | 168.00 C. |
| 7316 | Flush receptacle, 3-wire, 20 amp | 127.00 C. |
| 7408 | Flush receptacle, 4-wire, 20 amp | 156.00 C. |


No. 27200

## Type A Enclosed Switches

Available in capacities 30-1200 amperes for 2, 3, or 4-wire, 3 SN, 4 SN poles in a wide variety of styles. Also made in types C and D, in lower price class.

Send for special Catalog No. 7.


No. 27157

## Enclosed Pull-out Switches

For service entrance wiring. Meter-switch-fuse sequence. Made in a complete line for all types of requirements for ranges, water heaters, and lighting currents.

Send for special Catalog No. 7.

MEMORANDA

# BRYANT

BRYANT
SUPERIOR
WIRING DEVICES

SUPERIOR WIRING DEVICES

CATALOG No. 38A FOR ARCHITECTS

# BRYANT FLUSH SWITCHES

## "T" RATED FOR TYPE "C" LAMP LOADS

### APPROVED FOR FEDERAL SPECIFICATIONS



NO. 4961



NO. 5421

**ELECTRICAL SYMBOLS FOR SWITCH OUTLETS**

$ SINGLE POLE

$2 DOUBLE POLE

$3 THREE WAY

$4 FOUR WAY

$K KEY OPERATED

$MC MOMENTARY CONTACT

#### FOR GRADE "A" BUILDINGS AND FINE RESIDENCES

Mechanism is enclosed in arc-resisting composition and insulated from yoke. Quiet in operation and designed for long life, these switches are ideal for installation in banks, hospitals, hotels, apartments, schools, theatres, office buildings and fine residences.

| Cat. No. | | Amperes 125 V. | Amperes 250 V. |
|---|---|---|---|
| | **SINGLE POLE** | | |
| **4961** | Brown | 10 | 5 |
| **4961-I** | Ivory | 10 | 5 |
| **4966** | Brown, Quad. Break | 20 | 20 |
| **4966-I** | Ivory, Quad. Break | 20 | 20 |
| | **DOUBLE POLE** | | |
| **4962** | Brown | 10 | 10 |
| **4962-I** | Ivory | 10 | 10 |
| **4965** | Brown | 20 | 10 |
| **4965-I** | Ivory | 20 | 10 |
| | **THREE WAY** | | |
| **4963** | Brown | 10 | 5 |
| **4963-I** | Ivory | 10 | 5 |
| | **FOUR WAY** | | |
| **4964** | Brown | 5 | 2 |
| **4964-I** | Ivory | 5 | 2 |

#### FOR COMMERCIAL AND INDUSTRIAL INSTALLATIONS

Mechanism is equipped with arc snuffers and totally enclosed in bakelite. Designed and built for long service in Type "C" lamp circuits of 20 and 30 amperes. Approved for motor control up to and including 2 H.P. A.C. Require boxes not less than 2" deep. Fit standard plates.

| Cat. No. | | Amperes 125 V. | Amperes 250 V. |
|---|---|---|---|
| | **SINGLE POLE** | | |
| **5421** | Brown | 20 | 20 |
| **5426** | Brown, Quad. Break | 20 | 20 |
| **5431** | Brown | 30 | 30 |
| **5436** | Brown, Quad. Break | 30 | 30 |
| | **DOUBLE POLE** | | |
| **5422** | Brown | 20 | 20 |
| **5432** | Brown | 30 | 30 |
| | **THREE WAY** | | |
| **5423** | Brown | 20 | 20 |
| **5433** | Brown | 30 | 30 |
| | **FOUR WAY** | | |
| **5424** | Brown | 20 | 10 |
| **5434** | Brown | 20 | 10 |

FOR KEY OPERATED SWITCH ADD "L" TO CATALOG NUMBER
FOR MOMENTARY CONTACT SWITCH ADD "M" TO CATALOG NUMBER

## AUTOMATIC DOOR SWITCH

$D



NO. 2355

A high grade single-pole door switch furnished complete with box and brass strike plate. Plunger is adjustable.

6A., 125V.; 3A., 250V.

| Cat. No. | Description |
|---|---|
| **2355** | "On" when door is open |
| **2356** | "Off" when door is open |

## ELECTROLIER SWITCH

$E



NO. 2625

Electrolier push switch—one-button operation. Fits standard two-button plate No. OP61.

5A., 125V.; 2A., 250V.

| Cat. No. | Description |
|---|---|
| **2625** | Operating 1, 2, 1 and 2, off |
| **2628** | Operating 1, off, 2, off |
| **2627** | Operating 1, 1 and 2, 1 and 2 and 3, off |

LISTED AS STANDARD BY UNDERWRITERS' LABORATORIES, INC.

# BRYANT FLUSH SWITCHES

## STANDARD RATING



NO. 3951-I



NO. 1815-D

### FOR INSTALLATION IN THE HOME OFFICE AND FACTORY

A high grade general purpose switch. Mechanism is mounted in a porcelain cup. Handle may be Brown or Ivory.

| Cat. No. | | Amperes 125 V. | 250 V. |
|---|---|---|---|
| | SINGLE POLE | | |
| **3951** | Brown | 10 | 5 |
| **3951-I** | Ivory | 10 | 5 |
| **3920** | Brown, Quad. Break | 20 | 10 |
| **3920-I** | Ivory, Quad. Break | 20 | 10 |
| | DOUBLE POLE | | |
| **3952** | Brown | 10 | 10 |
| **3952-I** | Ivory | 10 | 10 |
| | THREE WAY | | |
| **3953** | Brown | 10 | 5 |
| **3953-I** | Ivory | 10 | 5 |
| | FOUR WAY | | |
| **3954** | Brown | 5 | 2 |
| **3954-I** | Ivory | 5 | 2 |

Small and compact, these switches are ideal for installations where space is limited. Mechanism is enclosed in bakelite. Furnished in Brown or Ivory.

| Cat. No. | | Amperes 125 V. | 250 V. |
|---|---|---|---|
| | SINGLE POLE | | |
| **1815-D** | Brown | 10 | 5 |
| **1915-D** | Ivory | 10 | 5 |
| | DOUBLE POLE | | |
| **1825-D** | Brown | 10 | 10 |
| **1925-D** | Ivory | 10 | 10 |
| | THREE WAY | | |
| **1835-D** | Brown | 10 | 5 |
| **1935-D** | Ivory | 10 | 5 |
| | FOUR WAY | | |
| **1844-D** | Brown | 5 | 2 |
| **1944-D** | Ivory | 5 | 2 |



NO. H61



NO. H51

### FOR MEDIUM AND MODERATELY PRICED HOMES

No. H61 is side wired for easy installation. Mechanism is enclosed in bakelite. Handle in Brown or Ivory.

No. H51 is top wired and mechanism is enclosed in porcelain. Handle in Brown or Ivory.

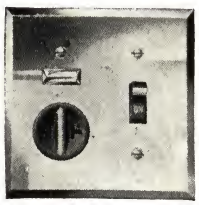
| Cat. No. | | Amperes 125 V. | 250 V. |
|---|---|---|---|
| | SINGLE POLE | | |
| **H61** | Brown, Bakelite | 10 | 5 |
| **H61-I** | Ivory, Bakelite | 10 | 5 |
| **H51** | Brown, Porcelain | 10 | 5 |
| **H51-I** | Ivory, Porcelain | 10 | 5 |
| | THREE WAY | | |
| **H63** | Brown, Bakelite | 10 | 5 |
| **H63-I** | Ivory, Bakelite | 10 | 5 |
| **H53** | Brown, Porcelain | 10 | 5 |
| **H53-I** | Ivory, Porcelain | 10 | 5 |

## SWITCH AND PILOT LAMP



NO. 2959

$P



NO. 55350

No. 2959 is an ideal Pilot and Switch combination to control cellar, garage and attic lights. Brush Brass Plate.

No. 55350 is a 2-gang switch-controlled outlet with Pilot indication. Polished Chromium Plate.

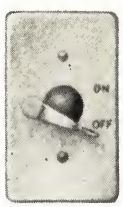
| Cat. No. | Description |
|---|---|
| **2959** | Switch and Pilot<br>Switch rating—10A., 125V.; 5A., 250V. |
| **55350** | Switch Controlled Outlet with Pilot<br>Receptacle rating—15A., 125V.; 10A., 250V.<br>Switch rating—20A., 125V.; 20A., 250V. |

## WEATHERPROOF SWITCH



NO. 4421

$WP



NO. 4431

For Porches, Garages, Industrial Plants and other installations exposed to weather and dampness. Furnished with rubber mat and Cadmium Plated Brass Plate.

| For Outlet Boxes Cat. No. | | Amperes 125V. | 250 V. | For "FS" Type Fittings Cat. No. |
|---|---|---|---|---|
| **4421** | Single Pole | 10 | 5 | **4431** |
| **4426** | Single Pole, Quad. Break | 20 | 10 | **4436** |
| **4422** | Double Pole | 10 | 10 | **4432** |
| **4425** | Double Pole | 20 | 10 | **4435** |
| **4423** | Three Way | 10 | 5 | **4433** |
| **4424** | Four Way | 5 | 2 | **4434** |

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• BRYANT SUPERIOR WIRING DEVICES •

# BRYANT CONVENIENCE OUTLETS

## DUPLEX — SINGLE — RANGE OUTLET

### FOR TOP WIRING



NO. 4812



NO. 4810

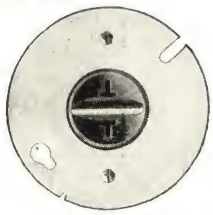
Totally enclosed in bakelite, this receptacle has "T" slots, double-sided spring contacts and wide mounting yoke. Approved for Federal Specifications and recommended for all Grade "A" Buildings.

| Duplex Cat. No. | Description | Single Cat. No. |
|---|---|---|
| **4812** | Brown | **4810** |

### FOR SIDE WIRING



NO. 4832



NO. 3780

Totally enclosed in bakelite and with "T" slots, double-sided spring contacts and wide mounting yoke. Meets requirements of best specifications including Federal.

| Duplex Cat. No. | Description | Single Cat. No. |
|---|---|---|
| **4832** | Brown | **4831** |
| **4832-I** | Ivory | **4831-I** |

#### FOR SWITCH CONTROL OF ONE OUTLET

One side controlled by switch; other side always alive for vacuum cleaner, radio, fan, etc.

| Cat No. | Description |
|---|---|
| **4832-X** | Separate Feeds, Separate Returns |
| **4832-Y** | Separate Feeds, Common Return |

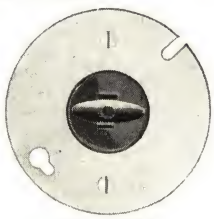
#### BOX MOUNTING METAL COVERS

| | | |
|---|---|---|
| **3781** | Brown, 3¼ inches | **3780** |
| **4782** | Brown, 4 inches | **4780** |

### FOR SIDE WIRING
NARROW MOUNTING YOKE



NO. H142



NO. H341

Enclosed in bakelite and has parallel slots only. Designed for moderately priced homes and all installations where a dependable outlet is desired at minimum cost.

| Duplex Cat. No. | Description | Single Cat. No. |
|---|---|---|
| **H142** | Brown | **H141** |
| **H142-I** | Ivory | **H141-I** |

#### BOX MOUNTING METAL COVERS

| | | |
|---|---|---|
| **H342** | Brown, 3¼ inches | **H341** |
| **H442** | Brown, 4 inches | **H441** |



NO. 3826

For all surface installations. Has solderless terminals, spring bronze contacts and bakelite casing of modern design.

| Cat. No. | Amperes 250V. |
|---|---|
| **3826** | 50 |



NO. 3862

For all flush installations. Has solderless terminals and spring bronze contacts. Attractively designed for the modern kitchen.

| Cat. No. | | Amperes 250V. |
|---|---|---|
| **3862** | .060" Brush Brass Plate | 50 |



NO. 3829

The connecting link for all electric ranges. These cord sets have heavy live rubber insulation. Terminals are embedded in vulcanized rubber cap.

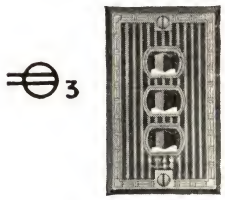
| Cat. No. | Wires | Amperes 250V. |
|---|---|---|
| **3829** | Two No. 8 and One No. 10 | 35 |
| **3830** | Two No. 6 and One No. 8 | 50 |
| **3857** | Three No. 6 | 50 |

Length, 38 inches.

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# BRYANT CONVENIENCE OUTLETS

## TRIPLEX OUTLET

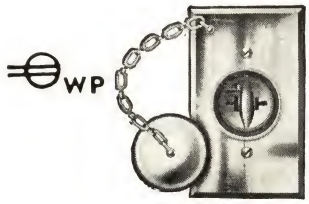


NO. IL1325

An all-bakelite triplex convenience outlet where three outlets are required in the space of a single gang. Available in brown and ivory as listed.

| Cat. No. | | Amperes 125V. | 250V. |
|---|---|---|---|
| **IL1325** | Brown | 15 | 10 |
| **IL1425** | Ivory | 15 | 10 |

## WEATHERPROOF OUTLET

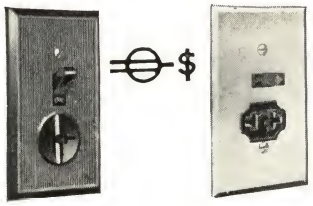


NO. 3795

Provides a permanent weatherproof convenience outlet installation.

| Cat. No. | | Amperes 125V. | 250V. |
|---|---|---|---|
| **3795** | 2-Wire | 15 | 10 |
| **3796** | 3-Wire | 15 | 10 |
| **3797** | Cover for Plug Cap | | |

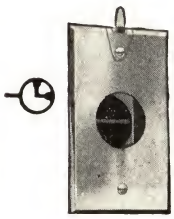
## SWITCH AND OUTLET



NO. 2989 NO. 2957

| Cat. No. | Description | Amperes 125V | 250V. |
|---|---|---|---|
| | VERTICAL OPERATION | | |
| **2989** | Bakelite Plate Switch, Rating | 10 | 10 |
| | HORIZONTAL OPERATION | | |
| **2957** | Brass Plate Switch, Rating | 10 | 5 |

## CLOCK OUTLET

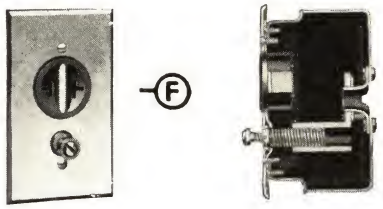


NO. 2828-F

A receptacle with hook to support the clock and a recess to conceal the cord. Fits single gang box.

| Cat. No. | Description |
|---|---|
| **2828-F** | Complete with Brush Brass Plate |

## FAN HANGER OUTLET

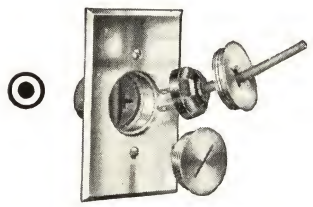


NO. 3751 SECTIONAL VIEW STUD MOUNTING TYPE

The box supports the entire weight of the fan by means of the yoke or stud. Takes 4″ square outlet box with cover.

| Cat. No. | Description |
|---|---|
| **3750** | Yoke Mounting |
| **3751** | Stud Mounting |

## FLOOR OUTLET



NO. 3799

The outlet is recessed so plug is flush with floor. Provides a convenient floor connection where wanted. A brass plate covers outlet when not in use and a cover with cord hole is furnished to protect the cap when outlet is used.

| Cat. No. | Description |
|---|---|
| **3798** | Square Edge Plate |
| **3799** | Bevel Edge Plate |

## RADIO OUTLET

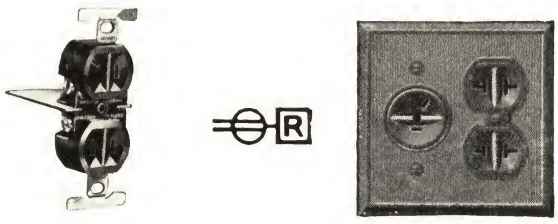


NO. 22149 NO. 3811

Designed for flush connections of aerial and ground.

| Cat. No. One Aerial One Ground | Description | Cat No. Two Aerials One Ground |
|---|---|---|
| **22149** | Brown | **3811** |
| **22149-I** | Ivory | **3811-I** |
| **3790** | Cap for use with above | **3812** |

## RADIO AND CONVENIENCE OUTLET



NO. 3789 NO. 22184

No 3789 provides a power connection and a connection for aerial and ground. No. 22184 has a duplex power receptacle, and a connection for aerial and ground. Includes a Radio Cap and a Bakelite Plate.

| Cat. No. | Description |
|---|---|
| **3789** | Brown, One Gang |
| **3789-I** | Ivory, One Gang |
| **22184** | Brown, Two Gang |
| **22184-I** | Ivory, Two Gang |

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• BRYANT SUPERIOR WIRING DEVICES •

# BRYANT LAMPHOLDERS AND PULL SWITCHES

## LAMPHOLDERS WITHOUT PULL SWITCH

660 WATTS, 250 VOLTS

### POPULARLY PRICED

PORCELAIN

ELECTRICAL SYMBOLS FOR GENERAL OUTLETS

(L)

CEILING LAMPHOLDER

(L)

WALL LAMPHOLDER



No. H227



NO. H73

These lampholders fit standard outlet boxes and are ideal for basements, garages, and for commercial and industrial applications.

| Cat. No. | Description |
|---|---|
| | ALL PORCELAIN |
| H227 | For 3¼-inch boxes |
| H228 | For 4-inch boxes |
| | ON METAL COVERS |
| H73 | For 3¼-inch boxes |
| H74 | For 4-inch boxes |

## LAMPHOLDERS WITH PULL SWITCH

250 WATTS, 250 VOLTS

WITH SHORT CHAIN AND 4-FT. CORD

### POPULARLY PRICED

PORCELAIN

(L)PS

CEILING LAMPHOLDER WITH PULL SWITCH

(L)PS

WALL LAMPHOLDER WITH PULL SWITCH



No. H168

Attractively designed pull lampholder for ceiling and wall use.

| Cat. No. | Description |
|---|---|
| H168 | For 3¼-inch boxes |
| H188 | For 4-inch boxes |

## WALL PULL SWITCHES

For individual control of fixtures in industrial and commercial buildings. Rugged mechanism and bakelite cover. Supplied with a short chain and 8 feet of heavy cord.

(S)

CEILING PULL SWITCH

(S)

WALL PULL SWITCH



No. 2546

### SURFACE MOUNTING

| Cat. No. | Description | Amperes 125 V. | Amperes 250 V. |
|---|---|---|---|
| 2546 | Single Pole | 10 | 5 |
| 2549 | Three Way | 10 | 5 |
| 2565 | Double Pole | 10 | 10 |
| 2560 | Four Way | 5 | 2 |

LISTED AS STANDARD BY UNDERWRITERS' LABORATORIES, INC.

# BRYANT LAMPHOLDERS AND PULL SWITCHES



## LAMPHOLDERS WITHOUT PULL SWITCH

660 WATTS, 250 VOLTS

### HIGH GRADE

#### BRASS COVERED



No. 4100

Finished in Brush Brass, Nos. 4100 and 4102 make artistic installations in closets, halls, etc.

| Cat. No. | Description |
|---|---|
| 4102 | For 3¼-inch boxes |
| 4100 | For 3¼ and 4-inch boxes |

#### BAKELITE



No. 4400



No. 5714

Impervious to moisture and fumes and suitable for either insulated or grounded systems.

| Cat. No. | Description |
|---|---|
| | OCTAGONAL |
| 4400 | Brown, For 3¼ and 4-inch boxes |
| 4400-I | Ivory, For 3¼ and 4-inch boxes |
| | ROUND |
| 5724 | Brown, For 3¼-inch boxes |
| 5714 | Brown, For 4-inch boxes |

## LAMPHOLDERS WITH PULL SWITCH

250 WATTS, 250 VOLTS

WITH SHORT CHAIN AND 4-FT. CORD

### HIGH GRADE

#### BRASS COVERED



No. 4104

For closets, halls and other locations in the home where a pleasing appearance is desired.

| Cat. No. | Description |
|---|---|
| 4104 | For 3¼ and 4-inch boxes |

#### PORCELAIN



No. 4278

A one-piece pull lampholder for closets, attics, basements, garages, etc.

| Cat. No. | Description |
|---|---|
| 4278 | For 3¼ and 4-inch boxes |

## CEILING PULL SWITCHES

For individual control of fixtures in industrial and commercial buildings. Rugged mechanism and bakelite cover. Supplied with a short chain and 8 feet of heavy cord.



No. 2387

#### SURFACE MOUNTING

| Cat. No. | Description | Amperes 125V. | Amperes 250V. |
|---|---|---|---|
| 2387 | Single Pole | 10 | 5 |
| 2388 | Three Way | 10 | 5 |
| 2396 | Double Pole | 10 | 10 |
| 2389 | Four Way | 5 | 2 |



No. 4331

#### BOX MOUNTING

| 3¼" Box Cat. No. | 4" Box Cat. No. | Description | Amperes 125V. | Amperes 250V. |
|---|---|---|---|---|
| 4331 | 4341 | Single Pole | 10 | 5 |
| 4333 | 4343 | Three Way | 10 | 5 |
| 4332 | 4342 | Double Pole | 10 | 10 |
| 4334 | 4344 | Four Way | 5 | 2 |

LISTED AS STANDARD BY UNDERWRITERS' LABORATORIES, INC.

# BRYANT FLUSH PLATES

Flush plates are furnished in three general types: brass, brown bakelite, and ivory beetle. Bakelite and beetle plates are available in either ribbed or mat finishes. Brass plates are made in three gauges: .040, .060 in. and solid (.100 in.). Brush brass is standard, but any finish can be supplied to specification. Plates other than those listed furnished on order.

## SWITCH PLATES



No. OS61
BRUSH BRASS



No. HS31
RIBBED



No. HS51-I
MAT

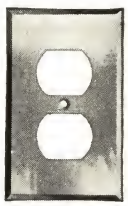
### BRUSH BRASS

### BROWN BAKELITE

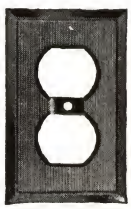
### IVORY BEETLE

| Number Gangs | .040" Cat. No. | .060" Cat. No. | .100" Cat. No. | Ribbed Cat. No. | Mat Cat. No. | Ribbed Cat. No. | Mat Cat. No. |
|---|---|---|---|---|---|---|---|
| 1 | OS41 | OS61 | OS11 | HS31 | HS51 | HS31-I | HS51-I |
| 2 | OS42 | OS62 | OS12 | HS32 | HS52 | HS32-I | HS52-I |
| 3 | OS43 | OS63 | OS13 | HS33 | HS53 | HS33-I | HS53-I |

## RECEPTACLE PLATES



No. OV61
BRUSH BRASS



No. HV31
RIBBED



No. HF51-I
MAT

### BRUSH BRASS

### BROWN BAKELITE

### IVORY BEETLE

| Description | .040" Cat. No. | .060" Cat. No. | .100" Cat. No. | Ribbed Cat. No. | Mat Cat. No. | Ribbed Cat. No. | Mat Cat. No. |
|---|---|---|---|---|---|---|---|
| Duplex | OV41 | OV61 | OV11 | HV31 | HV51 | HV31-I | HV51-I |
| Single | OF41 | OF61 | OF11 | HF31 | HF51 | HF31-I | HF51-I |

## BELL PUSH, BLANK AND TELEPHONE PLATES



PUSH BUTTON OUTLET



CAPPED OUTLET, WALL



TELEPHONE OUTLET



No. OT61
BELL PUSH



No. HK31
BLANK



No. HG31
TELEPHONE

### BRUSH BRASS

### BROWN BAKELITE

| Description | .040" Cat. No. | .060" Cat. No. | .100" Cat. No. | Ribbed Cat. No. | Mat Cat. No. |
|---|---|---|---|---|---|
| *Bell Push | | OT61 | OT11 | | |
| Blank | OK41 | OK61 | OK11 | HK31 | HK51 |
| Telephone | OG41 | OG61 | OG11 | HG31 | HG51 |

*No. 3675 Bell Push fits these plates.

TUMBLER SWITCHES SHOWN ON PAGES 2 AND 3; CONVENIENCE OUTLETS, PAGES 4 AND 5.

# BRYANT INTERCHANGEABLE UNIT DEVICES

A COMPLETE LINE OF SWITCHES, CONVENIENCE OUTLETS AND PILOT LIGHTS, ANY THREE OF WHICH MAY BE MOUNTED ON ONE YOKE FOR SINGLE GANG INSTALLATIONS.

## TYPICAL COMBINATIONS

A Few Bryant Interchangeable Unit Device Combinations.



(1) Three switches for living room, upper hall and porch.



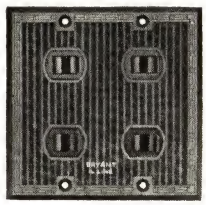
(2) Two switches for light circuits; one outlet for vacuum cleaner, etc.



(3) Cellar or garage switch and pilot combination.



(4) Upper hall combination; night light, outlet and night light switch.



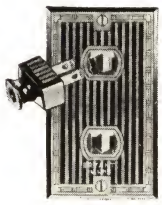
(5) Two-gang lower hall combination; switches for upper hall, lower hall, living room and porch.



(6) Duplex convenience outlet. Cat. No. IL1328 covers combination complete.



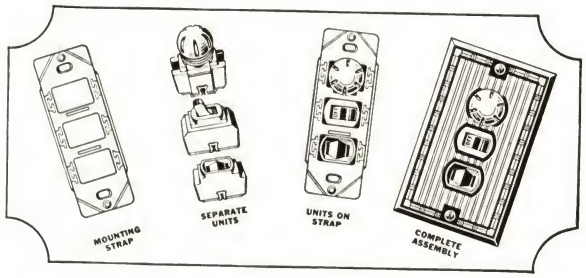
(7) Triplex convenience outlet. Cat. No. IL1325 covers combination complete.



(8) Radio combination. Cat. No. IL 4504 covers combination complete with one radio outlet, one power outlet, plate and radio cap.



(9) Triplex radio combination. Cat. No. IL4505 covers combination complete with one radio outlet, two power outlets, plate, radio cap, and two power caps.




PROGRESSIVE ASSEMBLY OF BRYANT "IL" DEVICES

## INTERCHANGEABLE UNITS



NO. IL1311



NO. IL1311-L



NO. IL1320



NO. IL1322



NO. IL1321



NO. IL1339



NO. IL1340



NO. IL1345



NO. IL1344

## SWITCHES

| Cat. No. | Description | Amperes 125V. | Amperes 250V. |
|---|---|---|---|
| IL1311 | Single Pole | 10 | 5 |
| IL1312 | Double Pole | 10 | 10 |
| IL1313 | Three Way | 10 | 5 |
| IL1314 | Four Way | 5 | 2 |

## OUTLETS

| | | | |
|---|---|---|---|
| IL1320 | Convenience outlet | 15 | 10 |
| IL1322 | Radio outlet | | |
| IL1341 | Outlet with connecting lead for pilot | 15 | 10 |

## CAPS

| | | | |
|---|---|---|---|
| IL1321 | Plug cap | 15 | 10 |
| IL1326 | Plug cap, polarized | 15 | 10 |
| IL1323 | Radio plug cap | | |

## PILOT AND NIGHT LIGHTS

| | | |
|---|---|---|
| IL1340 | Pilot light with hood | 75W |
| IL1339 | Night light with hood | 75W |

## BELL PUSH AND BLANK INSERT

| | | |
|---|---|---|
| IL1344 | Bell push for 6 to 12 V. | |
| IL1345 | Blank insert or Cord Hole | |

BROWN BAKELITE IS STANDARD. FURNISHED IN IVORY ON ORDER.

## PLATES

MOUNTING STRAPS ARE SUPPLIED WITH PLATES.

| Brown Cat. No. | Ivory Cat. No. | Description |
|---|---|---|
| | BAKELITE—SINGLE GANG | |
| IL1381 | IL1481 | 1 horizontal opening |
| IL1332 | IL1432 | 2 horizontal openings |
| IL1333 | IL1433 | 3 horizontal openings |
| | BAKELITE—2 GANG | |
| IL1334 | IL1434 | 4 horizontal openings |
| IL1382 | IL1482 | 2 horizontal openings |
| IL1336 | IL1436 | 6 horizontal openings |
| | BAKELITE—3 GANG | |
| IL1337 | IL1437 | 6 openings |
| | BRUSH BRASS-SINGLE GANG | |
| .060" | .040" | Description |
| IL1671-A | IL1771-A | 1 horizontal opening |
| IL1671-B | IL1771-B | 2 horizontal openings |
| IL1671-C | IL1771-C | 3 horizontal openings |

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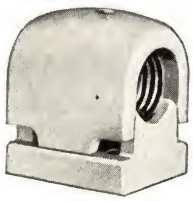
# BRYANT LAMPHOLDERS for CONCEALED LIGHTING and FIXTURES

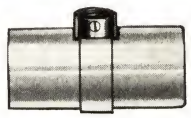

NO. 3890


NO. 3889


NO. 3891


NO. 3892


NO. 4248


NO. 76750


NO. 7043


NO. H715

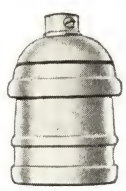

NO. H310


NO. 9429 AND 9457


NO. AA10


NO. TA4315


NO. FA3773


NO. PA73

## CONCEALED LIGHTING

The Bryant line includes a variety of lampholders for concealed illumination.

Twin and Angle lampholders for Edison base lamps are used in cove, trough, and other concealed installations.

The mounting bases for Lumiline lamps are used for either flush or surface work.

## LUMILINE

### 660 WATTS, 250 VOLTS

| Cat. Not. | |
|---|---|
| 3890 | Black bakelite end cap, shallow collar |
| 3889 | Black bakelite end cap, deep collar |
| 3891 | Black bakelite single base |
| 3892 | Black bakelite twin base |

For devices in white material, add "W" to catalog number.

## TWIN AND ANGLE

### 660 WATTS, 250 VOLTS

| | |
|---|---|
| 76750 | Twin ⅛ inch bushing |
| 7043 | Angle ⅛ inch bushing |
| 4248 | Keyless double outlet |

## CLEAT, DECORATIVE AND BRACKET

### 660 WATTS, 250 VOLTS

These lampholders are used for basements, garages, decoration, and temporary installations.

| | |
|---|---|
| H715 | Cleat, brown bakelite |
| 50715 | Cleat, porcelain |
| H310 | Decorative, brown bakelite |
| 9429 | Porcelain bracket body |
| 9457 | ⅜ in. die cast cap for 9429 body |
| 9458 | ½ in. die cast cap for 9429 body |

## BRASS SHELL

The fluted catch lampholders are designed for lasting service with a quality finish. Combinations of caps, bodies and bases are available for all applications.

The threaded catch lampholders are for industrial use and the support of heavy shades. The threaded ring securely locks the cap and shell together.

### CAPS

| Fluted Catch Cat. No. | Threaded Catch Cat. No. | Description |
|---|---|---|
| AA | TA | ⅛ inch female |
| AC | TC | ⅜ inch female |
| AT | TT | Pendent |

### BODIES

| | | |
|---|---|---|
| 10 | 4310 | Key, 250W. 250V. |
| 13 | 4313 | Keyless 660W. 250V. |
| 15 | 4315 | Pull, 250W. 250V. |
| 32 | 4317 | Push, 250W. 250W |
| 34 | 4314 | Push, 660W. 250V. |

## INSULATED SHELL

Insulated shell lampholders are designed particularly to resist high temperatures, moisture and fumes. They are suitable for damp locations such as cellars, garages, etc.

### CAPS

| Composition Cat. No. | Porcelain Cat. No. | Description |
|---|---|---|
| FA | PA | ⅛ inch female |
| FC | PC | ⅜ inch female |
| FT | PT | Pendent |

### BODIES

| | | |
|---|---|---|
| 3770 | 70 | Key,250W. 250V. |
| 3773 | 73 | Keyless, 660W. 250V. |
| | 75 | Pull, 250W. 250V. |
| | 74 | Push, 250W. 250V. |
| | 71 | Push, 660W. 250V. |

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# BRYANT NOFUZE MULTI-BREAKER LOAD CENTERS

## Nofuze Circuit Protection Makes the Home Modern

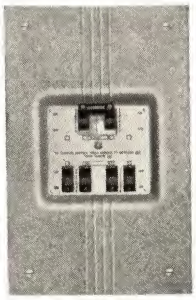
The Bryant Nofuze load center is the latest form of circuit protection for service entrance in residences, small stores, other buildings and for the control of lighting, range, water heater, and appliance branch circuits.

Available in attractive flush panel type for installation in room interiors and in surface type for ordinary installations.

Approved for service entrance work by Underwriters' Laboratories, Inc. and bears their label.



SURFACE



FLUSH

## Compact, Simple and Accessible

Overload or short circuit automatically opens the breaker and shuts off the current. To restore service, the handle is simply moved as far as possible beyond the "off" position and then to "on". The mechanism is trip free and the handle cannot be held in against an overload or short circuit condition.




**TRIP**

When a short circuit or overload occurs, the breaker handle trips to the indicating position shown above.




**RESET**

To reset the breaker, simply move the handle to extreme "OFF", as shown in the illustration. Then—




**ON**

To restore service, flip the handle to the "ON" position. Nofuze breaker cannot be held closed against a continuing overload.

## Easy to Install

The Bryant Nofuze load center comes complete, ready for wiring with an entire swing-out mechanism.

The mains are of 35 and 70-ampere capacities arranged for 3-wire 115/230, or 2-wire 115 volts solid neutral a-c service. Branch breakers are provided in various combinations of 15, 20, 25, 35 and 50 ampere capacities to make up the complete load center.

All branch circuit breakers are arranged for single pole connections. When the service is 3-wire 115/230 volt grounded neutral each 2-pole 230 volt branch circuit is provided with two single-pole breakers having the handles connected.

## FOR 2-WIRE AND 3-WIRE GROUNDED NEUTRAL SYSTEMS

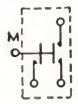
### 2-WIRE, 115 VOLT—A.C.




ONE BRANCH POLE UNIT




TWO BRANCH POLE UNIT




THREE BRANCH POLE UNIT

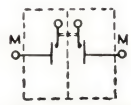



FOUR BRANCH POLE UNIT

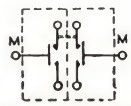
#### BRANCHES

| Total Number Branch Poles | Capacity and Number 2-Pole Branch Breakers | Capacity and Number 1-Pole Branch Breakers | Mains Max. Amp. | Cat. No. Flush | Cat. No. Surface |
|---|---|---|---|---|---|
| 1 | —— | 1-15 | 35 | 78011-F | 78011-S |
| 2 | —— | 2-15 | 35 | 78021-F | 78021-S |
| 3 | —— | 3-15 | 35 | 78031-F | 78031-S |
| 4 | —— | 4-15 | 35 | 78041-F | 78041-S |

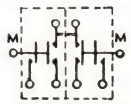
### 3-WIRE, 115/230 VOLT—A.C.



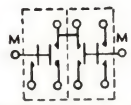

TWO BRANCH POLE UNIT



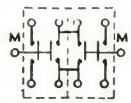

FOUR BRANCH POLE UNIT




SIX BRANCH POLE UNIT




SEVEN BRANCH POLE UNIT




EIGHT BRANCH POLE UNIT

#### BRANCHES

| Total Number Branch Poles | Capacity and Number 2-Pole Branch Breakers | Capacity and Number 1-Pole Branch Breakers | Mains Max. Amp. | Cat. No. Flush | Cat. No. Surface |
|---|---|---|---|---|---|
| 2 | —— | 2-15 | 35 | 72021-F | 72021-S |
| 2 | 1-35 | —— | 35 | 72100-F | 72100-S |
| 2 | 1-50 | —— | 70 | 73200-F | 73200-S |
| 4 | —— | 4-15 | 35 | 72041-F | 72041-S |
| 4 | 1-35 | 2-15 | 70 | 73121-F | 73121-S |
| 4 | 1-50 | 2-15 | 70 | 73221-F | 73221-S |
| 6 | 1-35 | 4-15 | 70 | 73141-F | 73141-S |
| 6 | 1-50 | 4-15 | 70 | 73241-F | 73241-S |
| 6 | 1-35, 1-20 | 2-15 | 70 | 73421-F | 73421-S |
| 7 | 1-35 | 5-15 | 70 | 73151-F | 73151-S |
| 8 | 1-35, 1-20 | 4-15 | 70 | 73441-F | 73441-S |
| 8 | 1-50, 1-20 | 4-15 | 70 | 73741-F | 73741-S |
| 8 | 1-50, 1-35 | 4-15 | 70 | 73941-F | 73941-S |

## DIMENSIONS AND FINISHES

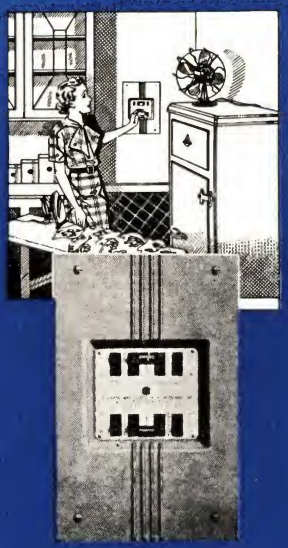
| | Front Height | Front Width | Depth | Finish |
|---|---|---|---|---|
| Flush Mounting | 12-5/16" | 7-13/16" | 3-5/8" | Gray Enamel |
| Surface Mounting | 11-3/8" | 6-7/8" | 3-5/8" | Black Enamel |

A FOLDER, GIVING MORE COMPLETE DATA ON NOFUZE LOAD CENTERS, WILL BE SENT TO ARCHITECTS ON REQUEST. THE FOLDER CONTAINS INFORMATION AS TO INSULATED SOLID NEUTRAL AND OTHER SPECIFICATION ITEMS.

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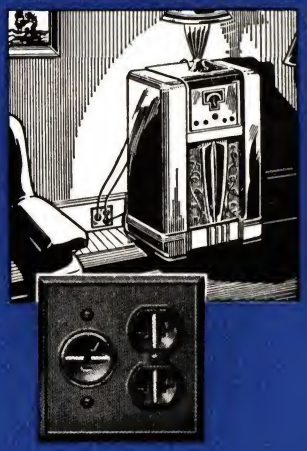
# PRACTICAL APPLICATIONS OF BRYANT DEVICES



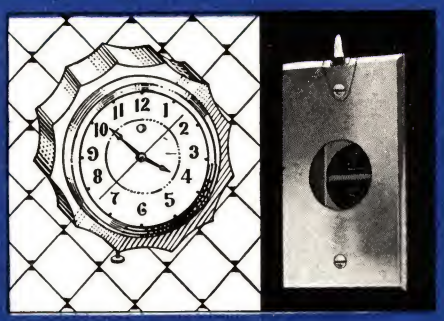


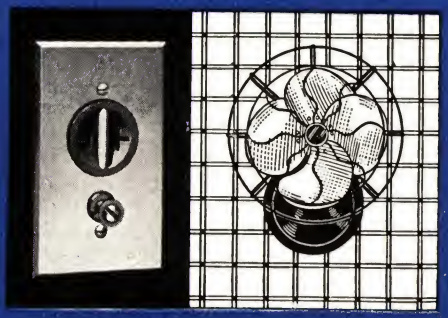






EVERY OUTLET DESERVES A BRYANT DEVICE





BRYANT
SUPERIOR WIRING DEVICES

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SELECTED BRYANT WIRING DEVICES OF INTEREST TO ARCHITECTS, ENGINEERS AND CONTRACTORS

This catalog contains a selection of Bryant devices commonly used in building specifications, together with the electrical symbols for architectural plans. It is hoped that this arrangement will be found useful as a time-saver to Architects, Engineers and Contractors.

BRYANT DEVICES KNOWN AND AVAILABLE NATIONALLY

Bryant Wiring Devices have been the choice of leading architects throughout the country for fifty years. They are distributed through electrical wholesalers in all important trading centers.

**THE BRYANT ELECTRIC COMPANY • BRIDGEPORT, CONNECTICUT**

NEW YORK
100 EAST 42nd ST.

CHICAGO
844 WEST ADAMS ST.

SAN FRANCISCO
325 NINTH ST.

23
10

# GENERAL ELECTRIC HOME WIRING

A MODERN WIRING METHOD DESIGNED
TO MEET MODERN REQUIREMENTS

GENERAL
ELECTRIC

FOR ALL TYPES OF RESIDENCES AND SMALL BUILDINGS

GENERAL ELECTRIC

# HOME WIRING

## MEETS MODERN NEED FOR PROPER HOME SYSTEMS

G-E Home Wiring is designed to provide enough copper and outlets for all modern conveniences. It can be installed in many different ways. Each circuit of the system is independent with local control. Long circuit runs are avoided. Heavy risers terminate at conveniently located branch distribution units, from which final branch circuits are divided into separate runs. Economies are effected and the overloading of circuits is prevented. This method of wiring is not expensive in comparison with conventional wiring done adequately.

### AMPLE COPPER AND PROPER LAYOUT

Much has been said and written about the need for outlets, but very little attention has been paid to wire sizes or to efficient layout design. Yet these two factors are even more important than an ample number of outlets. For of what use is an outlet if current can't get through to it without losses?

G-E Home Wiring furnishes enough outlets and ample copper. The slight additional cost of these ample copper conductors is returned many times over by the saving of two distinct losses—loss in heat and loss in power. Such losses are continuous and must be paid for as registered on the meter.

### APPLIANCES NEED FULL VOLTAGE

The growing use of electrical appliances has made evident another loss not recognized before. This loss is far greater than the first two. Electrical appliances of all types are very efficient, of course, when used on electrical distribution systems that supply them with a sufficient amount of electricity at the pressure for which they were designed. If electricity is not supplied under these conditions, the appliances cannot do the work for which they were intended. They can work only as fast as, and at the rate at which they can obtain power. The appliances have not lost their high efficiency but they are unable to obtain enough power to do the work required of them in the time for which they were designed. In fact, in some cases, they cannot do the work at all, or not to the full extent of their capacity.

To the extent that the pressure supplied to the appliance is reduced, the time required to do the work expected from the appliance is increased. During this additional time, the appliance is continuing to use power which must be paid for. The electrical bill is increased because electricity is purchased on a time basis, that is, electricity is measured and paid for on the basis of the kilowatt-hour—or the power times the time.

### G-E HOME WIRING SUPPLIES ALL NEEDS

It is apparent, then, that the attempt to save money on the size of the conductors throughout the electrical system will not be an economy, but will be foolhardy and will result in losses that will be constant throughout the life of the system. Upon consideration, it will be seen that a proper layout of the wiring system is without doubt the most important requisite in any home. G-E Home Wiring provides this proper layout, with ample copper and outlets, and with convenient control of circuits.

## *The Cost Is Comparable*

Cost analyses of specific jobs show that if the three essential requirements for G-E Home Wiring are followed, copper adequacy will be secured at no greater cost than would be encountered with conventional wiring methods.

# G-E HOME WIRING

## THE METHOD AND ITS ADVANTAGES

**THE METHOD**—G-E Home Wiring embodies a method which meets the fundamental requirements for any successful electrical wiring system. It is a method which has always been used for industrial and commercial buildings because of its efficiency. Now, this same method is applicable to small and moderate-sized homes—an application relatively new, that is made possible because control units are now available for home uses. The G-E Home Wiring Method, suitable for all sizes and types of homes follows:

(1)—*Main Distribution Conductors and Control Units*—The size of these conductors can be determined by a careful check of the power required for the whole house. The National Electrical Code rules assure proper conductor sizes and also the proper main distribution unit of control.

(2)—*Sub-feeder Conductors and their Control Units*—It is here that the G-E Home Wiring Method departs from the usual practice today. Convenient, centrally located control points are selected on each floor. To these points, large sub-feeders are run from the main distribution control unit. Here, at the end of these sub-feeders, a sufficient number of control units are placed to protect and control the final circuits.

(3)—*Short Runs for the Final-circuit Conductors*—Here again, G-E Home Wiring differs from the common, unsatisfactory practice of today. Common practice, of course, runs a final circuit conductor as one long string from the central point with outlets along the way, like the long tail of a kite with bows along its length. With G-E Home Wiring, the final circuits are divided up into a number of final sub-circuits which radiate from the control unit like the rays of the sun. Each sub-circuit serves only a few outlets.

**ADVANTAGES**—G-E Home Wiring assures electrical comfort and convenience to the home owner now and in the future. It is completely adequate and efficient.

*Convenience*—Enough outlets are provided so that lights and appliances can be used when and where they will be most useful. Ample wire sizes and proper layout design assure current being delivered at the outlets at full voltage. There is no waiting for pokey appliances to do their work.

*Comfort*—Lights burn brightly at their full rated voltage. There is no dimming and flickering of lights when appliances start to operate. Properly placed switches provide a pathway of light throughout the home without retracing steps.

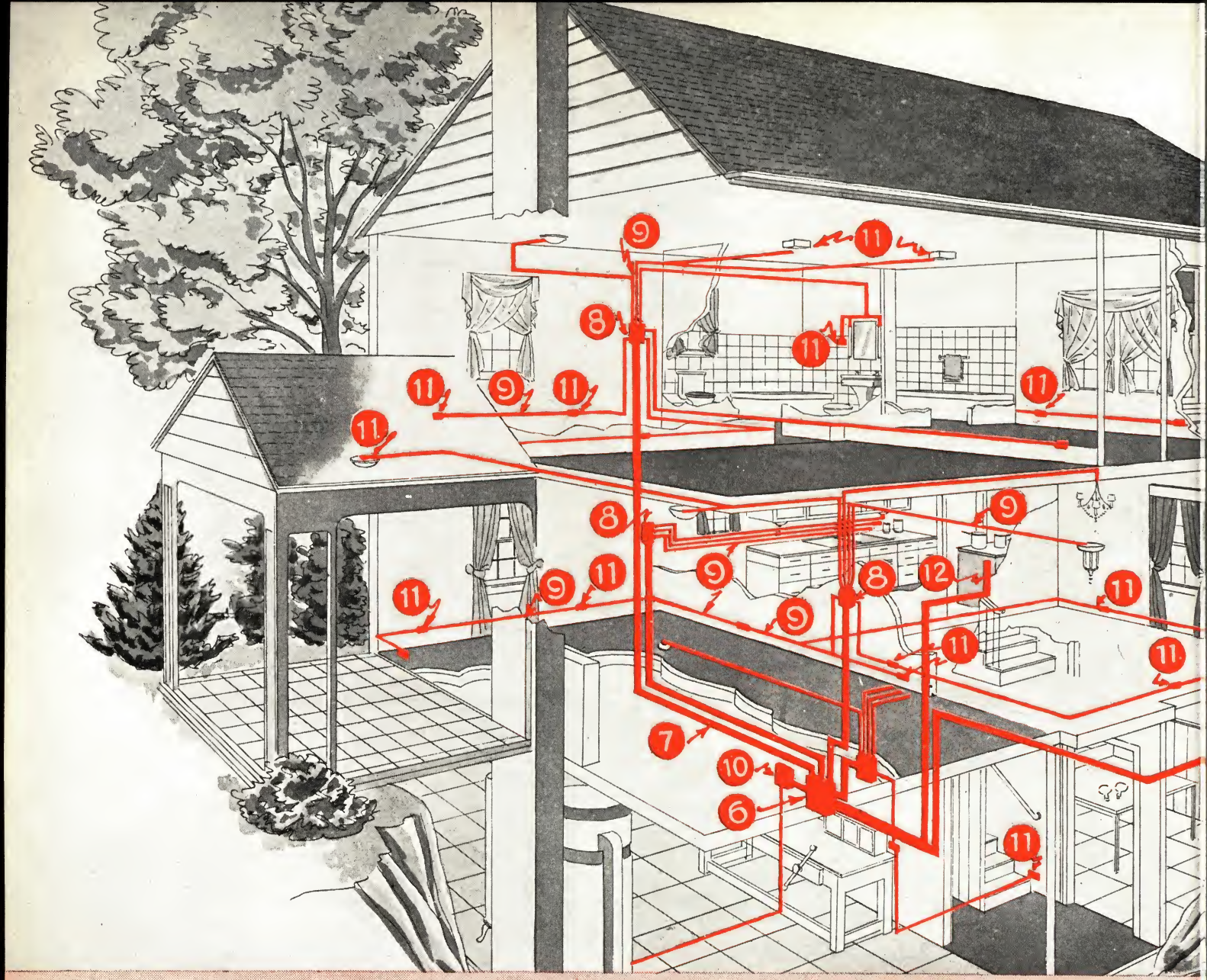
*Easy circuit Control*—Control units are placed at convenient, centrally located points about the home. This is possible because heavy feeders terminate at these points. Final circuits start here. If overloads or short circuits occur, it is only necessary to walk a few steps to restore service instead of making a trip to the basement as would be necessary with conventional wiring.

*Efficiency*—Proper wire sizes, short runs and radial circuits make G-E Home Wiring highly efficient. There is practically no voltage drop. An appliance operating at one outlet does not affect the operation of appliances at other outlets. Lights and appliances operate at their rated voltage.

*Economy*—G-E Home Wiring saves money in two ways: (1) expensive additional wiring will not be necessary in the future; (2) voltage losses are avoided. The voltage drop in the wires running to the outlets in a conventional wiring system causes considerable loss of efficiency in lights and appliances. These losses, of course, make the operation of appliances more expensive.

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# Explanations of Numbers

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Joins service conductors and main feeders together .....Page 10

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Cable or rubber-covered conductors in conduit from service lead to main distribution unit....Page 10



**4 OUTDOOR METER**
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**5 MAIN FEEDERS**
Should be of sufficient size. See No. 3 above....Page 11

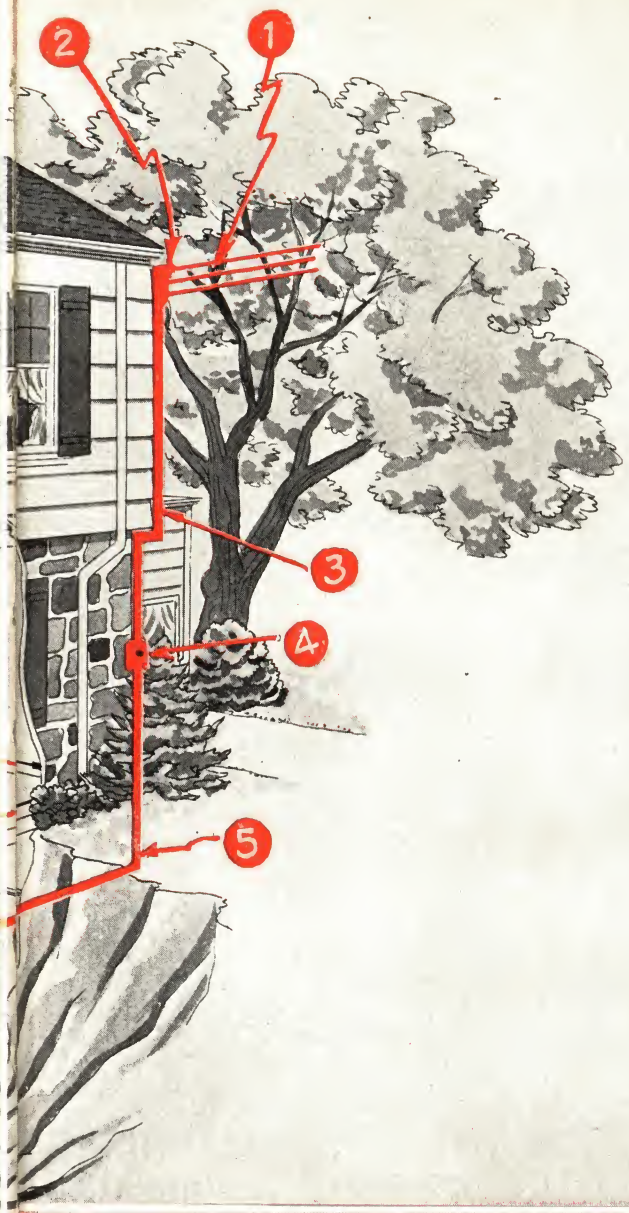
**6 MAIN DISTRIBUTION UNIT**



Of proper size for total connected load. Shall contain main fuses or breakers, range fuses or breakers and protective devices for other fixed equipment. See local utility about type.....Page 11

**7 SUB-FEEDERS**
At least one size larger than final circuit conductors .....Page 12






# HOW THIS G-E HOME WIRING LAYOUT MEETS THE THREE REQUIREMENTS FOR SUCCESSFUL WIRING

1. The sizes of the Main Distribution Conductors and their Control Units are adequate to supply the power required in the house according to the National Electrical Code rules. Numbers 1, 2, 3, 4, 5, and 6 on the drawing show, respectively, the Service, the Service Fitting, the Service Entrance Cable, the Outdoor Meter, the Main Feeders, and the Main Distribution Control Unit.

2. Large sub-feeder conductors (No. 7) run from the main distribution control unit to conveniently located points in the home, where they terminate at individual control units (No. 8) which protect and control the final circuits.

3. Final circuits are divided in several short radial runs (No. 9), each serving a few outlets (No. 11). Note that circuits serving lighting fixtures are different from those serving convenience outlets.

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## *Explanations of Numbers*

### 8 BRANCH DISTRIBUTION UNITS



Locate near load centers. May be fuses or circuit breakers but device should be same type as used in main distribution unit. Controls all final branch circuits.....Page 14

### 9 FINAL CIRCUITS

Recommended that circuit be divided into several short sub-circuits which radiate from control units—each sub-circuit to serve only a few outlets. .....Page 15

### 10 BOXES AND FITTINGS

Shall be furnished as needed.....Page 15

### 11 OUTLETS







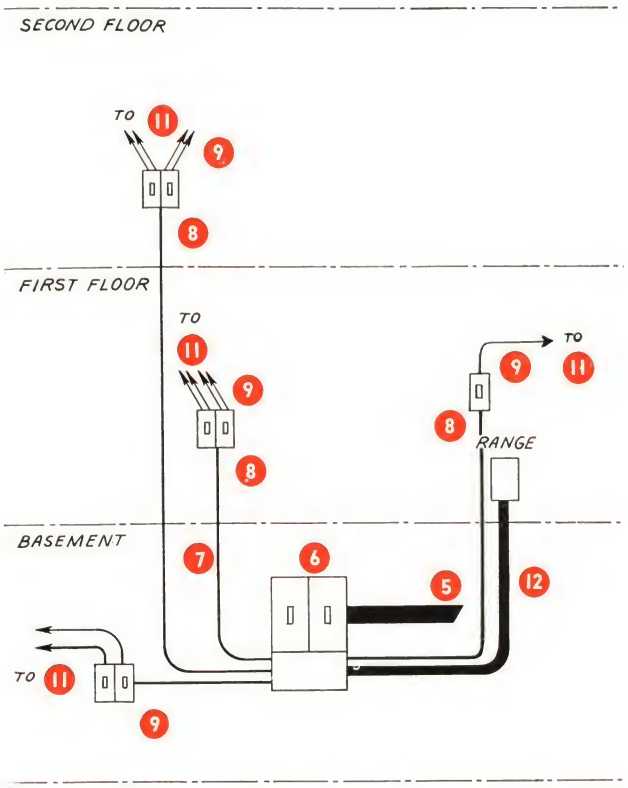
Should conform to modern standards of adequacy.....Page 16

### 12 RANGE WIRING

Heavy enough to permit full-load operation of range. See local rules for installation.....Page 21

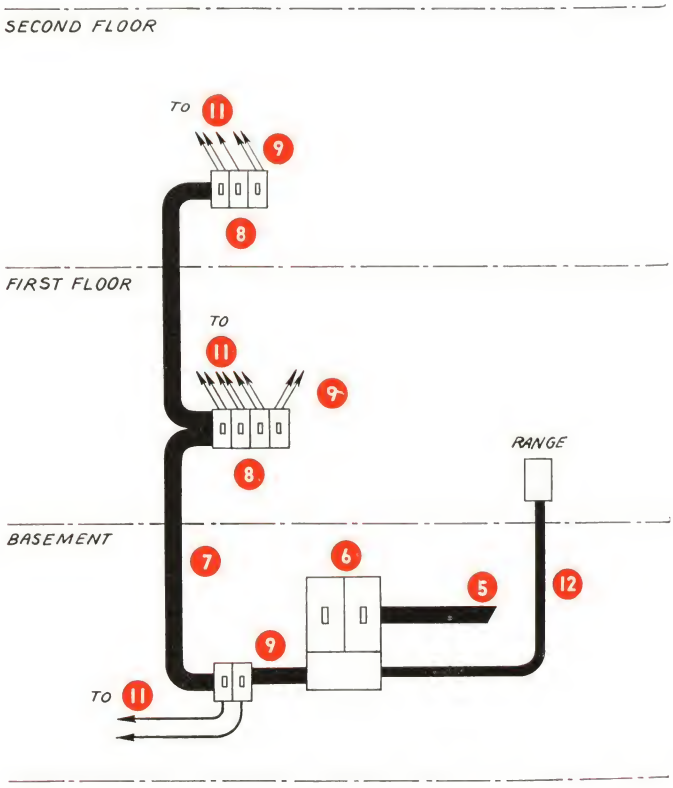
# Helpful Examples of . . .

**CASE 1**—Note the risers to the load centers on first and second floors. This installation was made in accordance with Section 2434d of the N.E.C., 1937 Edition, which allows the use of feeder without protective devices in the main distribution unit. An installation of this kind will be found economical for smaller residences with a limited number of branch circuits.




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**CASE 2**—Here, one heavy feeder runs to the first- and second-floor load centers. Inasmuch as the feeder is of the same size as the service entrance cable, the protective devices in the main distribution unit protect this feeder. There is also no code limitation to the length of the feeder or to the number of protective devices which it serves.




# Explanations of Numbers

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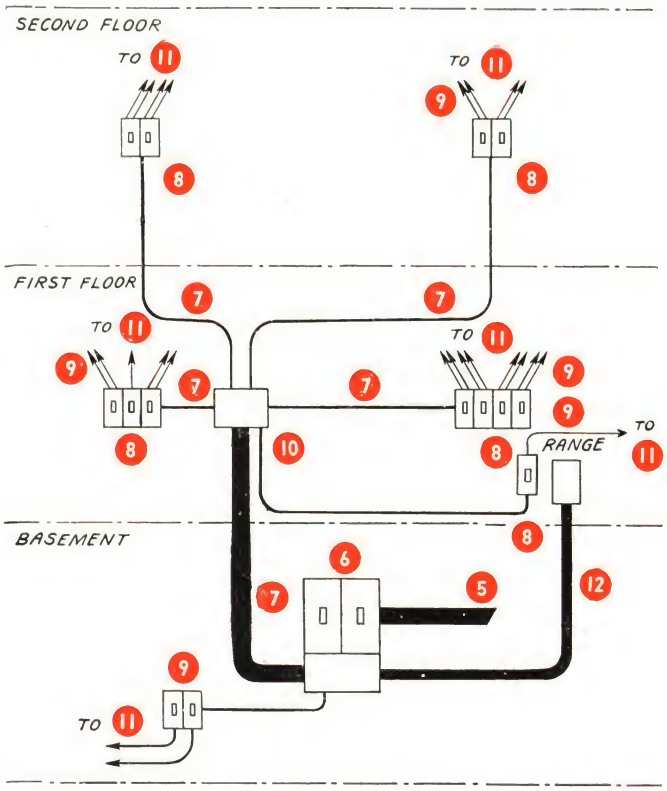
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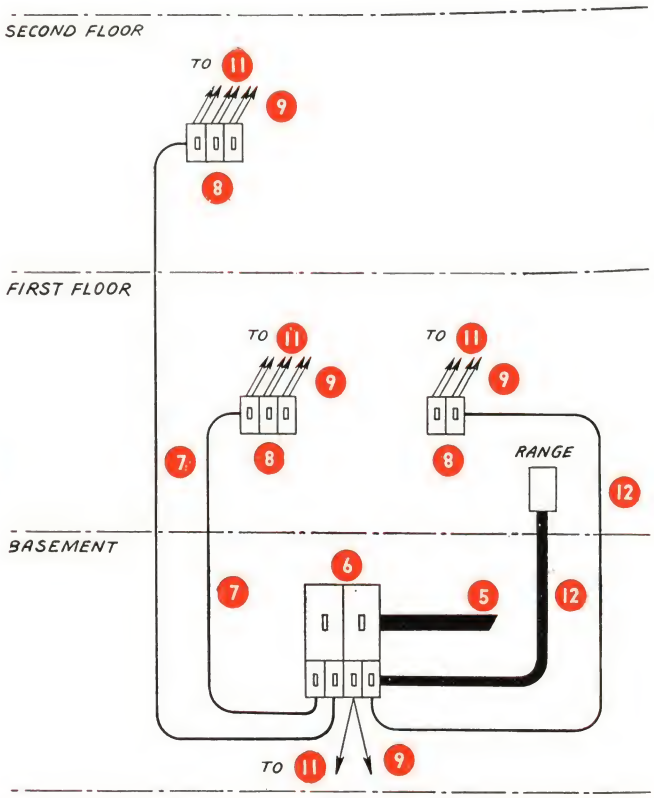
**7 SUB-FEEDERS**
At least one size larger than final circuit conductors .....Page 12



**CASE 3**—A combination of the methods in the first two layouts is employed here. A single feeder of the same size as the service entrance cable is run to a central point on the first floor. From there, smaller feeders are installed, in accordance with Section 2434d of the N.E.C., 1937 Edition, which serve branch load centers on the first and second floors.

**CASE 4**—Here, the feeders are protected in the main distribution unit. This method permits feeder sizes which are not limited in length or number of protective devices served by them. The protective devices for the feeders must, of course, have a rating high enough for the load which is served by them. Probable diversity factor may be taken into consideration.




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# Explanations of Numbers

## 8 BRANCH DISTRIBUTION UNITS



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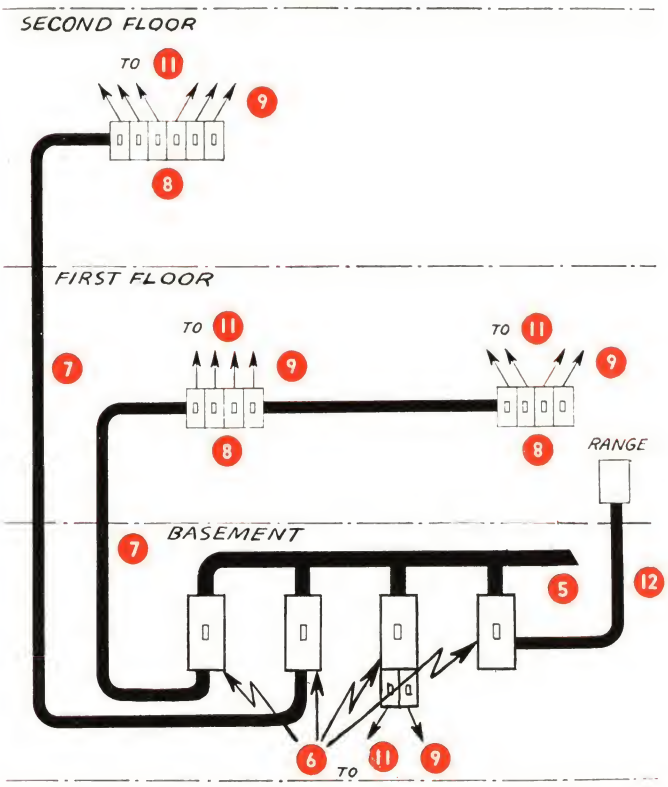
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## 12 RANGE WIRING

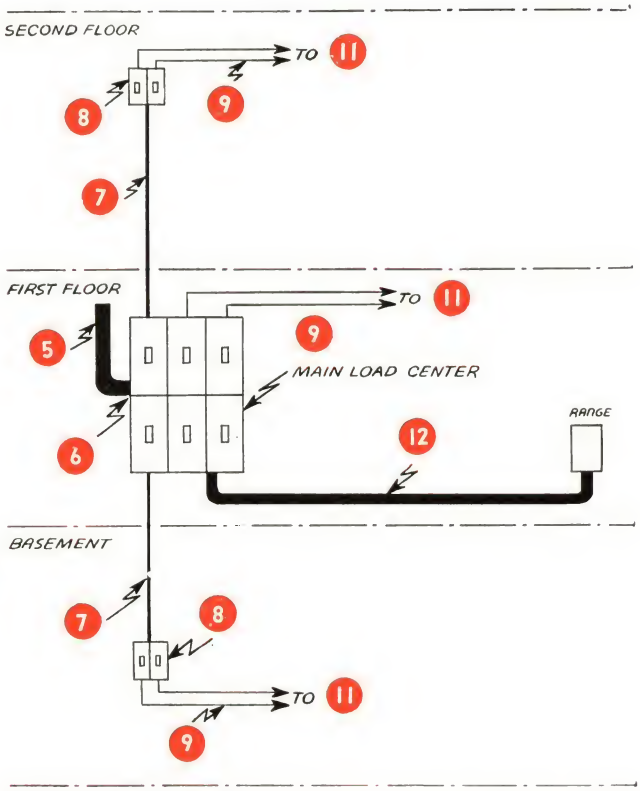
Heavy enough to permit full-load operation of range. See local rules for installation.....Page 21

# Helpful Examples of . . .

**CASE 5**—Here, a 200-amp. main distribution unit is split into four 50-amp. distribution units. This method is possible according to the 1937 Edition of the N.E.C., Section 2351a. This method of wiring will be found advantageous where a large main distribution unit makes the installation of sub-feeders or a main feeder as shown in the first two diagrams economically prohibitive.




**CASE 6**—Since multi-breaker panels of low cost are now available, the method of wiring shown here might be economical, especially when the service entrance conductors enter at the first floor. No main distribution unit is necessary as per Section 2351a of the 1937 Edition of the N.E.C. Multi-breaker panels can be mounted in the kitchen or in the back hall.




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# Explanations of Numbers

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Installed in accord with local utility.....Page 11

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Should be of sufficient size. See No. 3 above....Page 11

**6 MAIN DISTRIBUTION UNIT**



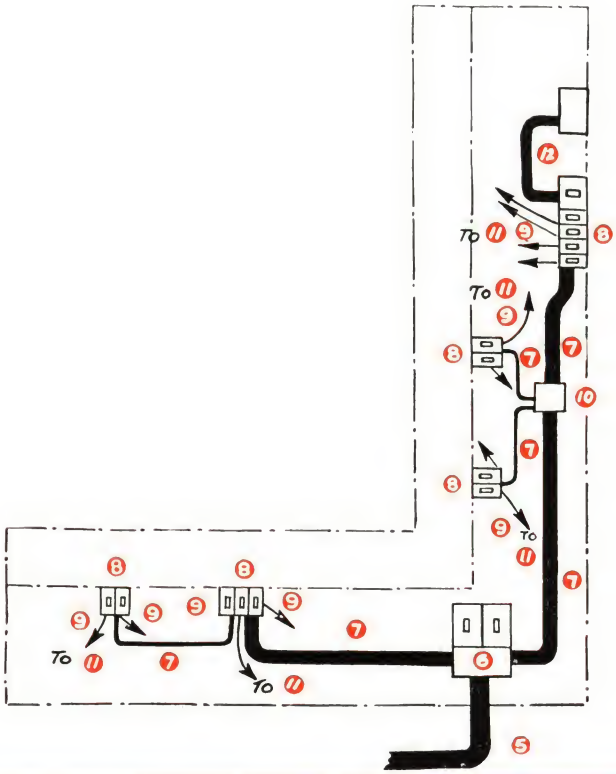
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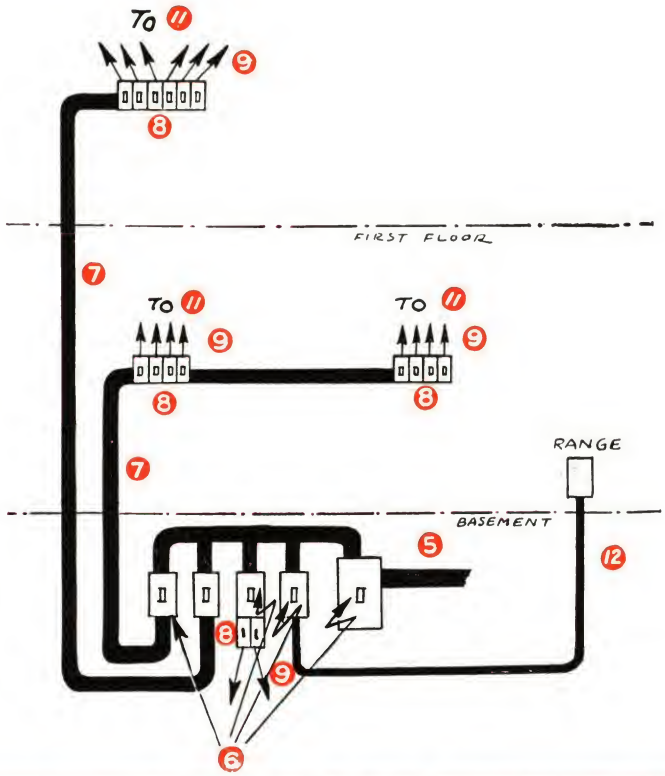
**7 SUB-FEEDERS**
At least one size larger than final circuit conductors .....Page 12



**CASE 7**—This diagram is substantially the same as diagram 3. It shows G-E Home Wiring adapted to a large one-story building. Heavy feeders run from the main distribution unit to convenient distribution points from where smaller feeders run to branch distribution units. Splicing boxes or the boxes enclosing the branch units can be used for tapping the large feeder.

**CASE 8**—In certain localities, where it is necessary to install a single disconnecting means for the entire current, the arrangement shown on this diagram can be used. Otherwise, this diagram is identical with the one shown on the preceding page. Of course the same principle can be applied wherever necessary, to any one of the other diagrams shown here.




## Explanations of Numbers

### 8 BRANCH DISTRIBUTION UNITS



Locate near load centers. May be fuses or circuit breakers but device should be same type as used in main distribution unit. Controls all final branch circuits.....Page 14

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Shall be furnished as needed.....Page 15

### 11 OUTLETS



Should conform to modern standards of adequacy.....Page 16

### 12 RANGE WIRING

Heavy enough to permit full-load operation of range. See local rules for installation.....Page 21

## 1 SERVICE

Materials used in the Electrical Service from the pole to the house are, of course, selected and installed by the local utility company. For G-E Wire and Cable available, see Sections No. 3 and No. 7.

## 2 SERVICE FITTINGS

See Section No. 10, Boxes and Fittings.

## 3 SERVICE ENTRANCE

Listed here are G-E cables and materials suitable for Service Entrance requirements and for use as Main Feeder Conductors, whatever type of installation you wish to specify.

**Rigid Conduit**—The accepted standard of protection for cables and conductors. It is used both on underground service entrance installations and on overhead installations from "point of attachment" (on the building) to meter and distribution center.



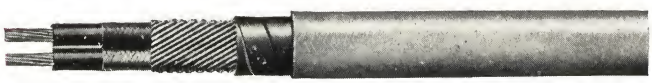

**G-E White Rigid Conduit** is thick-walled steel tubing, galvanized and Glyptal-coated inside and out, which can be connected at all points with threaded fittings.



**G-E Black Rigid Conduit** is heavy-wall steel tubing coated inside and out with a corrosion-resistant, elastic, black enamel.



**G-E Electrical Metallic Tubing** is light and easy to bend and requires no threading. Approved by Underwriters' Laboratories for both exposed and concealed work, except in cinder fill, in sizes ½- to 2-inch.



**G-E Service Drop Cable, Type SD**—For "Tamper-proof" overhead service entrance from pole to building. Available in 3-conductor assemblies, consisting of two insulated conductors, and a stranded concentric bare neutral conductor; and in 2-conductor assemblies, consisting of one rubber-covered wire and a stranded concentric bare conductor. Both are enclosed in waterproof tape and braid. Sizes: No. 10 AWG up to and including No. 2 AWG, stranded.

**G-E Service Entrance Cable**—"Tamper-proof," for use from point of attachment of Service Drop Cable at building to the distribution center.



**Type SE, Style U**—consists of one or more insulated conductors and a stranded concentric neutral conductor enclosed in a watertight, weatherproof covering. On short spans, it may be used from pole through to distribution center.



**Type SE, Style A**—Concentric Type (formerly A.E.I.C.) is a cable consisting of one or more rubber-covered conductors and a concentrically applied stranded bare conductor, protected by galvanized strip armor and a heavy watertight, weatherproof covering. Used when rigid conduit is not required.



**G-E V. C. Line Wire**—For overhead use from pole to building where individual conductors are required. Consists of a solid or stranded conductor, covered with two or more wrappings of varnished cambric and an overall heavy cotton braid treated with U.R.C. compound, making it weatherproof.



**G-E 600-volt Leaded Cable**—For underground use in rigid conduit. It consists of solid and stranded conductors insulated with rubber and enclosed in a lead sheath for positive moisture protection.



**G-E Parkway Cable**—For underground use without rigid conduit. Made in four types designed to meet varying conditions of

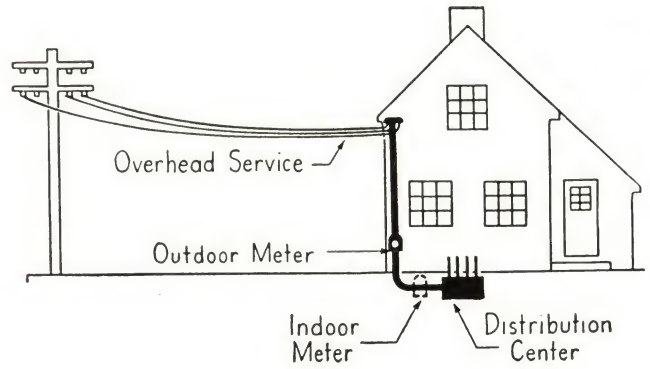
dampness and possibilities of mechanical injury which might occur either during installation or because of heavy trucking, plowing, spading, settling of the soil, etc., after the cable has been laid. The four types include:

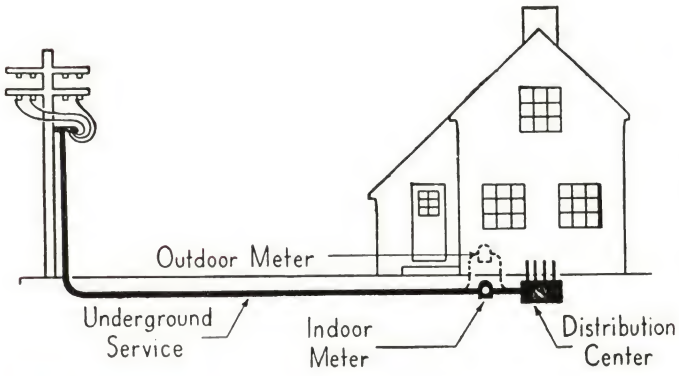
**(1) RJ**—An economical lightweight cable, protected against moisture and mechanical injury by multiple layers of asphalt-impregnated fabric, tape and jute wrappings.

**(2) RLJ**—An inexpensive cable, protected against moisture by a lead sheath, with asphalt-impregnated jute wrappings. Not to be used where there is danger of mechanical injury.

**(3) RLJIJ**—A superior cable sheathed with lead, then with an impregnated jute cushion, over which is BX interlocking armor which in turn is enclosed in an asphalt-impregnated jute wrapping.

**(4) RLJFJ**—Extremely resistant to mechanical injury and moisture, consisting of a lead sheath over the insulated conductors, with a double wrap of flat steel tape and asphalt-impregnated jute coverings.




## 4 METER

G-E Watthour Meter, outdoor or indoor type.

## 5 MAIN FEEDER CONDUCTORS

See Section No. 3, Service Entrance. G-E Cables suitable for use as Main Feeder Conductors are described in the foregoing section.

### Specifications: Service Entrance

1 2 3 4 5

All service entrance materials: Shall comply with requirements of local utility company. Unless contrary to regulations the following types shall be used. Overhead Entrance, pole to building and between buildings: G-E Service Drop Cable or Weatherproof Wire. Building Entrance to distribution center: G-E Service Entrance Cable or Code Wire in G-E White Rigid Conduit. Underground Entrances, pole to distribution center: G-E 600-volt Lead-sheathed cable in G-E White Rigid Conduit, except where local regulations permit use of G-E Parkway Cable of type adapted to subsoil and installation conditions. Meter: G-E Watthour Meter, outdoor or indoor type.

## 6 MAIN DISTRIBUTION UNIT

Materials available include the following:



Trumbull Multi-breaker, surface type; available also for flush mounting.

*Multi-breaker Load and Service Centers* are furnished in boxes of two sizes (for installation in shallow partition:)

1 to 8 Poles: 6⅝ in. wide, $3\frac{9}{16}$ in. deep, 11⅛ in. long.

9 to 16 Poles: 12⅛ in. wide, $4\frac{1}{16}$ in. deep, 13⅛ in. long.

Mains are of 70-ampere capacity arranged for 3-wire 115/230, or 2-wire 115 volts, solid neutral a-c service. Branch Circuit Breakers are single-pole in 15-, 20-, 25-, 35, ad 50-ampere capacities to match commercial wire sizes. Mechanically connected handles serve where 3-wire, ground-neutral, 115/230-volt service is required.

Multi-breakers are supplied in code-gauge steel enclosures with ample knockouts. Flush (gray), Surface (black) covers.

*Trumbull Fuse Puller Switches* are available as follows:

Fuse-Puller Switches: 100-amp.; 60- and 100-amp.; and 30-, 60-, 100-amp. combinations — 3-pole — solid-neutral — 2 cartridge fuses — 125-250 volts, a.c.

Branch Circuits: (1-8 incl.) 30-amp. — solid-neutral — single-fusing (plug) — 125 volts.




Trumbull Fuse Puller Switch, Surface Type; also available for flush mounting.

1. The ampere unit is designed for use singly or in combination with the 30- and 60-ampere units, including plug-fuse branch circuits if desired.

2. The base is heavy porcelain. The fuse cap is bakelite.

3. To open switch, pull cover out by handle.

4. Fuse switch covers have "on" and "off" positions and are indicating.

5. Shields are removable without removing screws.

6. 30-ampere NEC fuse puller is usually used for water-heater circuits, but a water-heater or other circuit at 230 volts may be connected to any pair of branch plug-fuse terminals of opposite polarity.

7. Box finish—Surface mounting: black enamel.

Flush mounting: galvanized steel box; gray lacquer fronts.

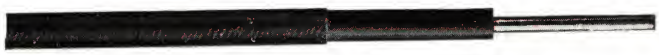
8. Can be furnished with service channel twistout in top end (3 in. wide, 1 in. deep) upon request.

### Specifications: Main Distribution Unit 6

The main distribution unit shall be of the proper size for the total connected load. It shall contain the main fuse or breakers, the range fuses or breakers (as desired), and the protective devices for the other fixed equipment in the basement. In all cases, the local utility shall be consulted in regard to type and meter sequence, etc., before the main distribution unit is installed.

## 7 SUB-FEEDER CONDUCTORS AND RACEWAYS

### Conductors



**G-E Rubber Insulated Wire and Cable** is made in three standard grades of insulation, all with flame-retarding finish which will not support combustion and protects against moisture.

(a) Code Grade meets the requirements of National Electrical Code. The rubber insulation is black.

(b) Intermediate Grade has red rubber insulation of superior electrical and physical characteristics.

(c) 30% Performance Grade has green rubber insulation and will meet Code requirements after passing the oxygen bomb test —equivalent to 10 years of natural aging.

**G-E Performite Wire and Cable** is insulated with a long-life, super-aging compound containing not less than 35% of new rubber by weight. Recommended for extremely important circuits where uninterrupted operation is absolutely essential. Meets all requirements of Federal Specifications JC-106.

**G-E Deltabeston Wires and Cables** are made in a complete line of all-asbestos and part-asbestos insulations and in single or multiple conductors, for high-temperature work (120° F or higher) where rubber deteriorates rapidly, such as switchboards, stoves and ranges, motion picture machine, arc lamp cables, etc.

G-E Wires and Cables are made for many special purposes, including fixture wires and telephone wires. Their use is governed by standards of the N.E.C. for the particular condition.

### Armored and Non-Metallic Sheathed Cables

These are wiring materials embodying protection against mechanical injury which are used when a conduit or other raceway is not employed. Primarily used for wiring in wood construction for ease and economy, and for minor alterations and branch circuit extensions in other buildings where the use of raceways is not practical.




**G-E BX Armored Cable** consists of one or more standard rubber-covered wires with a moisture-proofed wrapping covered by a flexible interlocking steel strip armor. Regularly made with "Code" Grade rubber insulation, but available on order in "Intermediate" and "30% Performance" Grades.

**G-E Oval BX Cable** is similar to regular BX Cable, but with conductors laid flat in an oval armor to permit installation within plaster without grooving the masonry beneath.



**G-E BXL Lead-sheathed Armored Cable** consists of rubber insulated conductors in a braided wax-saturated cotton jacket, sheathed in lead, and covered with BX type steel strip armor. Used in damp locations where BX is not suitable.



**G-E BraidX Non-metallic Sheathed Cable** consists of two or more rubber insulated conductors in a special protective covering having high resistance to mechanical injury. When required, G-E BraidX will be supplied containing an additional non-insulated copper conductor for bonding purposes.

### Conduits and Raceways

Primarily used to provide mechanical protection for conductors, they have other special advantages. Wiring is done after the structure is completed, avoiding injury to the circuits during construction. Existing circuits may be withdrawn for repair or replacement, and new circuits can be installed, without other alterations. They are required in all fireproof buildings. Advantages for non-fireproof structures are obvious.



**G-E White Rigid Conduit** is the accepted standard raceway for use where conductors are buried in concrete or masonry, and for exposed wiring where maximum mechanical protection is required. It is thick-walled steel tubing, hot dipped galvanized and Glyptal-coated inside and out—connected with threaded fittings at all joints to prevent leakage. It also acts as an induction

## RECOMMENDATIONS FOR USE OF G-E RACEWAYS AND CONDUCTORS

| Structural Conditions and Locations | Raceway (Use designated conductor as noted) | Conductor (Used in raceway except as noted) | Armored or Non-Metallic Sheathed Cable (Used without raceway) |
|---|---|---|---|
| **FIREPROOF CONSTRUCTION** | | | |
| **1. General Light and Power Circuits** | | | |
| Dry normal locations. | G-E Rigid Conduit required throughout except as here noted with G-E Flexible Conduits permitted for special conditions. G-E Fiberduct used for underfloor raceways. | G-E Rubber Insulated Conductors. | |
| Damp normal locations. | | G-E Lead-sheathed Cables. | |
| High temperature locations. | | G-E Deltabeston Conductors or Cables. | |
| *Hazardous locations. | | G-E Lead-sheathed Cables.* | |
| Concealed extensions. | Raceway not mandatory for under-plaster extensions. May be G-E Electrical Metallic Tubing or G-E Oval Duct as required. | G-E Rubber Insulated Conductors. | G-E BX or Oval BX permitted for under-plaster extensions. |
| Surface extensions. | | G-E Rubber Insulated Conductors. | G-E BX permitted for minor extensions. |
| **2. Low Voltage Circuits** | | | |
| Bells, thermostats, etc. | Raceway not required by code but recommended for protection and changes in circuits. G-E Rigid Conduit except where noted with G-E Fiberduct for underfloor raceways. G-E Flexible Conduit, Metallic Tubing and Oval Duct may be used as required. Separate these raceways from general light and power circuit raceways. | G-E Rubber Insulated Conductors. | Not required. Desirable for mechanical protection of important circuits when no raceway is used. |
| Public telephones. | | Installed by Telephone Company. | Not required. |
| Private telephones. | | G-E Telephone Wires. | Not required. |
| Protection, signaling and line voltage control devices. | G-E Rigid Conduit as above. G-E Armored Cable as alternate. | G-E Rubber Insulated Cables in conduit. | G-E BX Cables without conduit. G-E BraidX Cables without conduit. |
| Radio wiring, shielded circuits. | G-E Rigid Conduit as above with G-E BX Cable as alternate. | G-E Rubber Insulated Wires. | G-E BX Cables or Lead-sheathed Wires or Cable with sheath grounded. |
| Radio wiring, non-shielded circuits. | Do not use metallic raceway. | G-E BraidX Non-metallic Sheathed Conductors or Cables. | G-E BraidX Non-metallic Sheathed Conductors or Cables. |
| **NON-FIREPROOF CONSTRUCTION** | | | |
| **1. General Light and Power Circuits** | | | |
| Dry normal locations. | No raceway required by code for normal conditions. For highest grade installations, G-E Rigid Conduit (with G-E Flexible Conduit for special conditions) is recomemnded. | G-E Rubber Insulated Conductors. | G-E BX Cables. G-E BraidX Non-metallic Sheathed Cables and knob and tube work. |
| Damp normal locations. | | G-E Lead-sheathed Cables. | G-E BXL Cables. |
| High temperature locations. | | G-E Deltabeston Wires or Cables. | G-E Deltabeston Cables. |
| *Hazardous locations. | (Rigid Conduit may be required.*) | G-E Lead-sheathed Cables.* | G-E BXL Cables.* |
| Concealed extensions. | G-E Electrical Metallic Tubing or Oval Duct as required. Alternate G-E BX and BXL Cables. | G-E Rubber Covered Wires or Cables, lead-sheathed where required, in conduit. | G-E Oval BX or BXL Cables. |
| Surface extensions. | | | G-E BX or BXL Cables. |
| **2. Low Voltage Circuits** | | | |
| Bells, thermostats, etc. | No raceway required by code for normal conditions. G-E Rigid Conduit (with G-E Flexible Conduit, Metallic Tubing and Oval Duct for special conditions) in highest grade installations. | G-E Rubber Insulated Wires or Cables | G-E BraidX Cables. |
| Public telephones. | | Installed by Telephone Company. | Installed by Telephone Company. |
| Private telephones. | | G-E Telephone Wires. | G-E Telephone Wires. |
| Protection, signaling and line voltage control devices. | G-E Rigid Conduit recommended as above, with G-E BX Cable as alternate; in either case for protection against tampering or other hazards. | G-E Rubber Insulated Wires or Cables in conduit. | G-E BraidX Cables without conduit. G-E BX Cable without conduit. |
| Radio wiring, shielded circuits. | G-E Rigid Conduit as above with G-E BX Cable as alternate. | G-E Rubber Insulated Conductors in conduit. | G-E BX or Lead-sheathed Wires or Cables with sheath grounded. |
| Radio wiring, non-shielded circuits. | No metallic conduit or sheathing permissible. | G-E Rubber Insulated Conductors. | G-E BraidX Non-metallic Sheathed Conductors or Cables. |

*Consult requirements of National Electrical Code and local code for proper wiring for the particular hazardous condition at hand.

shield preventing interference, and provides an effective means of grounding.



**G-E Black Rigid Conduit.** This is heavy-wall steel tubing coated inside and out with a corrosion-proof elastic black enamel.



**G-E Electrical Metallic Tubing,** A thin-walled electro-galvanized steel raceway, provided with compression couplings, does not offer the same degree of protection as rigid conduit, but otherwise performs the same function. Subject to N.E.C. restrictions.

**G-E Underfloor Fiberduct.** A complete system of underfloor wiring is fully described on page 25.



**G-E Galvanized Flexible Metal Conduit** consists of interlocking flexible galvanized steel armor in sizes $\frac{5}{16}$" to 3" I.D. It is used where construction requires a flexible conduit in a rigid raceway system, and to provide couplings for adjustable equipment, where conduits are required for temporary wiring, etc. Not approved for exterior work or for hazardous locations.

## Specifications: Sub-feeder Conductors 7

All conductors: G-E Rubber-covered Wire, Flame-retarding and Moisture-resisting Finish, unless otherwise noted.

In fireproof buildings, new work: Conductors should be run in G-E White Rigid Conduit.

In non-fireproof buildings, new work: Unless otherwise shown on drawings, all sub-feeders and branch power circuits and branch sub-circuits should be BraidX or BX in dry locations or BXL in damp locations. Where conduit is shown on drawings, it should be G-E White Rigid Conduit.

unit should always be of a size large enough to assure good volt-

Sub-feeders from main distribution unit to branch distribution age conditions at the branch distribution unit, and should be at least one size larger than the final circuit conductors.

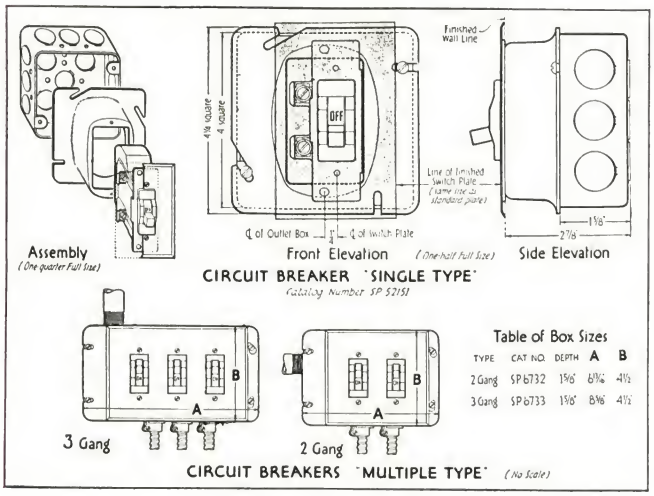
## 8 BRANCH DISTRIBUTION UNIT



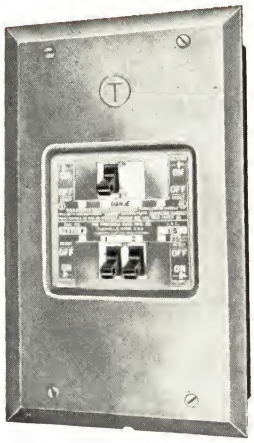
Materials available for branch distribution control include the following:

***G-E Branch-circuit Circuit Breakers***— These small circuit breakers serve both as a means of overload protection for the branch sub-circuits and as master control switches governing groups of lighting or convenience outlets—occasionally both.

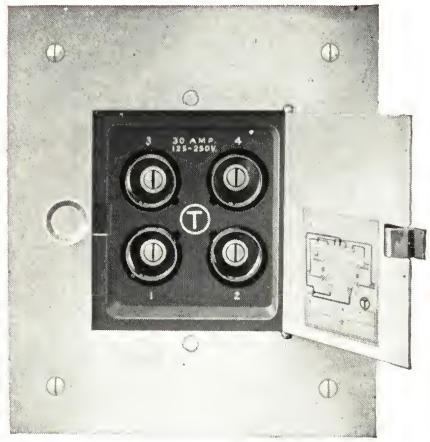
Circuit breakers of 15-, 20-, 25-, 30- and 35-ampere capacity, single-pole 125-volt, a-c and d-c, are made for flush mounting in standard outlet boxes with raised covers. Their appearance and general dimensions are shown in the accompanying illustration and diagrams. Bodies and operating tumbler are of brown Textolite. The tumbler takes three positions: *Down* to break the circuit manually; *center,* indicating that the circuit has been broken automatically by an overload or short circuit; *up,* to close the circuit (normal position in operation). When an overload occurs, service may be restored by throwing tumbler down to the "off" position, then fully up to the "on" position. If the overload condition remains, the circuit breaker will function even if the tumbler is held, and when the handle is released it will take the center position.




***Trumbull Multi-breakers***—See Section No. 6. All types of Trumbull Multi-breakers for homes and small buildings are described here.



Trumbull Multi-breaker, flush type, also available for surface mounting.



Trumbull Residence Panelboard—Enclosed Branch-circuit cutouts, flush type; available also for surface mounting.

***Trumbull Residence Panelboards***—Single Fusing—(2-12 circuits incl.)—3- or 2-wire Mains—2-wire Branches. These panelboards are designed for use with residence lighting systems to be located in a place more convenient for renewing fuses than on cellar meter board.

An abundance of ½-inch knockouts, located in ends, sides and back, and ½-inch to 1¼-inch knockouts (depending upon the number of circuits), in ends and sides for either flexible or rigid conduit, assure convenience in wiring.

Protective Shield safeguards the user from accidental contact with current-carrying parts while renewing fuses.

Circuit Index Card provided on door of each panel except the two-circuit. Removable front on flush-type panels overlaps the box on all sides. Box is galvanized steel. Each complete device is packed in an individual carton properly labeled. Panel is easily removed as a unit for pulling wires. Porcelain bases are used throughout.

### Specifications:

### Branch Distribution Unit 8

The branch loadcenters should be located as near centrally to the load on each floor as is possible. Circuit breakers Cat. No. GB115, GB120, GB125, GB130, GB135 with G-E square boxes with raised covers, Cat. No. SP52151 for single unit, Cat. No. SP6732 for pairs of circuit breakers, Cat. No. SP6733 for 3 and Cat. SP6734 for four units; or circuit breaker enclosures may be used—Cat. No. GB71F for single units and Cat. No. GB72F for pairs. Trumbull Multi-breaker loadcenters of proper capacity and Trumbull Residence panel boards can also be used. If circuit breakers are used in the branch unit, Circuit breakers should also be used in the Main Distribution Unit.

## 9 FINAL CIRCUIT CONDUCTORS

See Section No. 7, Sub-feeder Conductors. The wires and cables shown for sub-feeder use may be used in smaller sizes for Final Circuit Conductors.

### Specifications:

### Final Circuit Conductors 9

Final-circuit conductors to lighting and convenient outlets: It is recommended that the number of outlets to be served by each circuit be divided evenly and placed on 2, 3 or 4 sub-circuits, instead of being connected on one long run of conductor. These sub-circuits taken together will form a final branch circuit.

## 10 BOXES AND FITTINGS

**Outlet and Switch Boxes**—General Electric offers a complete line of high-grade outlet and utility boxes for every type of installation. These boxes are available with a wide assortment of covers.



3½-in. Octagonal Outlet Box SP24151



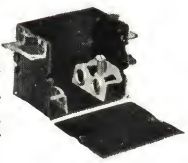
4-in. Square Outlet Box SP52151



4-in. Round Outlet Box SP26625F



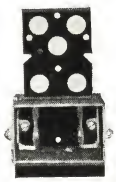
4-in. Long Utility Box SP5800



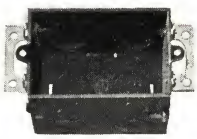
Switch Box for BX Cable SP6972



Switch Box for BraidX SP6974



Switch Box for BX old work SP7072

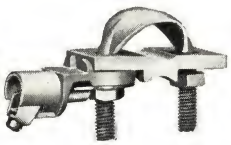


Switch Box for Rigid Conduit SP6971

**Fittings**—Each type of raceway requires special fittings for installation. Therefore, General Electric supplies all necessary fittings and accessories for commercial, industrial and residential wiring. Below is shown a representative group.



½-in. Locknut SP141



Grounding Device SP825



Entrance Cap SP1525



½-in. Bushing SP122



BX Squeeze Connector SP6125



BraidX Connector SP7101



"Tite-Bite" Connector SP5300



½-in. Strap SP1276



E.M.T. Coupling SP2550



Entrance Cable Connection SP1402C



E.M.T. Connector SP4550



Entrance Cable Connector SP3206B

### Specifications: Junction Boxes 10

Pull Boxes and Junction Boxes: G-E Stamped Steel Boxes with solid covers, such as Cat. No. SP52151.

Floor boxes in wood joist floors: G-E Utility Outlets, Cat. No. SP8000.

Outlet boxes for wall or ceiling fixtures: G-E Octagonal or Square Boxes of suitable size such as Cat. No. SP54151 or Cat. No. SP52151, mounted on suitable hangers, if in stud construction, such as Cat. No. SP6602; except where construction conditions require shallow boxes such as Cat. No. SP56121.

Switch Boxes: G-E Sectional Switch Boxes, such as Cat. No. SP6972.

## 11 OUTLETS

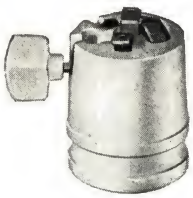
This classification to save space includes lampholders, convenience outlets and switches.

### G-E Lampholders

G-E Lampholders are available with porcelain, brass or Textolite shells, rated at 250 or 660 watts, 250 volts. Brass lampholders are made in two basic types—fluted-catch and threaded-catch. Textolite sockets have all moving parts sealed for complete protection. There are no linings to char. These sockets have a fine appearance of molded brown Textolite, with a highly lustrous finish. They are not only appropriate for use in rough surroundings but may also be used to advantage wherever the brown Textolite color is acceptable. Textolite sockets have the caps and bodies fastened together by a threaded ring. G-E Lampholders are available with four types of operating mechanisms: Keyless, key, pull, push.



GE2708—Pull-type—Insulated chain, Textolite Body, Threaded Catch-ring



GE1210—Key-type—Snap-catch, Porcelain Body



GE770—Medium Base, Keyless Brass Body, Fluted Catch

### Specifications:

### Outlets 11 — Lampholders

In all locations: Not subject to handling or strains: Textolite Lampholders except where brass shells are designated and these should be Brass Shell Fluted-catch Lampholders. Subject to frequent handling or strain: Textolite Lampholders except where brass shells are designated and these should be Brass Shell Threaded-catch Lampholders. Subject to dampness; G-E Textolite Lampholders.

### G-E Convenience Outlets

G-E Convenience Outlets are made of Textolite with smooth faces so designed that the prongs of a plug slip easily into the proper slots.

## SELECTION TABLE — G-E CONVENIENCE OUTLETS

| Purpose and Condition | Type and Description | Typical Catalog No. |
|---|---|---|
| **GENERAL UTILITY WALL OUTLETS** | | |
| **Where only one appliance will be served**—refrigerator, ventilating fan, etc. | Single outlet—side-wired.<br>Single outlet—top-wired. | GE2740<br>GE2533 |
| **Where more than one appliance may be served**—lamps, vacuum cleaners, radios, etc. | Twin outlet—side wired. (Also available in ivory.)<br>Twin outlet—top wired. | GE2679<br>GE2534 |
| **Where switch control of one circuit is desired,** leaving the other uninterrupted for electric clocks, etc. | Twin outlet—4 binding screws—separate feeds—separate ground. | GE2902 |
| **Where various appliances will be served,** for some of which polarity may be required or desired, others having conventional 2-pronged caps. | Double-duty twin outlets for conventional 2-pronged cap or 3-pronged polarity cap:<br>(a) With terminal screw for ground wire.<br>(b) Without terminal screw. | <br>GE2988<br>GE2989 |
| **For heavy-duty service** on radiant heaters, light power equipment, etc. | Heavy-duty polarity outlets, with 2 or 3-pronged polarity cap:<br>(a) With 2-pole cap (GE1370).<br>(b) With 3-pole cap (GE2758). | <br>GE1367<br>GE2762 |
| **Floor outlets.** | Single recessed outlet furnished complete with floor plate and 2 flush plugs (non-watertight). | GV2E1 |
| **Wall-hung electric clocks.** | Single recessed outlet. Furnished complete with special plate providing hook for clock. | GE2942 |
| **Wall-hung electric fans.** | Single outlet, furnished complete with receptacle stud and brushed-brass flush plate. | GE3035 |
| **Outdoor outlets** for open porches, floodlights, Christmas decorations, etc. Used on walls only. | Single outlet. Furnished complete with rubber seal gasget and cadmium plated flush plate and cap. (Weatherproof cap for appliance cord, GE2960.) | GE2959 |
| **Radio outlets.** | One power outlet and one special polarity radio outlet. With or without Textolite flush plate and special radio polarity cap for antenna and ground connections. For doublet antenna, use GE3053. | GE2997 |
| **OUTLET AND SWITCH COMBINATIONS** | | |
| **Switch and outlet** in same device. | Single outlet and double pole switch. | GE2736 |
| **Switch, outlet and pilot light** to indicate when circuit is in use, in one device. | Single outlet, single pole switch and pilot light; (Pilot light alone for use with any outlet or switch GE2822—receptacle only). | GX3A5 |
| **Outlet and pilot light** in one device. | Single outlet and 1 pilot light.<br>Twin outlet and 1 pilot light. | GX3A3<br>GX3A4 |
| **Pilot light and switch** in one device. To indicate when remote outlet is in use. | | GE2734 |



Twin Convenience Outlet—Top-wired, GE2534



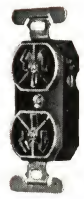
Twin Convenience Outlet—Side-wired, GE2679. This same outlet-top-wired, GE2534



Twin Outlet with one outlet controlled by a Switch, the other outlet uninterrupted—four binding screws, separate feeds, separate ground—GE2902



Single Outlet—Side-Wired GE2740. This same Outlet top-Wired, GE2533



Double-duty Twin Convenience Outlet GE2988



Fan Hanger Outlet GE3035



Outdoor Weatherproof Outlet, GE2959. Protecting Cap, GE2960



Electric Wall Clock Hanger Outlet (complete) GE2942



Radio Outlet, GE3052

## Specifications:

### Outlets (11) — Convenience Outlets

Top-wired Twin Convenience Outlets such as GE2534, except where circuit is designed to serve but one appliance, when an equivalent single outlet should be installed.

Outdoor Outlets: GE2959.

Portable Fixture Outlets: For fans, etc., G-E Hanger Outlet GE3035.

Electric Clock Outlet: G-E Electric Wall Clock Hanger Outlet, Cat. No. GE2942.

Radio Outlet: G-E Electric Radio Outlets, Cat. No. GE3052.

Switch and Convenience Outlet Plates: Unless brass plates are designated, all switch and outlet plates should be Textolite. Where brass plates are designated they should be .060" thick ("struck-up") in service and secondary living or public areas, and solid plates, .100" thick, in main living and public areas, finished as elsewhere specified.

## G-E Flush Plates for Convenience Outlets and Switches

### MATERIALS

Standard flush plates are made of brass, Textolite (black or brown) and ivory compound—in a variety of forms and combinations to meet all possible requirements.

**Brass Outlet Plates** are made in three grades, all normally furnished in standard brush brass finish. They may be obtained in a variety of finishes including colors. These include polished brass, embossed or stamped designs, colored lacquered finishes in single tones or in mottled and variegated color effects, and

(Continued on Page 18)

## PLATE SELECTION CHART

NOTE: Plates shown are typical single gang plates (excepting GE2814 and Circuit-Breaker Plates) and may be combined in multiple gang plates in any desired combination. Catalogue numbers are for brown Textolite and brush brass .060 in. except GE2256 which is made .100 in. thickness only.

| PLATE | DESCRIPTION | TEXTOLITE | BRASS |
|---|---|---|---|
| | Single Switch Plate | GE2316 | GE1741 |
| | Single Outlet Plate | GE2314* | GE1787 |
| | Twin Convenience Outlet Plate | GE2315* | GE1788 |
| | Telephone Outlet Plate with compound bushing — Single | GE2349 | GE2140 |
| | Telephone Outlet Plate with compound bushing — Double | GE2542 | GE2098 |
| | Triple Switch Plate | GE2693 | GE2727 |
| | Double Switch Plate | GE2691 | GE2726 |
| | Single Switch Plate | GE2893 | GE2957 |
| | Pilot Light Plate. Used with GE2822 receptacle. (Available also with various colored round and rectangular bulls-eyes for receptacle GE853) | GE2823 | GE1787 |
| | Combination Switch and Convenience Outlet Plate, (Available also for heavy duty device and for horizontal or vertical two-gang assemblies) | GE2737 | GE2738 |
| | Combination Pilot Light, Switch and Convenience Outlet Plate, two-gang | GE2814 | |
| | Combination Switch and Pilot Light Plate | GE2735 | GE2738 |
| | Circuit Breaker Plate — Single | GB51 | GB61 |
| | Circuit Breaker Plate — Double | GB52 | GB62 |
| | Circuit Breaker Plate — Triple | GB53 | GB63 |
| | Circuit Breaker Plate — Quadruple | | GB64 |

* Special gang plates available in brass only

## G-E FLUSH PLATES FOR CONVENIENCE OUTLETS AND SWITCHES

(Continued from Page 17)

plated or oxidized finishes. Consult the General Merchandising Catalogue for special finishes carried in stock; others are obtainable on special order.

**Solid Brass Plates,** 0.100″ thick, are the highest standard grade, and are for use where brass plates are demanded in highest grade installations.

**Heavy Stamped Plates** are 0.060″ thick, ("struck-up") and are suitable for general and high grade installations.

**Stamped Brass Plates,** 0.040″ thick ("struck-up"), are the lightest made, and are for use only where economy is the primary consideration.

**Textolite Outlet Plates.** These have become the accepted standard because of durability, fine appearance and freedom from tarnish and discoloration. Brown is the standard color. They are also available in black. Ivory Compound plates are available for standard flush switches up to and including 3-gangs. They are also supplied for convenience outlets, single gang; and for combination outlet and switch, double gang.

**Special Plates.** Special brass plates 0.100″ thick can be obtained with round corners and round edges, with round corners and bevelled edges, with square edges, and with raised edges. On special order, flush plates may be obtained made from other metals such as bronze and aluminum. Identifying words or numbers will be engraved on metal plates when so ordered.

### SIZES

All standard flush plates for single gang switches or outlets are 2¾″ by 4½″. Dimensions of multiple gang plates may be had on request.

**Horizontal Multiple Gang Plates.** A single plate covering a single switch or outlet unit measures 2¾″ by 4½″ and may be used either vertically or horizontally according to the position in which the outlet box is mounted. Horizontal plates for multiple gang switch or outlet units have the height constant, the width being increased $1\frac{13}{16}$″ for each additional gang or unit.

**Vertical Multiple Gang Plates.** These plates have a constant width of 2¾″, the length being increased 3⅝″ for each additional unit.

**Combination Gang Plates.** Multiple gang plates may be obtained to fit any combination of switch, convenience outlet and pilot light units, the only limitations being the number of switches or outlets obtainable in a single gang unit. The maximum number of switches in a single gang or unit is three. Convenience outlets are provided in single or double capacity.

**Circuit-Breaker Plates.** These plates are available in both single type and multiple gangs.

## G-E Switches



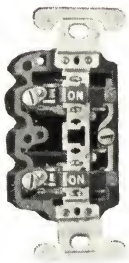
Single-pole Switch, Composition Body, GE2842.



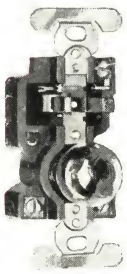
Single-pole Switch, Heavy-duty type, GE2923.



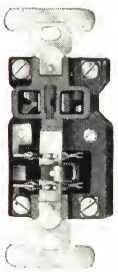
Mercury Switch, Composition Body, GE2756.



Combination Switch Device. Two Single-pole Units, GE2907.



Combination Switch and Pilot Light, GE2734.



Combination Switch and Convenience Outlet, GE2736.



Combination Switch and Pilot Light, GX3AI.

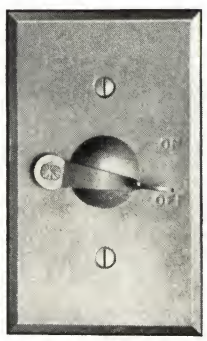


Time-Saver Combination Switch and Convenience Outlet, GX2AI.



Automatic Door Switch, GE273.

Outdoor Flush Switch, GE3024.



### TYPES

This material is arranged to facilitate choice of G-E Switches available for the control of electric light and power circuits.

Switches used in normal lighting and power circuits are of three types:

**Tumbler Switches.** These have largely superseded other types because of simpler construction, ease of operation, and pleasing appearance.

(Continued on Page 19)

**Rotary Snap Switches.** These are seldom used on lighting circuits except with exposed wiring or surface raceways. More generally used to control small motors and circuits in electric ranges.

**Push-button Switches.** Though still made, this type is practically obsolete.

## TUMBLER SWITCHES

G-E Tumbler Switches are made in both surface and flush-mounting styles, the former being used only with surface wiring where appearance is not a factor. Flush-mounting styles are available in the following grades:

**Porcelain Body.** A general purpose switch having the switch mechanism mounted in a porcelain box with a snap fiber cover. Also available with ivory handle.

**Composition Body.** The mechanism is completely enclosed in a moulded composition box—fully protected from tampering and mechanical damages. Also available with ivory handle.

**Heavy-duty Switches.** The mechanism is totally enclosed in a Textolite box. Their size requires the use of deep outlet boxes. Used on circuits up to 30 amperes capacity for power or heavy-duty service.

**Tumbler Switches.** Made in several styles to meet the various requirements of standard wiring systems. The use of single and double-pole switches, and of the three-way and four-way switches is fully covered in the Switch Selection Table (see page 20) with diagrammatic hook-ups. Other styles for specific service conditions are the following:

**Outdoor Switches.** For open porches, floodlights, Christmas decorations, etc. Single pole G-E 3024; 3-way G-E 3039. Complete with rubber seal gasket and cadmium flush plate.

**G-E Electrolier Switches.** These permit the control of two or three circuits, in sequence or combination, with one switch mechanism.

**G-E Lock Switches** are operated by a key, and may be locked "on" or "off," thus limiting the control to authorized persons only. They are made in all standard grades.

**G-E Mercury-break Switches.** In these noiseless switches a mercury element takes the place of a snap mechanism for controlling the circuit. Used where silent operation is desired.

**G-E Combination Switch Assemblies** consist of from one to three switches mounted in the same moulded composition body, fitting standard switch boxes. Possible arrangements in these assemblies are shown in the table on page 20. (See "Combination Switch Assemblies" in "Switch Selection Table.") These assemblies save space, reduce the number of outlet boxes required, and may be used to increase the extent of switch control in existing systems.

**G-E Switch and Outlet Combinations** in one device are designed for convenience and space saving and to increase the effectiveness of circuit control. They are available in the following units:

Switch and Convenience Outlet.
Switch and Pilot Light.
Switch, Pilot Light and Convenience Outlet.

**Special Switches** are made in a variety of forms. These include automatic door switches, miniature tumbler switches, "pony" back-connected surface tumbler switches, and canopy switches for lighting fixtures of rotary, snap and pull types in all required forms. Also a complete line of heavy-duty tumbler switches for panel or box cover mountings.

**G-E Step-saver Switches.** In all rooms having more than one door, 3- or 4-way switches (as required) should be located at each door to control one major source of light in each room. They should also be used to control lights in halls and passages, on different floors of a residence, between detached buildings and wherever it is desirable to control light from separate entrances and exits.

### Specifications:
### Outlets (11) — Switches

In all locations except as noted below: G-E Single-pole Compound Box Flush Tumbler Switches, such as GE2842. If porcelain base switches are desired and are so designated on drawings or elsewhere, they should be such as Cat. No. GE2841.

Step-saver Switches: Should be used to control at least one light in every space served by two doors more than ten feet apart in all stair halls, between main buildings and garage or outbuildings, and should be G-E Three-way Flush Tumbler Switches, such as GE2593 with equivalent Four-way Switches as required.

Silent Switches: To be used where designated on drawings (in living rooms or bedrooms, hospital rooms, etc., where silent operation is desired) and should be G-E Mercury Tube Flush Tumbler Switches Cat. No. GE2756.

Double-pole Switches: Should be used on circuits controlling appliances drawing more than 1500 watts, and on circuits serving convenience outlets designed for ungrounded appliances drawing over 1500 watts and should be equivalent to Cat. No. GE2846.

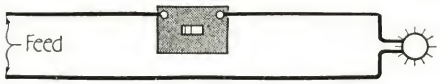
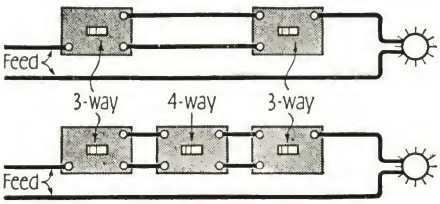
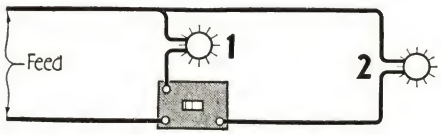
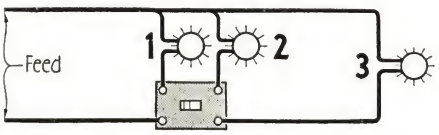
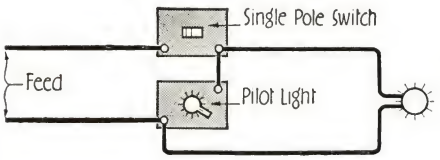
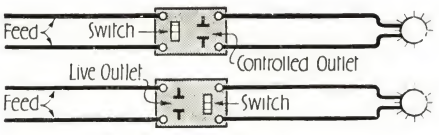
Heavy-duty Switches: Where indicated on drawings should be G-E Heavy-duty Tumbler Switches, Cat. No. GE2923 type as required.

Special Switches: Combination Switches: Should be Cat. No. GE2903 or any combination in this series as required: Switch and Pilot Light Combination Cat. No. GE2734, or Switch and Outlet Combination Cat. No. GE2736 or their equivalent, where indicated on drawings.

Door Switches: G-E Door Switches; either Cat. No. GE273 where light is on when door opens, or Cat. No. GE274 where light is on when door is closed; mounted in G-E Door Switch Boxes, Cat. No. SP6597.

Weatherproof Switches: Should be GE3024 when exposed to outdoor weather conditions.

## G-E SWITCH SELECTION TABLE

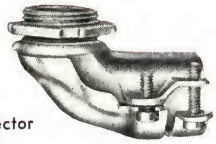
| Wiring Diagrams | Purpose | Type and Description of Switch | Typical Catalog Nos. Porcelain Base | Typical Catalog Nos. Composition Base and Heavy Duty* |
|---|---|---|---|---|
|  SINGLE POLE SWITCH | **GENERAL PURPOSE SWITCHES: SINGLE UNITS; ONE TO EACH SWITCH BOX** | | | |
| | **To control:** One circuit from one point. | Single Pole — controls one wire (live side) only of a single circuit. | GE2841 | GE2842<br>GE2923* |
| | | Double Pole—controls both sides of a single circuit. Required for 3-wire circuits. Recommended where appliances of over 1000 watts will be used. | GE2845 | GE2846<br>GE2924* |
| | | Silent switch—for hospitals, nurseries, bedrooms, etc., where noise must be eliminated. Single Pole only. | | GE2756 |
| | | Lock-Switch, key operated—for limited control in public rooms, etc. Single Pole listed. Also made in double pole, 3-way and 4-way types. | GE1755 | GE2670 |
| | | Automatic door switch—for closets, telephone booths, etc. Installed in door jamb. Bumper plate included.<br>To turn light on when door opens.<br>To turn light on when door closes. | | <br>GE273<br>GE274 |
|  3 AND 4-WAY SWITCHES | One circuit from two points. | Three-way switch—controls single circuit from 2 remote points. Two switches required. | GE2514 | GE2593<br>GE2925* |
| | One circuit from three or more points. | Four-way switch—controls single circuit from 3 remote points. Used with 2 three-way switches. Each additional control point requires an additional four-way switch. | GE2515 | GE2596 |
| | Two circuits with one switch. | Electrolier switch—controls two circuits in sequence by repeated throws of a single tumbler. Requires deep outlet box. | GE2518 | |
| | Three circuits with one switch. | Electrolier switch—controls three circuits in sequence or combination. | GE2519 | |
|  2-CIRCUIT ELECTROLIER | **COMBINATION SWITCH ASSEMBLIES TO CONTROL ONE, TWO OR THREE CIRCUITS FROM ONE SWITCH BOX**** | | | |
| | **To control:** Two circuits with common feed. | 2 single pole units.<br>1 single pole unit—1 three-way unit. | | GE2907<br>GE2909 |
| | Two circuits with separate feed. | 2 single pole units.<br>1 single pole unit—1 three-way unit.<br>2 three-way units.<br>1 single pole unit—1 four-way unit.<br>1 three-way unit—1 four-way unit. | | GE2908<br>GE2910<br>GE2911<br>GE2912<br>GE2913 |
| | Three circuits with common feed. | 3 single pole units.<br>2 single pole units—1 three-way unit. | | GE2914<br>GE2916 |
| | Three circuits with separate feed. | 3 single pole units.<br>2 single pole units—1 three-way unit.<br>1 single pole unit—1 three-way unit—1 four-way unit. | | GE2915<br>GE2917<br>GE2918 |
|  3-CIRCUIT ELECTROLIER | | 1 single pole unit—2 three-way units. | | GE2938 |
| | One circuit. Matching two— and three - tumbler-units in appearance | 1 single pole unit.<br>1 three-way unit.<br>1 double pole unit.<br>1 four-way unit. | | GE2903<br>GE2904<br>GE2905<br>GE2906 |
|  SWITCH AND PILOT | **SWITCH, CONVENIENCE OUTLET AND PILOT LIGHT COMBINATIONS** | | | |
| | **To control:** One circuit with pilot light indicator. | Single pole switch and pilot light. (Pilot light alone for use with any switch—GE2822—receptacle only.) | | GE2734 |
| | One circuit with outlet in same device. | Double pole switch and outlet. May be installed with outlet live or under switch control. | | GE2736 |
| | One circuit, with outlet and pilot light. | Single pole switch, outlet and pilot light. Each unit independent. Numerous combinations possible. | | GX3A5 |
|  SWITCH, CONVENIENCE & PILOT | | Switch independent. Pilot light controlled by outlet. | | GX3A6 |

*Heavy-duty switches. Capacity up to 30 amperes.

**Any G-E Combination switch in one, two or three unit assemblies can be used to replace any standard flush switch in a single switch box. This permits ready increase of switch control in existing systems and the grouping of switch units with a minimum of cover plate area.

## 12 RANGE WIRING





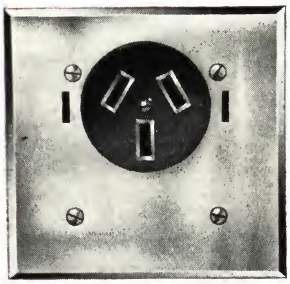
Angle Connector SP6194A



Range Outlet with "Unicord" Set GE3001



Range Outlet—GE3000 Cover Receptacle Ground Clip 39x328



Flush Range Receptacle GE3036 with Plate GE3037



Protector Tube for BraidX Cable 39x361



4-Wire Range Cord Set GE3050

Rapid advances in the use of electricity for cooking, make it advisable to consider the installation of a special range circuit during construction or major alterations to avoid later inconvenience and expense, even though immediate use of an electric range may not be contemplated. An installation consists of the following:

**Special Power Circuit.** This is of 5 to 10 kw. capacity, run directly from the Main Distribution Control Unit. This circuit may be installed to serve both range and hot water heater by use of a load limiting device to cut off the heater when range is in use.

**Range Devices.** G-E Range devices consist of a special triple-pole, 50-amp., 250-volt outlet or receptacle and a flexible cord set of approved design. Range outlets should be located so as to be accessible when the range is in place and to allow the range to be placed close to the wall. Ranges standing on legs should have the outlet between the legs, in or just above the baseboard. Solid cabinet ranges should have the outlet at either side, generally in the baseboard, but always below the cooking level.

**Flush Receptacle.** GE3036 is recommended for new work or high grade old work where appearance is an important factor. Brush brass flush plates are GE3037, .040 inch thick and GE3038, .060 inch thick. Either is equipped with grounding clips and slots for use where 4-wire connection set is required (see below).

**Surface Receptacle.** GE3000 is for surface mounting only and is recommended for old or new work where low cost is of paramount importance. Black Textolite cover of modern design fits snugly on to one-piece Textolite base. Designed so that service cables to outlet can be brought through floor or the baseboard. If fourth wire ground is required use 39X328 grounding clamp. These may be run in G-E Rigid Conduit or may be BX or BraidX or service entrance cables. Where required a coupling tube (Cat. No. 39X361) is used to protect the cable through the floor and to connect to the Range Outlet.

**Three Wire Unicords.** (Cat. No. GE3003) are recommended for use where no fourth wire grounding of the range frame is required. See local authorities for grounding rules. G-E Unicords consist of an all-rubber plug moulded to 38-inch length of flexible rubber 3-conductor cable.

**Four Wire Cord Sets.** (Cat. No. GE3050) are designed for use where separate fourth wire grounding of range frame is made compulsory by local regulations. They consist of an assembly of 90° angle, 50 amp. range cap (designed to match the modern styling of receptacle GE3000) and a 38-inch length of flexible rubber 4-conductor cable.

**Note:** These installations meet the requirements of the National Electrical Code for a disconnecting device in the range circuit. By disconnecting the plug, the range may be moved for cleaning or redecorating of walls and floor. No special switch is required in the circuit.

### Specifications: Range Wiring 12

Range Circuit: G-E Range Receptacle, and G-E Unicord, or a G-E Range Connection Cable, depending on grounding requirements. Non-shielded circuits. BraidX single conductors or cables.

# Check List for G-E Home Wiring

This list is a reminder of all the items that may be needed in the design of residential wiring. It may be used partly or totally. It is designed particularly for use in laying out G-E Home Wiring.

To avoid repetition in several parts of this check list, reference is made to the following rules:

**RULE 1.** Twin convenience outlets, in rooms where arrangement of furniture, etc., may vary, should be placed so that no point along the floor line, in any unbroken wall space, is more than six feet from an outlet in that space. However, no outlet is required in any space, the major portion of which is covered by a door when opened. In halls, passages, etc., one twin convenience outlet should be provided for each 12 feet of length or major fraction thereof, with at least one outlet in each hall or passage.

**RULE 2.** "Step-Saver" switches (3-way and 4-way as required) should be provided in halls, stairways, or rooms having two or more doors, and on lighting circuits extending between buildings, to control at least one light source from each entrance-exit point. Function of rooms, etc., and traffic through them rather than the distance between doorways should determine the need for these switches. Their purpose is to permit continuous passage in either direction, turning lights on and off, without retracing steps.

**RULE 3.** Lighting outlets for installed fixtures should be provided in all rooms, whether or not portable lamps are chiefly used. Those not initially used may be covered with a blank flush cover. Good lighting practice demands general lighting in addition to local lighting. One ceiling outlet is adequate for most rooms. Two outlets are required if the room area is more than 300 square feet, or if the length is more than one and a half times the width. Wall, bookcase, mirror or additional ceiling outlets should be provided where local or decorative lighting may be needed.

## GROUNDS AND OUTBUILDINGS

| LOCATION | CONVENIENCE OUTLETS | LIGHTING OUTLETS | SWITCHES AND CIRCUIT BREAKERS | SPECIAL OUTLETS |
|---|---|---|---|---|
| Entrance Gate or Gate House | | Ornamental lamps or gate light | Key-operated switch controlling driveway lights - 3-way | Push button for main or gate house bell; illuminated house number |
| Driveways and Walks | | Street-type lights | See "Main Entrance Hall" | |
| Terraces and Gardens; Shelters, Garden Houses, Boat Houses, etc. | Outdoor outlets on walls, columns, etc., for portable garden lights, hedge clippers, etc.; and in shelters for appliances and portable lights. | Fixed garden lights<br>Fountain and pool lights<br>Fixed lights in shelters as required | 3 or 4-way switches controlling lighting of adjacent areas and grounds with master control from main house | In shelters: Push button for main house annunciator<br>Telephone outlets |
| Play Areas: Tennis Courts, Pools, Docks, etc. | See "Terraces," etc. | Floodlighting, as required; Dock and fixed landing lights; Under-water lighting. | See "Terraces" | See "Terraces" |
| Outbuildings: Garages, Barns, Greenhouses, Hotbeds, etc. | Outlets for battery chargers, portable tools and machinery radios, heaters, etc. | Fixed entrance lights or floodlights | 3 or 4-way switch control with master control from house | Telephone outlets<br>Heavy-duty outlets |

## PROTECTIVE SYSTEMS

One fixed light in each room and exterior floodlights controlled by master switch in bedroom.

Burglar and fire alarm circuits should employ G-E Rigid Conduit for mechanical protection and to prevent tampering and deliberate damage. Thermostat, humidistat, water level indicator and such circuits do not require protection.

It is advisable to serve protective alarm systems from separate transformers to avoid overloading and voltage losses.

| LOCATION | CONVENIENCE OUTLETS | LIGHTING OUTLETS | SWITCHES AND CIRCUIT BREAKERS | SPECIAL OUTLETS |
|---|---|---|---|---|
| Main and side entrances | Outdoor outlets for decorative lighting. See "Terraces" | Overhead or side | Locking switch for outside and vestibule lights - 3 or 4-way | Push button for door bell<br>Illuminated house number |
| Service entrances | | Overhead or side | | Push button for door bell |
| Open porches | Outdoor outlets - See Rule 2 | Overhead or side wall | Switch inside of door leading to porch | Push button for annunciator<br>Telephone outlet plug |
| Main Entrance Hall, including Vestibule and Stair Hall<br>For coat closet see "Closets"<br>For powder-room or lavatory, see "Bathrooms" | See Rule 2<br>Clock hanger outlet<br>Fan hanger outlet | See Rule 3 | Single-pole, 3 or 4-way switches (see Rule 3) controlling lights in: Main Entrance (exterior) and Vestibule; Main, Upper and Stair Halls; Cellar Stairway (with pilot); Gardens, Driveway, Gates, etc.<br>Flush Circuit breakers protecting subcircuits in main living areas and all outside lighting circuits | Telephone outlet<br>Organ or radio reproducer outlets |
| Main Living Rooms<br>Library or Study<br>Music Room<br>Reception Room | Follow Rule 1 throughout<br>Clock hanger outlet<br>Fan hanger outlet<br>Floor outlets for free standing tables, pianos, etc.<br>Flush outlets in mantles, etc., for luminous ornaments | See Rule 3<br>Consider outlets for cove lighting; panel, beam, cornice and soffit lighting; "spot" or local lights for dominant features, paintings, etc. | Local control of fixed lighting outlets. See also Rule 3<br>Consider switch control of one side of twin convenience outlets serving portable lights | Telephone connection<br>Radio outlets<br>Push button or pull cord for servants' annunciator<br>Thermostat, humidistat or air-conditioning control |
| Dining Rooms and Breakfast Rooms | Follow Rule 1<br>Floor outlet under table<br>Clock hanger outlet<br>Fan hanger outlet | See Rule 3<br>Ceiling outlet over table essential | Control of fixed lighting outlets by 3 or 4-way switches at living and service entrances | Table or floor button to kitchen annunciator<br>Telephone outlet plug<br>Radio outlets |
| Enclosed Porches, Conservatories, etc. | See Rule 1<br>Fan hanger | See Rule 3 | Local control switch at entrance | Push button for servants' call<br>Telephone outlet plug<br>Radio outlets |
| Kitchens, Pantries and Service Areas | Single outlets at refrigerator, dishwasher, garbage destructor<br>Twin outlets (double-duty type) over all work tops<br>Fan outlet - flush or hanger type<br>Clock hanger outlet | Ceiling outlet supplemented by soffit lights at sink and range<br>Combination lamp and convenience outlets over each work top | Local switch control for each wall or soffit light<br>Wall switch control of ceiling light (see Rule 2)<br>Switch controlling kitchen ventilator fan<br>Flush circuit breakers protecting all kitchen and service area sub-circuits | Special range outlet<br>Special water heater outlet<br>Annunciator box, bells and buzzers<br>Telephone<br>Radio outlet |
| Service Entrance Hall or Vestibule | See Rule 1 | Ceiling outlet | Switch for vestibule light (see Rule 2)<br>3-way switches controlling service entrance lights and entrance lights at garage and adjacent outbuildings | |
| Halls, Stairs and Passageways | See Rule 1 | See Rule 3 | See Rule 2<br>Flush circuit breakers protecting branch sub-circuits serving adjacent areas | Telephone outlets<br>Push buttons or pull cords to servants' annunciator |
| Master Bedrooms<br>Dressing rooms<br>Nurseries | Follow Rule 1 throughout<br>Fan hanger outlet | See Rule 3 with special emphasis on side lights at mirrors, lights to illuminate wardrobes in dressing rooms and night light circuits | Consider silent (Mercury type) switches throughout, at least for night light circuits<br>See also Rule 2 and "Protective Lighting" below | Heavy-duty outlet for radiant heater (fireplace or portable)<br>Radio outlets<br>Push button or pull cord to servants annunciator<br>Telephone outlets |
| Servants' Bedrooms | See Rule 1 | See Rule 3 | Wall switch for lights | Night call bell<br>House telephone |
| Bathrooms, Lavatories | Twin outlets at lavatory for toilet appliances<br>Heavy-duty outlets (polarized) for radiant heater, sun lamps, etc.; out of reach of bathtub | Ceiling outlet<br>Side lights at mirror<br>Waterproof shower light<br>Night light | Single-pole switches for lights<br>Double-pole switches for heavy duty circuits; out of reach of the bathtub | Push button to servants' annunciator<br>Consider exhaust fan over shower or toilet compartment |
| Closets (all types) | | Ceiling or side wall outlets | Automatic door switch or switch and pilot light on room side, or pull chain on light fixture | |
| Storerooms<br>Attics<br>Open Cellars | Twin outlets as required by size for vacuum cleaners, etc. | Ceiling or side wall as required for lighting all parts | Switches for all lights (with pilot if at door). See also Rule 2) | |
| Utility Room<br>Furnace and Equipment space | One or more for trouble lights, vacuum cleaner, repair tools, etc. (Preferably double-duty type) | Ceiling or side wall as required | Totalizing Unit, preferably with circuit breakers<br>Flush circuit breaker for local branch sub-circuits if required<br>Single-pole switches controlling all lights. See also Rule 2 | Low voltage transformer<br>Power outlet for invalid elevator, trunk lifts, etc.<br>Power outlets for air conditioning equipment, oil burners, pumps, blowers, etc. |
| Laundry | Double-duty or heavy-duty outlets for washer, ironer, flat irons, dryer, etc. | Ceiling or side outlet for (general illumination)<br>Lights over all fixed equipment | Single-pole controlling lights<br>Double-pole as required for heavy-duty circuits | Exhaust fan outlet<br>Extension call bell |
| Recreation Rooms<br>Game Rooms | See Rule 1<br>Fan hanger outlet<br>Clock hanger outlet | Ceiling or side for general illumination<br>Special lighting for billiards, ping pong, etc. | Single-pole for general illumination<br>Separate switches for special lighting<br>See also Rule 2 | Heavy-duty outlet for radiant heater (fireplace or portable<br>Telephone outlet<br>Radio outlet<br>Push button for servants' call |
| Work Rooms and Hobby Shops | Double-duty or heavy-duty with local switch control for all power machines, motors, etc. | See Rule 3<br>Special lights according to nature of equipment | Wall switches for general lights<br>Pull switches for local lights | Ventilating fan<br>House telephone |

*This page contains data on special and miscellaneous wiring not a direct part of the general light and power requirements for the home or other building.*

## LOW-VOLTAGE WIRING MATERIALS

These include circuits for call bells, annunciators, alarm systems, thermostats, etc., as well as intercommunicating telephone systems and radio wiring, which should all be considered in any electrical layout. Except for smaller wire sizes, materials are similar to those used for general light and power circuits. Materials designed for these services are indicated below.

**Call Bell and Annunciator Wiring.** For voltages less than 32, G-E Code Grade Rubber Insulated Wire is used. Raceways of G-E Rigid Conduit or Metallic Tubing permit repairs or rewiring to be made readily.

**Transformers.** One or more should be installed near the distribution center. Selection of transformers is dependent on the following:

a. the voltage and frequency of the primary current;

b. the voltage required in the secondary current;

c. the total wattage requirements of the low voltage systems so operated. This is generally advisable as a margin of safety, even though systems so served operate intermittently and independently.

TYPICAL TRANSFORMERS

| Primary Current | | Secondary Current | Capacity Watts | Type | Catalog No. |
|---|---|---|---|---|---|
| Volts | Cycles | Volts | | | |
| 110 | 50-140 | 8 | 10 to 5 | Residence | GE2332 |
| 110 | 50-140 | 4/8/12/16 20/24 | 50 | Heavy duty | GE2333 |
| 110 | 50-140 | 4/8/12/16 20/24 | 100 | Heavy duty | GE2334 |
| 220 | 50-140 | 8/16/24 | 50 | Heavy duty | GE2336 |
| 220 | 50-140 | 8/16/24 | 100 | Heavy duty | GE2337 |

**Protective and Control Systems.** Burglar and fire alarm circuits should employ G-E Rigid Conduit for mechanical protection and to prevent tampering and deliberate damage. Thermostat, humidistat, water level indicator and such circuits do not require protection. It is advisable to serve protective alarm systems from separate transformers to avoid overloading and voltage losses.

## TELEPHONE WIRING

Branch telephones and intercommunicating systems need special consideration. While telephone companies install wiring materials (at the owner's expense) for all public and branch systems, raceways of G-E Rigid Conduit, or Fiberduct for underfloor extensions, should be provided (unless surface wiring is acceptable) to permit extending or altering the system. Telephone company engineers will assist in determining sizes and distribution of materials.

Private intercommunicating systems require G-E Telephone Wires, preferably in G-E Rigid Conduit.

## RADIO WIRING

In single or multiple residences and institutions, etc., provision should be made for radio wiring. G-E Rigid Conduit provides a raceway adapted to various systems, permitting rewiring to keep pace with developments in radio and television, and functioning as a shield or ground. The manufacturer of the system employed should be consulted on the layout.

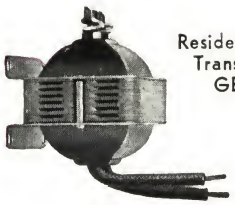
**Multiple Antenna Systems** permit the use of a single antenna to serve a number of receiving sets, and require an antenna and a ground circuit to each receiver outlet. G-E Rigid Conduit permits flexibility in wiring and rewiring.

**Audio-frequency Distribution Systems** consist of independently tuned receiving sets which distribute audio-frequency impulses to reproducers in different locations, and require antenna and ground circuits to the central receiving sets only. From these sets Rigid Conduit raceways carry audio-frequency circuits to each speaker outlet, where switch and volume control permits selective reception through any of the central receivers. Dynamic or power speakers require a power outlet and switch. With such systems G-E Rigid Conduit acts also as a shield. BX Armored Cable, with the sheathing grounded, is suitable for single circuits, but does not readily permit rewiring.

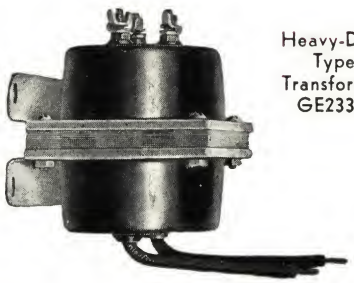
**Remote Control Wiring for Radios** consists of multi-wired cables from a central receiver, each wire being connected to a position on individual control panels. Special outlet plates permit connection to the flexible cables leading to the portable control panel. The use of G-E Rigid Conduit provides flexibility in wiring and rewiring.

## PRIVATE LOW-VOLTAGE LIGHTING CIRCUITS

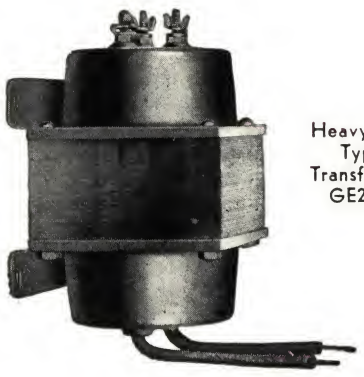
Private lighting plants operate at voltages of 50 and under. To prevent voltage losses, conductors, switches and sockets must be capable of carrying higher amperages than for 110-115 volt circuits. 600-watt sockets and receptacles, and heavy duty conductors and switches should be used.



Residence Type Transformer GE2332

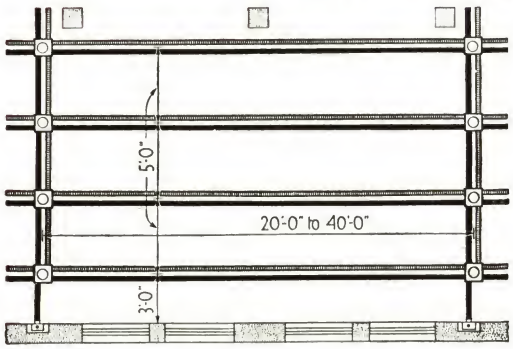


Heavy-Duty Type Transformer GE2336



Heavy-Duty Type Transformer GE2337

# CARRY LIGHT, POWER, SIGNAL AND TELEPHONE WIRES TO ANY PART OF FLOOR AREA




*Double Grid Layout.* Similar in floor area effectiveness to the Single Grid Layout but with ducts laid in pairs. Provides separate raceways for light and power wiring and for telephone and signal distribution.

Certain areas such as stenographic rooms, office service rooms with tabulating and bookkeeping equipment, etc., often require more electrical service than is permissible in a double grid layout. In such cases a triple grid layout may be used or any required number of ducts may be laid parallel under the area to be served.

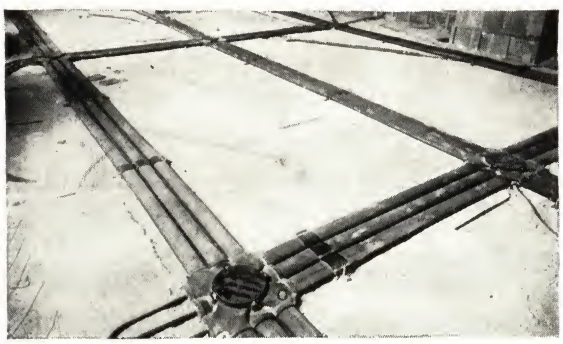
## FIBERDUCT IS FLAT, OVAL TUBING

G-E Fiberduct for underfloor wiring is a flat oval tubing of impregnated fiber that resists corrosive influences encountered in actual service. It forms a system of non-corrodible raceways in concrete floors and provides a practical means of bringing wires for light, power, telephone and signals to any part of the floor area. It permits new outlets to be safely and economically installed at any time and at any point along the duct system. Fiberduct is 1½" by 3¾" O.D.

## INSTALLATION

In slab construction: Set junction boxes on the structural slab, bring the top of adjusting sleeve to the approximate grade of the finished cement floor by means of the leveling screws, and anchor them with a cement grout. Run Fiberduct sections from box to box, adjusting leveling screws to bring top of duct 1" below finished floor grade. (¾" depth of concrete is minimum N.E. Code requirement.) Anchor all couplings in place with a cement grout. Then set adjusting sleeves in junction boxes precisely to finished floor grade before pouring fill.

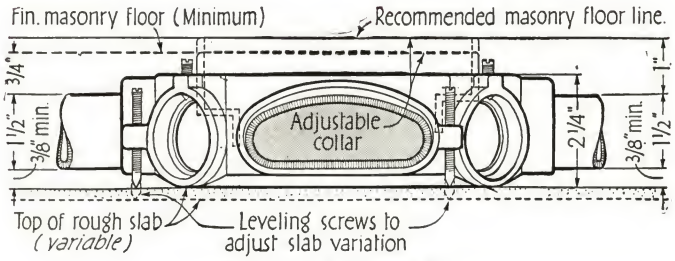
In monolithic construction the installation is essentially the same. Soft iron tie wires are used in place of cement grout to secure boxes and fitting to the steel or the form. When junction boxes are located over joists in pan construction, they are usually set on cross strip of bar iron laid from pan to pan.



Multiple Duct Assembly

## PRELOKAYLETS-SPECIALLY CONCEALED OUTLETS

Prelokaylets are special concealed outlets which can be attached to the Fiberduct at predetermined locations before the raceway is laid. They are adapted to use in stenographic and clerical rooms, office service areas and the like, where the approximate location of desks and equipment can be predetermined with reasonable accuracy.



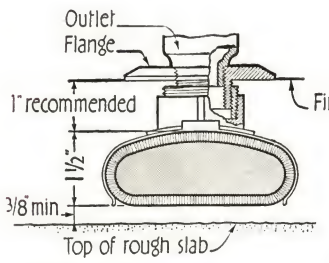

Elevation of Junction Box

Prelokaylets do not penetrate the cement floor, and do not require flanges and floor plates until access to the circuits in the raceway is required at a Prelokaylet location; but they are readily accessible at any time with a minimum of inconvenience and expense. They are located through the finished floor by a magnetic or meter-type finder which "spots" the magnetized pin in the head of each Prelokaylet.

These outlets may be clamped to the Fiberduct sections on the job, or they can be set at the factory at specified spacings.

## JUNCTION BOXES

Subfloor fittings include Junction Boxes in single, double and triple types—also floor and wall elbows, cross under-fittings and other items required to complete installation.




Detail of Prelokaylet



1" Insert SP9250



Beveled Floor Flange SP9310-A



Double Duct Junction Box



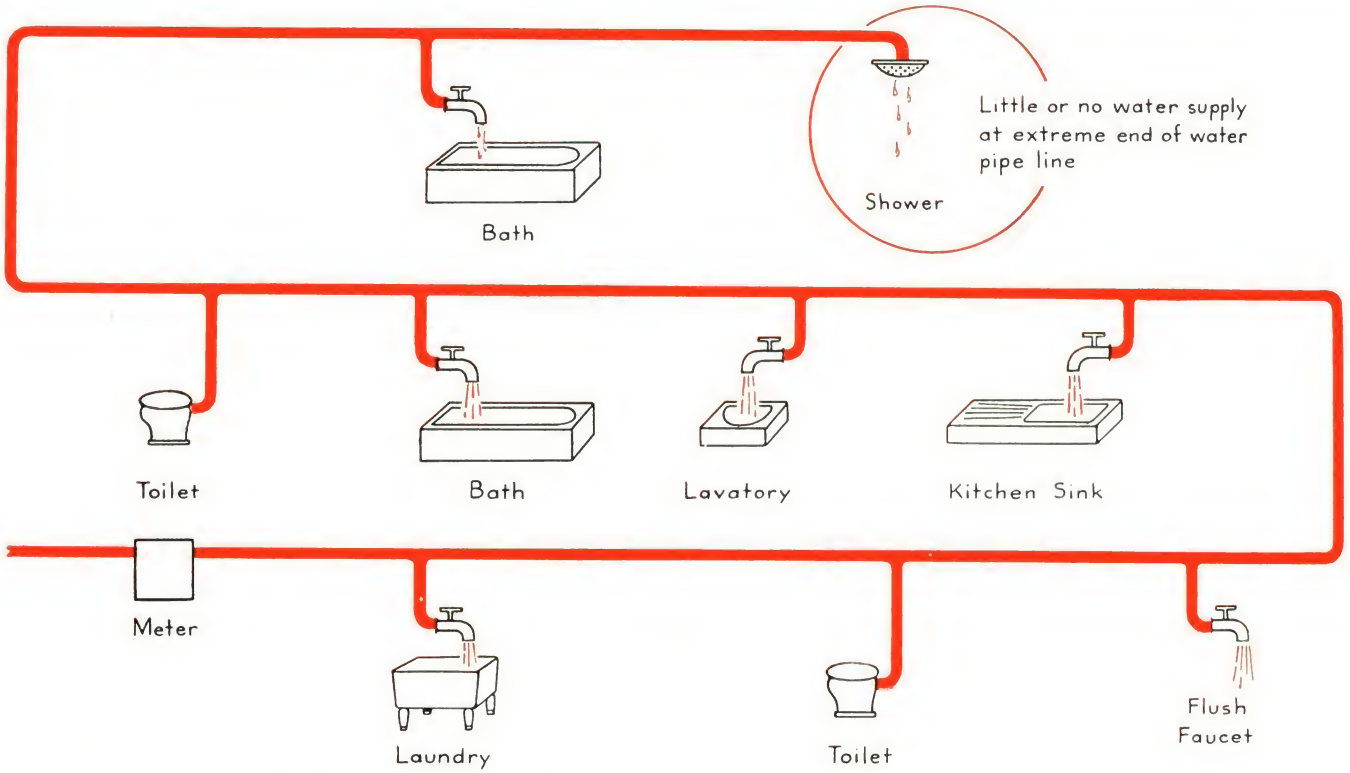
Telephone Outlet SP9340-A



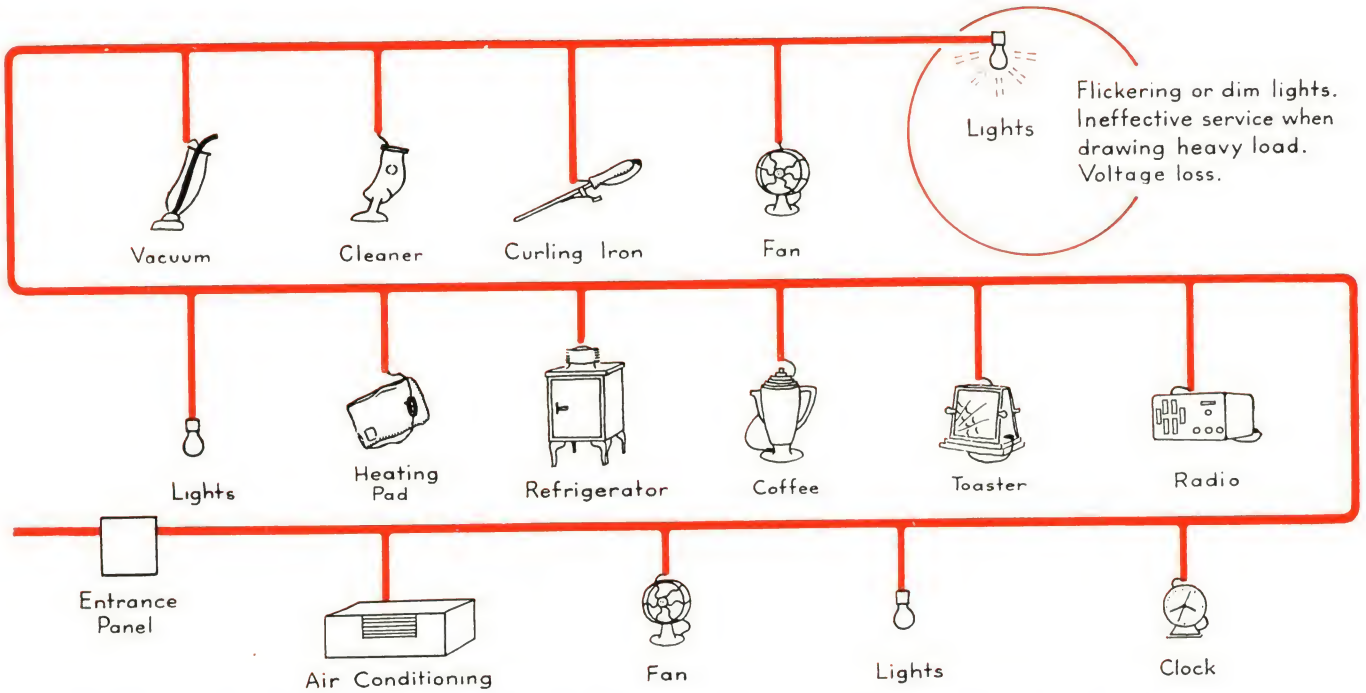
Lighting Outlet Duplex SP9360-A



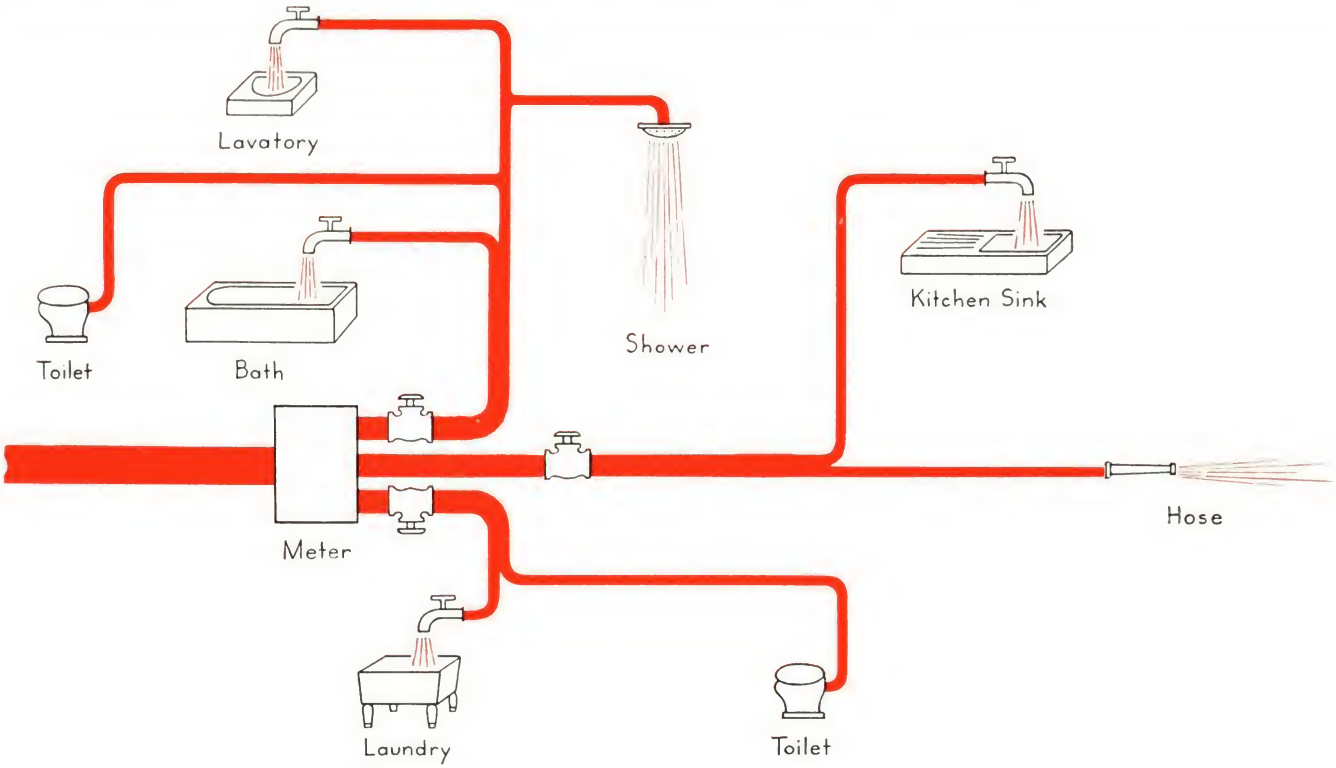
Triple Junction Box



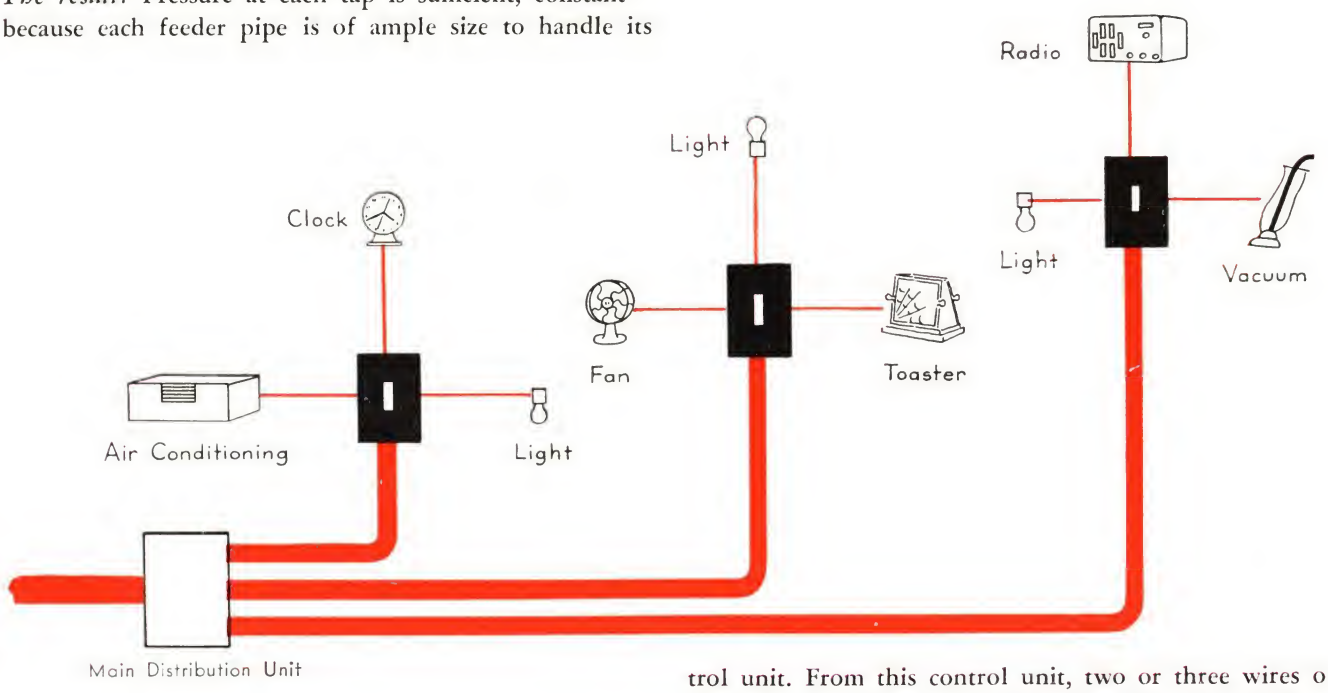

Imagine a home piped with a water system like this! One feeder pipe, of unchanging size, travels from the meter up through the house . . . "supplying" water to all the plumbing fixtures on the way. *The result:* full pressure at the laundry tubs, naturally; less pressure at the toilet when the laundry faucet is "open." Less flow at each succeeding tap all the way up the line. A dribble at the shower. No one would pipe a house this way! *Yet* . . .




For twenty years we have been "hooking up" our house wiring systems in a similar way . . . with similar results. Current comes through eventually at every outlet. But what chance has the lamp at the end of the circuit? Watch it flicker every time an appliance uses part of the current . . . We've forgotten that long arms of poorly planned, undersized wiring cause voltage losses. We're sending an ambling hook-up from outlet to outlet . . . and expecting it to do the work of an *efficient system!* But modern plumbing and wiring have progressed . . .




Modern plumbing handles the job differently: It runs a few "trunk" or feeder pipes *of large size* from the main inlet pipe up into the house. Each of these feeder lines, in turn, supplies water to a small number of fixtures. *The result:* Pressure at each tap is sufficient, constant—because each feeder pipe is of ample size to handle its "load" . . . because no feeder pipe is burdened by a large number of taps. Pressure everywhere is the same as at bath or laundry tub. *That's real plumbing!*




Today we plan home wiring in the same, sane way . . . We run a small number of "trunk" or feeder lines of *extra* size from the entrance panel. Each of these feeder lines run up through the house to a centrally located control unit. From this control unit, two or three wires of ordinary size radiate to near-by outlets. Simple, logical . . .

And now the results: There is no light flicker . . . and you don't lose any electricity *inside* the walls. This is the essence of G-E Home Wiring. It's efficient . . . it assures comfort and convenience, and it's economical.

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N. J., Newark—E. B. Latham Co.
N. J., Paterson—G-E Supply Corporation
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N. Y., Elmira—Southern Tier Electric Supply Co.
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O., Akron—G-E Supply Corporation
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O., Cleveland—G-E Supply Corporation
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Wis., Madison—Crescent Electric Supply Company
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51-726 10M-11-37

# SECTION 23

CONTINUED ⟶

# HARVEY HUBBELL, INC.

## Manufacturers of Electrical Wiring Devices

MAIN OFFICE AND FACTORY

BRIDGEPORT, CONN.

BRANCH OFFICES

CHICAGO, ILL. NEW YORK, N. Y. SAN FRANCISCO, CALIF.

## THE COMPANY AND ITS PRODUCTS

This Company was one of the pioneers in the manufacturing of electrical wiring devices, many of which have become standard for the industry.

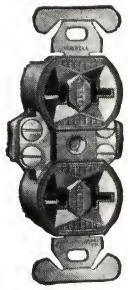
Hubbell products have a national distribution and can be secured through electrical supply houses throughout the country.

Approved wiring devices, including Hubbell T-Slot and Polarized Receptacles of all types, Brass Shell and Porcelain Sockets, Toggle Switches, Plugs, Receptacle and Plug Caps.

Practically every product listed on these pages is also obtainable with higher carrying capacity, so that the Hubbell Line will furnish the proper style and type device to meet any standard requirement.

## HUBBELL T-SLOT CONVENIENCE OUTLETS

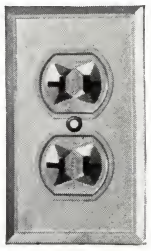
### 10 Amperes, 250 Volts—15 Amperes, 125 Volts



No. 7626



No. 9595



No. 9595-I with
No. 7094-I Plate
(Ivorine)



No. 9571
No. 9573
With separate feeds



No. 7550




Nos. 7135-7136
With 3¼" or 4" box covers



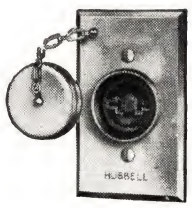

Nos. 7260-7137
With 3¼" or 4" box covers

| Cat. No. | Description | Cat. No. | Description | Cat. No. | Description |
|---|---|---|---|---|---|
| 7626 | Highest quality—top wired (Bakelite) | 7093 | Single receptacle plate (Bakelite) | 7260 | Duplex 3¼" cover |
| 7626-I | Top wired, W.E. (Ivorine) | 7093-I | Single receptacle plate (Ivorine) | 7137 | Duplex 4" cover |
| 9595 | Standard quality, side wired (Bakelite) | 7094 | Duplex receptacle plate | 7550 | Side wired, narrow ears (Bakelite) |
| 9595-I | Side wired, W.E. (Ivorine) | 7094-I | Duplex receptacle plate (Ivorine) | 7590 | Side wired, wide ears (Bakelite) |
| *9571 | With two feeds and one return, wide ears | 7135 | Single 3¼" cover | 7590-I | Standard quality, side wired, wide ears (Ivorine) |
| *9573 | With two feeds and two returns, wide ears | 7136 | Single 4" cover | | |

*If desired in "Ivorine" material, add letter "I" to catalogue number.

## HUBBELL SPECIAL PURPOSE OUTLETS

### 10 Amperes, 250 Volts—15 Amperes, 125 Volts




No. 7792




No. 7794




No. 7707




No. 7739



No. 7711



No. 7797




No. 7710



No. 8891

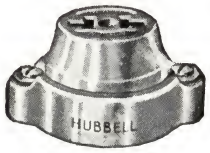
| Cat. No. | Description | Cat. No. | Description | Cat. No. | Description |
|---|---|---|---|---|---|
| 7792 | Outdoor flush receptacle Complete unit, including receptacle, plate, rubber mat and attached protecting cap | 7713 | .060" brass plate for outlet and pilot light | 8886 | Single outlet and switch S.P. without plate |
| | | 7729 | Ornamental bakelite plate for outlet and pilot light | 8891 | Single outlet and switch S.P. with bakelite plate |
| 7794 | Outdoor flush receptacle, same arrangement as No. 7792 except 3 wire | 7739 | Switch and bullseye combination S.P. with .060" brass plate | 8887 | Single outlet and switch D.P. with .060" brass plate |
| 7707 | Electric clock hanger outlet with .040" plate | 7797 | Floor outlet, bevel edge, .060" Plate | 8892 | Single outlet and switch D.P. with bakelite plate |
| 7711 | Convenience outlet, pilot light with 7713 brass plate | 7798 | Floor outlet, square edge, .060" Plate | 7710 | Fan hanger outlet complete with yoke support and brass plate |
| 7712 | Convenience outlet and pilot light receptacle only | 7956 | Switch and bullseye combination D.P. with .060" brass plate | 7714 | Fan hanger outlet complete with stud support and brass plate |
| | | 7953 | Switch and bullseye combination 3-way with .060" brass plate | | |
| | | 8885 | Single outlet and switch S.P. with .060" brass plate | | |

# HUBBELL SURFACE PLUG RECEPTACLES AND CAPS

## 10 Amperes, 250 Volts—15 Amperes, 125 Volts




No. 5617




No. 5618



No. 7056
Steel armored



No. 9754
Rubber




No. 7162
Steel armored

| Cat. No. | Description |
|---|---|
| 5617 | Concealed base, screws $1\frac{17}{32}$" centers |
| 5618 | Cleat base, screws $1\frac{13}{32}$" centers |

| Cat. No. | Description | Cord hole, in. |
|---|---|---|
| | **Armored "Cord Grip" Caps** | |
| 7056 | Tandem blade | $\frac{9}{16}$ |
| 7057 | Parallel blade | $\frac{9}{16}$ |
| 7183 | Tandem blade | $\frac{5}{8}$ |
| 7184 | Parallel blade | $\frac{5}{8}$ |
| 7162 | Double "T" blade | $\frac{9}{16}$ |

| Cat. No. | Description | Cord hole in. |
|---|---|---|
| | **"Cord Grip" All-rubber** | |
| 9752 | Tandem blade | $\frac{9}{16}$ |
| 9753 | Tandem blade | $\frac{5}{8}$ |
| 9754 | Parallel blade | $\frac{9}{16}$ |
| 9756 | Parallel blade | $\frac{5}{8}$ |
| 9759 | Double "T" blade | $\frac{9}{16}$ |
| 9761 | Double "T" blade | $\frac{5}{8}$ |

# HUBBELL NON-REVERSIBLE POLARIZED RECEPTACLES AND CAPS—2 WIRE

## 10 Amperes, 250 Volts—15 Amperes, 125 Volts



Nos. 5566-B, 5552-B




No. 7270




No. 5885



No. 9970
No. 9971



No. 7092
No. 7241



No. 6730
No. 6720

| Cat. No. | Description |
|---|---|
| 5885 | Porcelain wall receptacle concealed base, screws $1\frac{17}{32}$" on centers |
| 5566-B | Flush receptacle, black bakelite—10 amp. |
| 5552-B | Flush receptacle, black bakelite—20 amp. |

| Cat. No. | Description |
|---|---|
| 7270 | Receptacle and round box cover No. 5566 with $3\frac{1}{4}$" cover |
| 7271 | Receptacle and round box cover No. 5566 with 4" cover |
| 9970 | "Cord-Grip" rubber plug cap with cord hole $\frac{19}{64}$" to $\frac{9}{16}$" |
| 9971 | "Cord-Grip" rubber plug cap with cord hole $\frac{5}{8}$" |

| Cat. No. | Description |
|---|---|
| 7092 | Armored "Cord-Grip" plug cap with cord hole $\frac{19}{64}$" to $\frac{9}{16}$" |
| 7241 | Armored "Cord-Grip" plug cap with cord hole $\frac{5}{8}$" |
| 6730 | Composition plug cap without cord-grip —10 amp. |
| 6720 | Composition plug cap without cord-grip —20 amp. |

All of above are also available in 20-ampere 250-volt rating.

# HUBBELL POLARIZED RECEPTACLES AND CAPS—3 WIRE

## 10 Amperes, 250 Volts—15 Amperes, 125 Volts




Nos. 6047, 6059




No. 6149




No. 6051




Nos. 7275, 7277



No. 6810



No. 7051




No. 7055
No. 7089



No. 9750
No. 9977

| Cat. No. | Description |
|---|---|
| 6047 | Concealed, wall type receptacle—10 amp., 250 v. |
| 6059 | Concealed, wall type receptacle—20 amp., 250 v. |
| 6051 | Flush type composition receptacle for standard single outlet plate |
| 7189 | Flush type composition receptacle grounded |
| 9051 | Flush type porcelain receptacle |
| 9051-G | Flush type porcelain receptacle grounded |

| Cat. No. | Description |
|---|---|
| 7275 | Flush type receptacle with 4" round box cover |
| 7275-G | Flush type receptacle with 4" round box cover—grounded |
| 7277 | Flush type receptacle with 4" round box cover—20 amp. 250 v. |
| 6810 | Flush type porcelain receptacle,—20 amp. 250 v. |
| 6810-G | Flush type porcelain receptacle grounded—20 amp., 250 v. |

| Cat. No. | Description |
|---|---|
| 7051 | Duplex flush type black composition receptacle—10 amp., 250 v. |
| 7051-G | Duplex flush type black composition receptacle, grounded—10 amp., 250 v. |
| 6149 | Bakelite plug cap—10 amp. |
| 7055 | "Cord-Grip" steel covered composition plug cap, cord hole $\frac{9}{16}$"—10 amp. |
| 7089 | "Cord-Grip" steel covered composition plug cap, cord hole $\frac{5}{8}$"—20 amp. |
| 9750 | Rubber "Cord-Grip" cap, cord hole $\frac{9}{16}$"—10 amp. |
| 9977 | Rubber "Cord-Grip" cap, cord hole $\frac{5}{8}$"—20 amp. |

# HUBBELL FLUSH SWITCHES


No. 9801


No. 7901


No. 7701


No. 9701

Designed Specially for Type "C" Lamps (with "T" Rating)

FULLY ENCLOSED BAKELITE BASE

| Cat. No. | Description | Cat. No. | Description |
|---|---|---|---|
| | **With Bakelite Handles** | | **With Live Rubber Handles** |
| 9801 | S.P., Ind., 5 amp. 250 v. T. | 7701 | S.P., Ind., 5 amp., 250 v. T. |
| 9802 | D.P., Ind., 10 amp., 250 v. T. | 7702 | D.P., Ind., 10 amp., 250 v. T. |
| 9803 | 3-way, 5 amp., 250 v. T. | 7703 | 3-way, 5 amp., 250 v. T. |
| 9933 | 3-way, 10 amp., 250 v. T. | 7704 | 4-way, 2 amp., 250 v. T. |
| 9804 | 4-way, 2 amp., 250 v. T. | 7705 | S.P., Ind., 20 amp., 125 v. T. |
| 9805 | S.P., Ind., 20 amp. 125 v. T. | 7706 | D.P., Ind., 20 amp., 125 v. T. |
| 9806 | D.P., Ind., 20 amp., 125 v. T. | | |
| | **With Metal Handles** | | **Locking Type** |
| 7901 | S.P., Ind., 5 amp., 250 v. T. | 9701 | Single pole, 5 amp., 250 v. T. |
| 7902 | D.P., Ind., 10 amp., 250 v. T. | 9702 | D.P., 10 amp., 250 v. T. |
| 7903 | 3-way, 5 amp., 250 v. T. | 9703 | 3-way, 5 amp., 250 v. T. |
| 9623 | 3-way, 10 amp., 250 v. T. | 9613 | 3-way, 10 amp., 250 v. T. |
| 7904 | 4-way, 2 amp., 250 v. T. | 9704 | 4-way, 2 amp., 250 v. T. |
| 7905 | S.P., Ind., 20 amp., 125 v. T. | 9705 | S.P., 20 amp., 125 v. T. |
| 7905 | D.P., Ind., 20 amp., 125 v. T. | 9706 | D.P., 20 amp., 125 v. T. |
| | | 8965 | Key |

*Note:* Above ratings at 250 volts may be doubled in most cases when used at 125 volts. Bakelite and brass plates are available for above switches.


No. 8801


No. 7801


No. 7601


No. 8961

Standard Quality Switches for General Installation

NU-BLAC PORCELAIN BASE

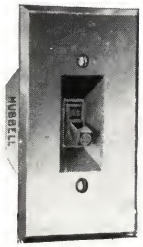
| Cat. No. | Description | Cat. No. | Description |
|---|---|---|---|
| | **With Bakelite Handles** | | **With Live Rubber Handles** |
| 8801 | S.P., Ind., 5 amp., 250 v. | 7601 | S.P., Ind., 5 amp., 250 v. |
| 8941 | S.P., Ind., 20 amp., 250 v. | 7602 | D.P., Ind., 10 amp., 250 v. |
| 8942 | D.P., Ind., 20 amp., 250 v. | 7603 | 3-way, 5 amp., 250 v. |
| 8802 | D.P., Ind., 10 amp., 250 v. | 7604 | 4-way, 2 amp., 250 v. |
| 8803 | 3-way, 5 amp., 250 v. | 7605 | S.P., Ind., 20 amp., 250 v. |
| 8804 | 4-way, 2 amp., 250 v. | | |
| | **With Metal Handles** | | **Locking Type** |
| 7801 | S.P., Ind., 5 amp., 250 v. | 8961 | Single pole, 5 amp., 250 v. |
| 7802 | D.P., Ind., 10 amp., 250 v. | 8962 | Double pole, 10 amp., 250 v. |
| 7842 | D.P., Ind., 20 amp., 250 v. | 8963 | 3-way, 5 amp., 250 v. |
| 7803 | 3-way, 10 amp., 250 v. | 8964 | 4-way, 2 amp., 250 v. |
| 7804 | 4-way, 2 amp., 250 v. | 8965 | Key |
| 7805 | S.P., Ind., 20 amp., 250 v. | | |

*Note:* Above ratings at 250 volts may be doubled in most cases when used at 125 volts.

# HUBBELL SPECIAL PURPOSE SWITCHES


No. 8121

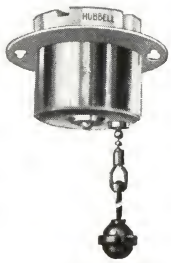

No. 9801-1


No. 8901 Switch
No. 8911 Plate


No. 7981


No. 2971
No. 2923


No. 8171


No. 5020

| Cat. No. | Description |
|---|---|
| | **Round Metal Handle Flush Toggle Composition Base—Brass Handle** |
| 8121 | Single pole, 5 amp., 250 v. |
| 8122 | Double pole, 10 amp., 250 v. |
| 8132 | Double pole, 20 amp., 250 v. |
| 8123 | 3-way, 5 amp., 250 v. |
| 8124 | 4-way, 2 amp.. 250 v. |

| Cat. No. | Description |
|---|---|
| | **Ivorine Handle Flush Toggle Bakelite Base—For Type "C" Lamps** |
| 9801-I | S.P., Ind., 5 amp., 250 v. |
| 9802-I | D.P., Ind., 10 amp., 250 v. |
| 9803-I | 3-way, 5 amp., 250 v. |
| 9804-I | 4-way, 2 amp., 250 v. |
| 9805-I | S.P., Ind., 20 amp., 125 v. |

| Cat. No. | Description |
|---|---|
| | **Ivorine Handle Flush Toggle "Nu-Blac" Porcelain Base Standard Quality** |
| 8801-I | S.P., Ind., 5 amp., 250 v. |
| 8941-I | S.P., Ind., 20 amp., 250 v. |
| 8802-I | D.P., Ind., 10 amp., 250 v. |
| 8803-I | 3-way, 5 amp., 250 v. |
| 8804-I | 4-way, 2 amp., 250 v. |

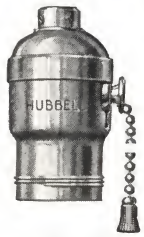
| Cat. No. | Description |
|---|---|
| | **Ivorine Plates** |
| 7095-I | Single switch plate |
| 7121-I | 2-gang switch plate |
| 7122-I | 3-gang switch plate |
| 7138-I | 4-gang switch plate |

| Cat. No. | Description | Cat. No. | Description | Amperes 125 v. | Amperes 250 v. |
|---|---|---|---|---|---|
| | **Recessed Flush Toggle Switches Handle—Porcelain Base** | | **Surface Toggle Switches Metal Covers—Metal Handles** | | |
| 8901 | S.P., Ind., 5 amp., 250 v. | 8171 | S.P., solid | 5 | 3 |
| 8902 | D.P., Ind., 10 amp., 250 v. | 8191 | S.P., slotted | 5 | 3 |
| 8903 | 3-way, 5 amp., 250 v. | 8421 | S.P., solid | 10 | 5 |
| 8904 | 4-way, 2 amp., 250 v. | 8431 | S.P., slotted | 10 | 5 |
| 8911 | .060" brass plate | 8173 | 3-way, solid | 5 | 3 |
| | | 8193 | 3-way, slotted | 5 | 3 |

| Std. Type | Lock Type | Description |
|---|---|---|
| | | **Heavy Duty Flush Toggle Switches Fully Enclosed Bakelite Base** |
| 2971 | 2971-L | S.P., 20 amp., 250 v. |
| 2972 | 2972-L | D.P., 20 amp., 250 v. |
| 2973 | 2973-L | 3-way, 20 amp., 250 v. |
| 2923 | 2923-L | S.P., 30 amp., 250 v. |
| 2924 | 2924-L | D.P., 30 amp., 250 v. |
| 2925 | 2925-L | 3-way, 30 amp., 250 v. |

| Cat. No. | Description |
|---|---|
| | **Ceiling Pull Switches with Outlet Box Covers** |
| 5020 | S.P. for 3¼ in. box |
| 5026 | S.P. for 4 in. box |
| | **Outdoor Weatherproof Switches** |
| 7981 | S.P., 5 amp., 250 v. |
| 7982 | D.P., 10 amp., 250 v. |
| 7983 | 3-way, 5 amp., 250 v. |
| 7984 | 4-way, 2 amp., 250 v. |

# HUBBELL BRASS SHELL SOCKETS AND CEILING RECEPTACLES

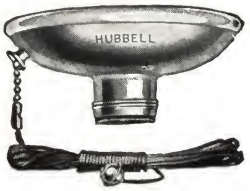

No. 3618—⅛" Cap
No. 3620—Pendant
250 W., 250 V.


No. 3664—⅛" Cap
No. 3665—⅜" Cap
No. 3666—Pendant
250 W., 250 V.


No. 3667—⅛" Cap
No. 3668—⅜" Cap
No. 3669—Pendant
600 W., 250 V.


No. 4100
For 3¼" and 4" Boxes

No. 4102
For 3¼" Box Only
660 W., 250 V.


No. 4104
For 3¼" and 4" Boxes
250 W., 250 V.

## HUBBELL RANGE RECEPTACLES AND CAPS

### 50 Amperes, 250 Volts—3 Wire



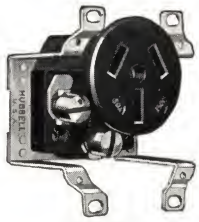
No. 7970
Black Bakelite, Single Screw, Solderless Terminals



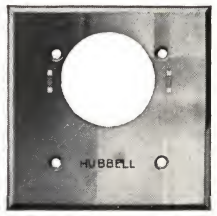

No. 7914—
38″ Cord Set. 2 No. 6 and 1 No. 8 Wires
No. 7915—
38″ Cord Set. 2 No. 8 and 1 No. 10 Wires
No. 7916—38″ Cord Set. 3 No. 6 Wires
No. 7923—38″ "BX" Cable Set. 3 No. 8 Wires
No. 7924—38″ "BX" Cable Set. 3 No. 6 Wires
No.7971—Ground Strap for No. 7970 Receptacle



No. 7977 Range Cap
Black Bakelite



No. 7974
Flush Receptacle




No. 7975 .040″ Brass Plate
No. 7976 .060″ Brass Plate

## HUBBELL COMBINATION DUPLEX RECEPTACLES

### 2 Wire and 3 Wire



No. 7053

| Cat. No. | Description |
|---|---|
| 7053 | Duplex Receptacle with standard double T-slot outlet on one end, and 3-wire outlet on the other. Each outlet wired independently. |
| 7054 | Duplex Receptacle with standard double T-slot outlet on one end, and 3-wire outlet on the other. Arranged with one feed and one return common to both outlets. 3-wire end permanently grounded to supporting strap. |
| 7064 | Duplex Receptacle with standard double T-slot outlet on one end, and 3-wire outlet on the other. Arranged with one feed and one return common to both outlets. Grounding terminal of 3-wire end equipped with binding screw. |



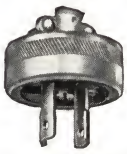

No. 7053 with Standard Plate

## HUBBELL *Twist-Lock* DEVICES

### 20 Amperes, 250 Volts—2, 3 or 4 Wire



No. 7210, 2-Wire
No. 7310, 3-Wire
No. 7410, 4-Wire
Porcelain Receptacles



No. 7102, 2-Wire
No. 7311, 3-Wire
No. 7411, 4-Wire
"Cord-Grip" Caps
Metal Covered



No. 7101, 2-Wire
No. 7313, 3-Wire
No. 7413, 4-Wire
"Cord-Grip" Connectors



No. 8808, 2-Wire
No. 7327, 3-Wire
No. 7408, 4-Wire
Flush Motor Plugs



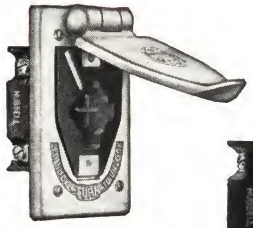

No. 9763 2-Wire
No. 9965, 3-Wire
No. 9967, 4-Wire
"Cord-Grip" Cap
Rubber




No. 7216, 2-Wire, 3¼″ Cover
No. 7517, 3-Wire, 4″ Cover
No. 7417, 4-Wire, 4″ Cover

## *Hubbellock* CIRCUIT BREAKING DEVICES

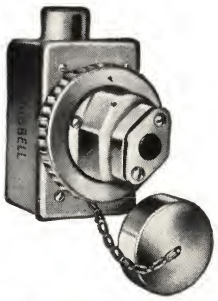
### 4 Wire—20 Amperes, 250 Volts D.C.—30 Amperes, 600 Volts A.C.
### 3 Wire—10 Amperes, 250 Volts D.C.; 460 Volts A.C.—20 Amperes, 125 A.C. or D.C.
### 20 Amperes, 250 Volts D.C.—30 Amperes, 600 Volts A.C.



No. 20403 Receptacle with No. 20416 Plate



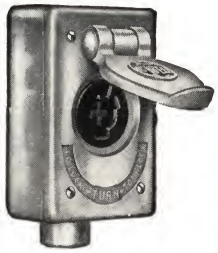
No. 20403
4-Wire Polarized Receptacle




Nos. 22427 and 22415
Attached to Box



Nos. 22414 and 22415
Assembled
4-Wire Watertight Receptacle, Polarized Cord Connector and Cap



Nos. 23000-23007
Assembled to Box



No. 23000
3-Wire Polarized Receptacle

# PASS & SEYMOUR, INC.

Manufacturers of National Electrical Code Standard Wiring Devices

Solvay Station, SYRACUSE, N. Y.

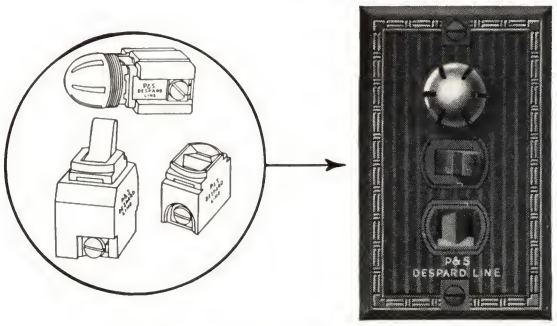
BRANCH OFFICES

NEW YORK, 71-73 Murray Street

CHICAGO, 605 W. Washington Boulevard

## THE P&S-DESPARD LINE OF MODERN WIRING DEVICES

*Listed by Underwriters' Laboratories and Fulfills Specifications of Federal Specification Board*




Three Devices in a Single Gang Plate

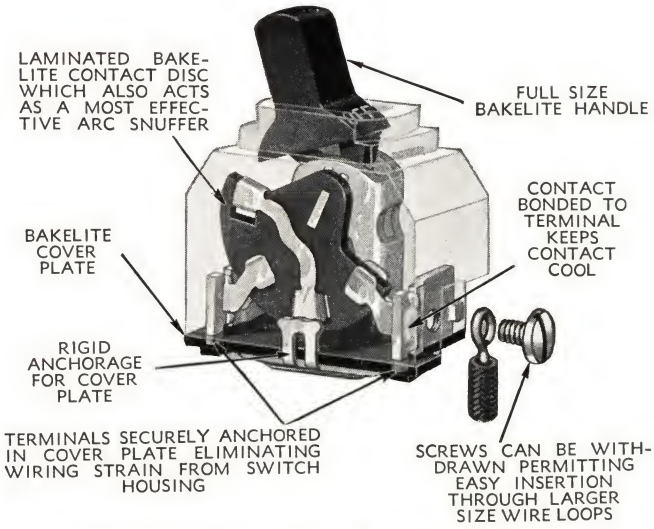
### Three Devices May Be Used in a Single Switch Box

One of the most important advantages of these new devices is that *one, two or three* devices may be installed in the space formerly required for a single switch box and all these devices are interchangeable.

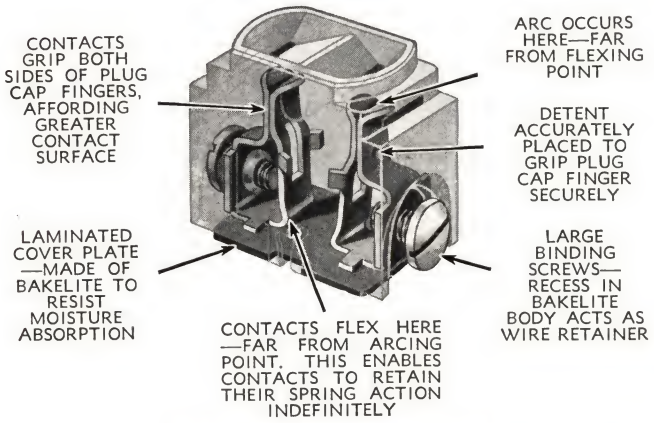
### Twenty Basic Interchangeable Devices Used to Form 59,244 Combinations

From only 20 basic devices and the wall plates listed, over 59,244 different combinations of wiring devices can be made. These few devices, due to their interchangeability, are so versatile that a uniform wiring system composed of identically designed devices is now possible in the entire residence or commercial structure.

The pilot light combination (shown at left) illustrates only one of the many space saving possibilities of this modern wiring device line. Suggested wiring layouts and specifications are shown on page four.




P&S-Despard Type "C" Tumbler Switch Construction




P&S-Despard Convenience Outlets

## HI-LITES OF THEIR ADVANTAGES

**1—Complete Line of Space Saving Devices—**
The P&S-Despard line is complete—every possible convenience for the homeowner is now at the architect's command.

**2—Three in One—**
The P&S-Despard Units allow the use of three wiring devices if desired in a single gang switch box.

**3—Each Device Interchangeable—**
Any P&S-Despard device may be removed and interchanged with any of the other 20 basic devices which comprise the line.

**4—Small but Sturdy Construction—**
While the devices are of smaller size, they have the sturdy construction of the finest quality—full 10-amp. rating for switches and 15-amp. rating for outlets.

**5—Devices Inexpensive—**
The many savings in boxes, multi-gang plates and installation time makes the P&S-Despard wiring system not only the most convenient but actually the most economical wiring system available today.

**6—Reduce Wiring Costs—**
The facility of installation, the various combinations which can be secured in single gang switch boxes give the owner greater value especially in modernizing work.

**7—Large Gang Plates Not Required—**
The fact that six switches, either tumbler or lock type, may be assembled in a two gang box instead of two switches has spelled the end of the large plates of former years.

**8—Standard Boxes Used—**
These devices do not require special boxes but use the ordinary one and two gang standard boxes, the single switch box being the one more frequently used.

**9—Material of the Products—**
Each device is enclosed in an all bakelite body—specification construction throughout.
While Brown bakelite is standard, devices and wall plates can be furnished in Alabar (Ivory) or black when specified.

**10—Listed by Underwriters—**
All the devices are listed by the Underwriters' Laboratories.

*For Specifications see Page 4*

## P&S-DESPARD TUMBLER SWITCHES FOR TYPE "C" LAMP LOADS

The special features of the switches are illustrated on the previous page. They are made of Brown Bakelite or Alabar (Ivory). The lever is doubly insulated and the strap is insulated from the switch. The front and back are enclosed, making a thoroughly dust-proof unit. The mechanism has a four point break and the contact member is designed to quickly snuff all arcs and is based on an effective modern principle. Each switch is tested under full current load before shipment and conforms to the most rigid Government and Architectural specifications.

### Single-Pole Momentary Contact Switches

These switches contain the same arc-snuffing mechanism as Cat. No. 1311 type listed above. See listing below.

### Luminous Tip Switches

All P&S-Despard tumbler switches can be supplied with luminous tip handles on order. Specify regular catalog number with Suffix "LT," i.e., 1311-LT, etc.

**BROWN BAKELITE**

| Description | Standard Cat. No. | Lock Type Cat. No. | Amperes 125 V. | Amperes 250 V. |
|---|---|---|---|---|
| Single Pole | 1311 | 1311-L | 10 | 5 |
| Double Pole | 1312 | 1312-L | .. | 10 |
| Three Way | 1313 | 1313-L | 10 | 5 |
| Four Way | 1314 | 1314-L | 5 | 2 |

**ALABAR (IVORY)**

| Description | Standard Cat. No. | Lock Type Cat. No. | Amperes 125 V. | Amperes 250 V. |
|---|---|---|---|---|
| Single Pole | 1411 | 1411-L | 10 | 5 |
| Double Pole | 1412 | 1412-L | .. | 10 |
| Three Way | 1413 | 1413-L | 10 | 5 |
| Four Way | 1414 | 1414-L | 5 | 2 |

**MOMENTARY CONTACT SWITCHES**

| Cat. No. | DESCRIPTION | Std. pkg. | Carton |
|---|---|---|---|
| Brown | | | |
| 1311-MO | Circuit Normally Open | 100 | 10 |
| 1311-MC | Circuit Normally Closed | 100 | 10 |
| Alabar | | | |
| 1411-MO | Circuit Normally Open | 50 | 10 |
| 1411-MC | Circuit Normally Closed | 50 | 10 |

**Switch Dimensions**—Single pole—length 1½ in., width ⅞ in., depth 1 3/32 in.; all other switches—length 1⅝ in., width ⅞ in., depth 1 3/32 in.



Cat. No. 1311
Single Pole



Cat. No. 1311-L
Single Pole
Lock Type



Cat. No. 1313
Three-Way



Cat. No. 1320
Convenience Outlet





Cat. No. 1328 Cat. No. 1325
Convenience Outlets
Above Cat. Nos. include wall plate



Cat. No. 1341
Pilot
Light Outlet



Cat. No. 1322
Radio Outlet



Cat. No. 1323
Radio Cap



Cat. No. 1339
Night Light Receptacle



Cat. No. 1340
Pilot Light
Receptacle



Cat. No. 1344
Bell Push



Cat. No. 1345
Blank Insert

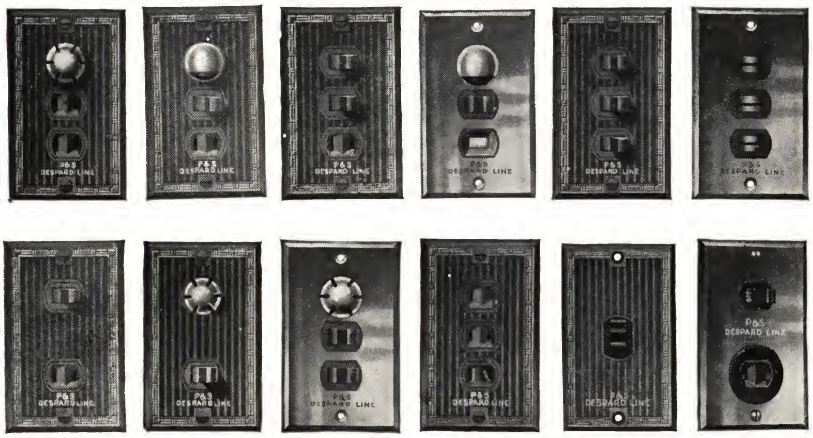


Cat. No. 1346
Box Divider



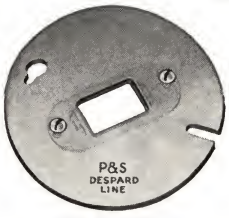

Cat. No. 1330
Name Plate

## A Few of the Many Possible Combinations of P&S-Despard Devices



| Description | Amperes 125 V. | Amperes 250 V. | Catalog No. Brown | Catalog No. Alabar (Ivory) | Catalog No. Misc. |
|---|---|---|---|---|---|
| Convenience Outlet, Single | 15 A. | 10 A. | 1320 | 1420 | ..... |
| Pilot Light Outlet | 15 A. | 10 A. | 1341 | 1441 | ..... |
| Radio Outlet | ..... | ..... | 1322 | 1422 | ..... |
| Duplex Outlet | 15 A | 10 A. | 1328 | 1428 | ..... |
| Triplex Outlet | 15 A. | 10 A. | 1325 | 1425 | ..... |
| Night Light Recept. Chrome Hood | 75 Watts | 125 V. | 1339 | ..... | ..... |
| Night Light Recept. Brush Brass Hood | 75 Watts | 125 V. | 1339-B | ..... | ..... |
| Pilot Light Recept. Chrome Hood | 75 Watts | 125 V. | 1340 | ..... | ..... |
| Pilot Light Recept. Brush Brass Hood | 75 Watts | 125 V. | 1340-B | ..... | ..... |
| Bell Push for 6 to 12V Circuits | ..... | ..... | 1344 | 1444 | ..... |

| Description | Catalog No. Brown | Catalog No. Alabar (Ivory) | Catalog No. Misc. |
|---|---|---|---|
| Blank or Cord Hole | 1345 | 1445 | ..... |
| Name Plate, Stainless Steel | ..... | ..... | 1330 |
| Name Plate, Brush Brass | ..... | ..... | 1330-1 |
| Box Divider | ..... | ..... | 1346 |
| Single Opening Cover for 3¼" Box | ..... | ..... | 1361 |
| Single Opening Cover for 4" Box | ..... | ..... | 1362 |
| Two Opening Cover for 4" Box | ..... | ..... | 1363 |
| Att. Plug Cap, parallel blades 9/32 cord hole | 1321 | 1421 | ..... |
| Polarized Att. Plug Cap 9/32 Cord Hole | 1326 | 1426 | ..... |
| Radio Cap, 9/32 Cord Hole | 1323 | 1423 | ..... |




Cat. No. 1361
Single Opening
3¼-in. Box Cover



Cat. No. 1321
Attachment
Plug Cap

*For Specifications and Wall Plates, see Page 4*

# PASS & SEYMOUR WIRING DEVICES—P & S TYPE "C" FLUSH TUMBLER SWITCHES

## 10 Ampere Type (Bakelite)



Cat. No. 1815-D

The ideal switch for either specification work or all purpose wiring. Its arc-snuffing mechanism—fully enclosed in a dust-proof bakelite housing—has been especially designed to handle Type "C" lamp loads.

Made to fit regular rectangular opening tumbler switch plates.

Indicating Type—All Bakelite—Totally Enclosed

| Description | Standard Cat. No. | | Lock Type Cat. No. | | Amperes | |
|---|---|---|---|---|---|---|
| | Brown | Alabar | Brown | Alabar | 125 V. | 250 V. |
| Single Pole.. | 1815-D | 1915-D | 1815-DL | 1915-DL | 10 | 5 |
| Double Pole | 1825-D | 1925-D | 1825-DL | 1925-DL | .. | 10 |
| Three Way.. | 1835-D | 1935-D | 1835-DL | 1935-DL | 10 | 5 |
| Four Way.. | 1844-D | 1944-D | 1844-DL | 1944-DL | 5 | 2 |

## 10 Ampere (Composition) T-Rating



Cat. No. 3961

A type "C" switch with mechanism totally enclosed in composition cup. Switch operating handles are brown bakelite. Black handles are available on order at no extra charge.

With Enclosed Composition Cups

| Description | Cat. No. | Amperes | |
|---|---|---|---|
| | | 125 V. | 250 V. |
| Single Pole, Indicating | 3961 | 10 | 5 |
| Double Pole, Indicating | 3962 | 10 | 10 |
| Three Way | 3963 | 10 | 5 |
| Four Way | 3964 | 5 | 2 |
| Double Pole, Indicating | 3965 | 20 | 10 |
| Single Pole, Quadruple Break, Indicating | 3970 | 20 | 10 |

## Door Switches

### Rating—6 Amp., 125 V.; 3 Amp., 250 V.



Cat. No. 6553

P&S door switches are designed to fit all standard size door jambs. The Catalog No. 6553 type listed below is supplied complete in approved box with knockouts and clamp for flexible metallic conduit.

| Description | Cat. No. | Hole required, inches | | |
|---|---|---|---|---|
| | | W. | L. | D. |
| Light On, Door Open | 6553 | 1 5/16 | 3 5/8 | 2 3/4 |
| Light On, Door Closed | 6554 | 1 5/16 | 3 5/8 | 2 3/4 |

## Heavy Duty Enclosed Tumbler Switches, T-Rating

### 20 and 30 Amperes, 250 Volts

P&S 5421 type switches are especially constructed for handling "Type C" lamp loads and for general heavy duty service. The casings and handles are made of brown Bakelite. These switches are for use in single gang boxes with standard tumbler switch plates.



Cat. No. 5421

| Cat. No. Std. | Cat. No. Lock | Description | Amperes 125 V. | Amperes 250 V. | Std. pkg. | Carton |
|---|---|---|---|---|---|---|
| 5421 | 5421-L | Single Pole | — | 20 | 30 | 10 |
| 5422 | 5422-L | Double Pole | — | 20 | 10 | 2 |
| 5423 | 5423-L | Three Way | — | 20 | 10 | 2 |
| 5424 | 5424-L | Four Way | 20 | 10 | 10 | 2 |
| 5426 | 5426-L | Single Pole, Quadruple Break | — | 20 | 10 | 2 |
| 5431 | 5431-L | Single Pole | — | 30 | 30 | 10 |
| 5432 | 5432-L | Double Pole | — | 30 | 10 | 2 |
| 5433 | 5433-L | Three Way | — | 30 | 10 | 2 |
| 5434 | 5434-L | Four Way | 20 | 10 | 10 | 2 |
| 5436 | 5436-L | Single Pole, Quadruple Break | — | 30 | 10 | 2 |
| — | 5430 | Key for Lock Switches | — | — | 100 | 20 |

*Note:* One Cat. No. 5430 Key furnished with each lock switch.

Dimensions of Bakelite Bodies—length 2 3/4 in., width 1 7/4 in., depth 1 1/16 in.

## 20 Ampere, Heavy Duty Switches (Gray Porcelain Base) T-Rating



Cat. No. 3971

| Cat. No. | Description | Amperes 125 V. | Amperes 250 V. |
|---|---|---|---|
| | | With brown handles | |
| 3971 | S.P. Indicating | 20 | 10 |
| 3972 | D.P. Indicating | 20 | 20 |
| 3973 | 3-W | 20 | 10 |
| 3974 | 4-W | 10 | 5 |
| 3982 | D.P. Ind. (Back connected and sealed with high heat compound for appliance use) | 20 | 20 |
| | Lock Type | | |
| 3971-L | S.P. Indicating | 20 | 10 |
| 3972-L | D.P. Indicating | 20 | 20 |
| 3973-L | 3-W | 20 | 10 |
| 3974-L | 4-W | 10 | 5 |
| 4960 | Key for use with Lock Type 3971 and 3961 Sws. | | |

*Note:* One 4960 Key furnished with each lock switch.

Double Pole switches for motor control are rated—2hp., 115-230 volts a-c., 125-250 volts d-c.

No. 3982 for appliance use is rated—2500 W., 125 V.; 5000 W., 250 V.

All of the above switches listed as standard by Underwriters.

## CONVENIENCE OUTLETS



Cat. No. 1530



Cat. No. 1520

| Description | Cat. No. | Amperes 125 V. | Amperes 250 V. |
|---|---|---|---|
| Single, T-Slot Side Wired | 1527 | 15 | 10 |
| Single, T-Slot (Brown Composition) Top Wired | 5850 | 15 | 10 |
| Duplex, T-Slot (Brown Bakelite) Side Wired | 1530 | 15 | 10 |
| Duplex, T-Slot (ALABAR Ivory) Side Wired | 1530-I | 15 | 10 |
| **With Metal Box Covers (Cadmium Finish)** | | | |
| Duplex, T-Slot, for 3 1/4 in. Outlet Box | 1523 | 15 | 10 |
| Single Flush Receptacle for 3 1/4 in. Box | 1538 | 15 | 10 |



Cat. No. 1527



Cat. No. 5850

## SPECIAL OUTLETS AND RECEPTACLES



Cat. No. 1534
Clock Hanger Outlet

**Clock Hanger Outlet**—Receptacle is recessed for attachment plug cap, allowing clock to hang flush with wall, eliminating the usual unsightly cord connection.



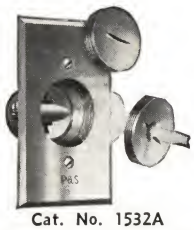
Cat. No. 1535
Clamp Type
Cat. No. 1535-S
Stud Type
Fan Hanger Outlet

**Fan Hanger Outlet**—Clamp and stud types for mounting on a standard 4-in. square outlet box and cover with raised rectangular opening. Fan supporting screw locked in split bushing making a rigid, vibrationless assembly.



Cat. No. 1533
Outdoor Flush Receptacle

**Outdoor Flush Receptacle**—For holiday lighting, portable lamps on verandas, etc. Plate and screw cover cadmium finished. Gaskets for both plate and screw cover make it thoroughly weatherproof.



Cat. No. 1532A

**Floor Outlets**—Furnished complete with two caps—one a cord hole cap for retaining attachment plug in receptacle, the other a protective flush screw cap which closes the outlet when device is not in use. Complete with .060-in. brush brass plate and two flush screw caps.

*For Specifications see Page 4*

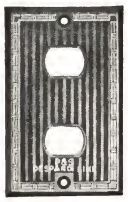
## P&S AND P&S-DESPARD WALL PLATES

The brown Bakelite or the Alabar (Ivory) plates are made in decorated finish.

Brown Bakelite and Ivory plates are also available in sectional type.

Brass plates (.060 Struck-up) for both P&S and P&S-Despard wiring device lines are also available as standard items.

Any United States standard finish can be furnished on special order of brass plates.


Cat. No. 1332

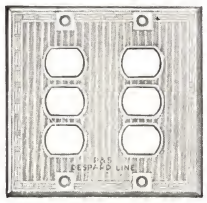

Cat. No. 1671D


Cat. No. 1671F


Cat. No. 1951

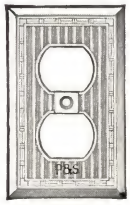

Cat. No. 1333


Cat. No. 1331


Cat. No. 1436

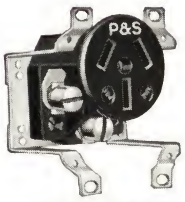

Cat. No. 1671C


Cat. No. 1433

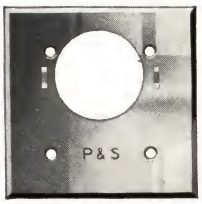

Cat. No. 1438

## THREE-WIRE POLARIZED RANGE RECEPTACLES, CAPS AND CORD SETS

### Flush Type Receptacle


Cat. No. 3845

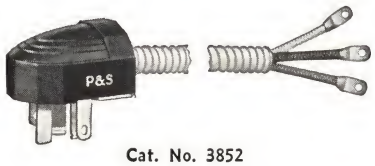
P&S 3845 Bakelite range receptacle with solderless terminals, is designed for mounting in standard 4-in. square box (Universal Cat. No. 52151-S box with ¾-in. knockouts and 52C18 cover). P&S 3847 and 3861 plates for use with P&S 3845 receptacle have grounding contacts.


Cat. No. 3861

RATING—50 AMPERES, 250 VOLTS

| Cat. No. | Description |
|---|---|
| 3845 | Flush Receptacle Only |
| 3847 | .040-in. Brush Brass Plate Only |
| 3861 | .060-in. Brush Brass Plate Only |

### Caps and Cord Sets


Cat. No. 3852


Cat. No. 3833


Cat. No. 3829

RATING—50 AMPERES, 250 VOLTS

| Cat. No. | Description |
|---|---|
| 3833 | Three-Wire Cap Only |
| 3829* | Rubber Cord Set with Cap, two No. 8 and one No. 10 Wires |
| 3830 | Rubber Cord Set with Cap, two No. 6 and one No. 8 Wires |
| 3852* | Armored Cord Set with No. 3833 Cap, three No. 8 Wires |
| 3853 | Armored Cord Set with No. 3833 Cap, three No. 6 Wires |
| 3854* | Rubber Cord Set with No. 3833 Cap, two No. 8 and one No. 10 Wires |
| 3855 | Rubber Cord Set with No. 3833 Cap, two No. 6 and one No. 8 Wires |

*Rating—35 amperes, 250 volts.

*Note:* Length of above cord sets, 38 inches.

### Surface Type Receptacle


Cat. No. 3826

Three-wire range receptacle of rugged construction designed to give more wiring room and easier connections, either from the bottom or back. Wires enter straight in to approved solderless connections. A cable clamp is built in, interchangeable for bottom or back wiring.

RATING—50 AMPERES, 250 VOLTS

| Cat. No. | Description |
|---|---|
| 3826 | Surface Receptacle Only |

## COMPLETE WIRING DEVICE SPECIFICATIONS

All Wiring Devices—unless otherwise specified—shall be of the P&S or P&S-Despard Line, assembled either singly or in multiple in straps, and installed as units in single-gang boxes or multiples thereof, as indicated or specified on drawings, or as directed by the architect.

The Contractor shall furnish and install:

**Local Switches**—P&S-Despard Flush Tumbler Switches, Types 1311, 1312, 1313, and 1314 (single-pole, double-pole, three-way, and four-way). In general all switches shall be located on knob side of doors.

**Lock Switches**—Where lock switches are indicated the above listed switches in lock type complete with key shall be installed.

**Door Switches**—Where door switches are indicated furnish and install P&S 6553 Type door switches.

**Receptacles**—P&S-Despard Triplex receptacles, No. 1325 (or Duplex receptacles, No. 1328) shall be installed—except—where a warning light (or signal) is specified in conjunction with a convenience outlet, a pilot light outlet (or outlets) P&S-Despard Type No. 1341 shall be installed. No plug caps—unless otherwise specified—shall be furnished.

**Warning or Pilot Light Signals**—Where pilot lights are specified or indicated for operation in conjunction with switches or outlets, P&S-Despard pilot light receptacles No. 1340, equipped with red lamp, shall be installed.

**Night Lights**—P&S-Despard night light receptacles No. 1339 equipped with clear lamp shall be installed as indicated on plans.

Where Radio Outlets are indicated, No. 4505 complete with box divider and plug caps shall be installed. Ground wire shall be run and connected to suitable ground. Aerial wire shall run to roof for connection to aerial to be installed by others.

**Telephone Outlets**—P&S plates No. 1965 shall be installed where indicated on plans.

**Clock Receptacle**—Where clock outlets are indicated on drawings install P&S 1534 clock hanger outlet—height to be obtained from architect.

**Fan Outlet**—Where fan hanger outlets are indicated on drawings P&S fan hanger, No. 1535 shall be installed.

**Special Floor Receptacles**—Where special floor receptacles are indicated on drawings furnish and install P&S No. 1532 floor outlet.

**Exterior Receptacle**—At each point indicated on drawings install P&S No. 1533 outdoor flush receptacle complete with cap and gaskets.

**Name Plates**—Where designations are required on switches or bell pushes, P&S-Despard name plates No. 1330 neatly printed or labeled shall be installed.

**Flush Plates**—All flush plates—unless otherwise specified—are to be of the P&S-Despard Line, in the proper gang and having the required number of wiring device openings—either Brown Bakelite or Alabar finish, as listed on specification, drawing, or schedule. Where brass plates are specified by the architect, they must be .060 brass, finished to match the hardware if so specified.

MEMORANDA

# FRANK ADAM ELECTRIC CO.

GENERAL OFFICE AND FACTORY
3650 Windsor Place
ST. LOUIS, MISSOURI

MAIL ADDRESS
P. O. DRAWER 22

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EXPORT OFFICE: Roy Chandler, Inc., NEW YORK, N. Y.

DISTRICT OFFICE REPRESENTATIVE

### Engineering Service

Recognizing the fact that our products are of a highly technical nature, we have built up an organization of sales engineers in our home office and district offices, who by long experience are competent to help the architects, engineers and specification writers in their problems of designing and specifying the electrical installations with the proper switches, panelboards and switchboards that the particular installation requires.

We therefore suggest to the architects when they have a project requiring our line of material, that they immediately call upon our nearest district office representative to give them the latest engineering data on our products. We are only too glad to assist the architects' engineers and specification writers in every way, because we appreciate that this is a necessary service that we must offer in connection with our highly technical products.

### Experience

The Frank Adam Electric Co. have been pioneers and have for over forty years specialized in the design and manufacture of our line of products.

### Manufacturing Facilities

The main office and manufacturing plant are in St. Louis, Mo.

The plant is a thoroughly modern fireproof building specially designed and equipped for the most efficient and economical manufacture of the company's specialized quality products.

### Distribution Facilities

The manufacturing plant, being located in St. Louis, has plenty of skilled help available, has a short haul for supplies of raw materials and finished devices, and can ship to all parts of the United States promptly and at an economical cost. Furthermore we carry in most of the district offices sufficient finished stock for emergency demand.

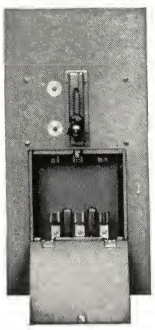
### Standardization

The Frank Adam Electric Co. were the first manufacturers to apply the complete unit of either panelboard section or switches to the design and construction of lighting and appliance branch panelboards and distribution panelboards and switchboards, and also to the F-A Major System of Pre-selective Remote Control for theaters and auditorium stage switchboards, with the result that these standardized unit constructed panelboards and switchboards are far better made today and at a lower price than ever thought possible ten or fifteen years ago.

The Frank Adam Electric Co. was one of the first manufacturers of these products to co-operate with the Underwriters' Laboratories, Inc., of the National Board of Fire Underwriters, to the end of making a better and safer product.

## FRANK ADAM PRODUCTS

### F-A Fuslok Type Switches



These fuse lock type switches are made in 30 to 600-ampere capacity inclusive, for 250 volts and less, and 30 to 200-ampere inclusive, for 600 volts, for general use, service equipment and horsepower rating as listed in our catalog.

These switches are high grade rugged, quick make and quick break operating mechanisms, with interlock for fuse compartment, and double break solid copper contacts, and are furnished for either flush or surface mounting as individual switches, or grouped in distribution panelboard or switchboard assemblies.

### F-A Switchfuz

The F-A Switchfuz is a rugged constructed hinge-type pull-out fuse disconnect switch, with "on" and "off" position, and is approved for general use and service equipment.

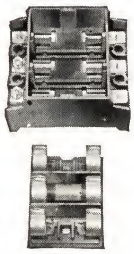


The F-A Switchfuz is made in 100 to 1800-ampere capacity for 250 volts or less and 100 to 400-ampere inclusive for 600 volts.

It is furnished for either surface or flush mounting as individual switches, or grouped in distribution panelboard or switchboard assemblies.

### F-A Pulfuzsw (Pull Fuse Switch)

The Frank Adam Pull Fuse Switch is a special design and construction pull-out type of fuse switch with "on" and "off" position, and a special design of switch blade arranged to clamp the fuses when the switch is in the "on" position.



The Frank Adam Pulfuzsw is approved for general use and service equipment, and is furnished in separate enclosure or assembled with other similar units for main switch and range switch, and with 15-ampere branches for light and appliance circuits. It is also assembled for distribution panelboards for power and light.

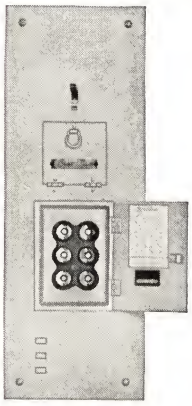
### F-A Circuit Breakers



The FRANK ADAM ELECTRIC Co., has developed a new type of circuit breaker particularly designed for adoption in an assembly for electric light and appliance branch panelboards and small single phase and three phase power branch panelboards. These circuit breakers in one, two and three pole are approved for both DC and AC feeder systems for 125 volts or 125/250 volts from 10 amperes to 50 amperes, and will be ready for delivery about January 1st, 1938.

### F-A Service Equipment

The Frank Adam Service Equipment includes small units for residential installation carried on wholesalers' shelves, as well as the special design and heavy capacity type for commercial and industrial and hotel buildings. We specialize on these service equipments for large capacities, where we include in one compact assembly, not only the main service switch, but the current transformer for the meter, large capacity and small capacity feeder branches, as well as light and appliance branch panelboards.



They are economical in space requirements and in time and labor for installation.

### F-A Distribution Panelboards and Switchboards

Our several types of switches were all designed and constructed to be used in assemblies for panelboards and switchboards, and as all of these are special for each installation, we offer our engineering service to help the architects' engineers to design and specify the right and proper design, capacity and construction of the distribution panelboards or switchboards.



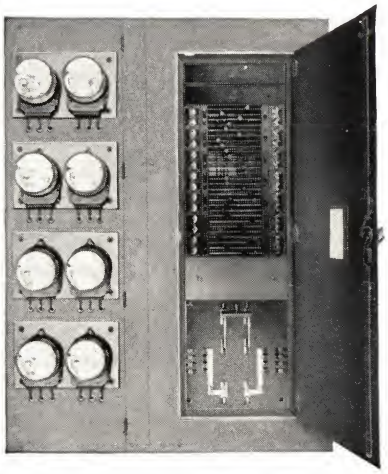
We recommend the panelboards for small installations and the switchboard type for large installations.

### F-A Lighting and Appliance Branch Circuit Panelboards



The FRANK ADAM ELECTRIC Co. assemble from various standardized panelboard section units both standardized as well as special design light and appliance branch panelboards for either Edison plug or cartridge type N.E.C. fuse connections, or with fuse connections and a rugged single, double or three pole tumbler switch. We also furnish standard and special design panelboards with circuit breakers for the main connection and for the branches.

### F-A Meter Control Panelboards and Cabinets

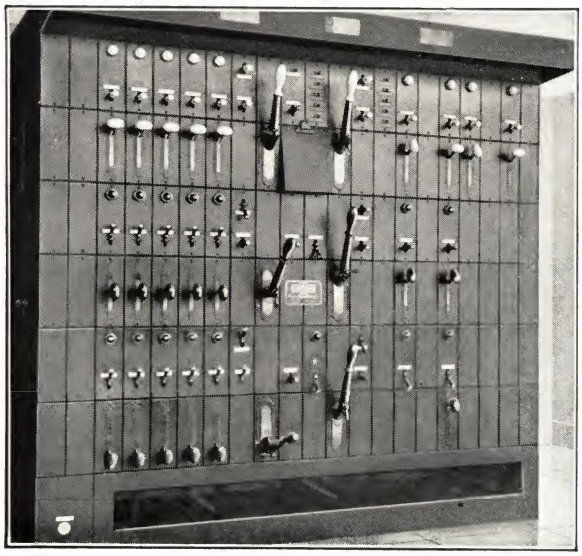


The FRANK ADAM ELECTRIC Co. was one of the earliest manufacturers to recognize the value to the owners of office buildings and loft buildings of the meter control panelboards for electric light and power, and have given considerable time and thought in developing the various types of meter control panelboards as best suited to the demand of small buildings, medium size buildings and large buildings.

Here again we offer the architects our special engineering service if they will call on our district office representative and place their project problems before our representative, and he will co-operate with them to the best of his ability to specify the most economical and the best adapted meter control panelboards and cabinets for the project.

### F-A Stage Switchboards

The FRANK ADAM ELECTRIC Co. design and build stage switchboards for purely manual control, modified manual and remote control, full remote control, five or ten all master pre-selective remote control and with the standard resistor or potentiometer reactor dimmers, or for motor drive remote controlled dimmer banks with a minimum size control station on the stage, or in the picture booth, or in both locations; also the Frank Adam Electronic Tube control system, and also mobile, or manual-mobile illumination control for dining rooms, dance halls, auditoriums, night clubs or the outside of buildings.



## F-A SPECIAL STEEL BOXES AND CABINETS

The FRANK ADAM ELECTRIC Co. have one of the most complete sheet steel working shops in the country for the manufacture of the enclosures for switches, light and appliance branch panelboards, distribution panelboards and switchboards.

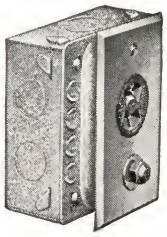
We also furnish all kinds and conditions of junction and pull boxes and telephone boxes.

## SPECIAL F-A PRODUCTS

### F-A Fan Hangers

Many years ago an architect called upon us to furnish one of his jobs with an outlet on the wall that would both support and give connection to the wall type electric fan, and since that time we have developed several types of Frank Adam Hanger Outlets that are adaptable for hanging fans, pictures with illumination fixtures, clocks and glow heaters, also radios.

The Frank Adam Hanger Outlet is a real hanger outlet, because it is furnished with a stud upon which the fan or whatever should be hung can be actually hung onto, and then held in position by a washer and nut.



### F-A Security Type Fan Hanger

This is furnished complete with Frank Adam special 4-in. outlet box and special cover with plaster keys for holding thin plastering over the box; also with bakelite receptacle and struck-up heavy brushed brass face plate.

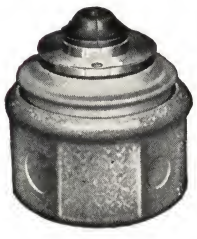
### F-A Fixture Stud Type Fan Hanger

This is the same as above, but without either the box or cover, the hanger arm being arranged to be supported on the standard 4x4-in. outlet box with rectangular cover and fixture stud, and held in position by a nut.

### F-A FHSB Type Fan Hanger

This is the competitive type that is arranged to be fastened into the rectangular cover of a 4x4x1½-in. standard outlet box, and for supporting the fan is dependent on the fastening of the rectangular cover to the box.

### F-A Floor Box



We were called upon many years ago to design and produce an adjustable and reversible cover floor box that would be easy to install and get it flush with the finished floor and be readily adaptable for either a wire connection out of the box or for a plugging connection into a receptacle. These points are all taken care of in the Frank Adam Adjustable Floor Box.

### F-A Cable and Wire Duct

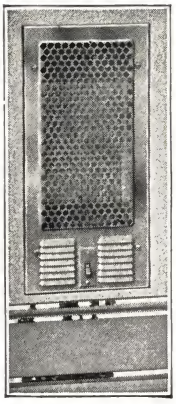
The FRANK ADAM ELECTRIC Co. has for many years made all kinds and conditions of special cable and wire duct for the Frank Adam Major Stage Remote Control System, because of the necessity of bringing into a limited space the many wires between the stage pilot switchboard and the location of the remote control switchboard. The architect having a large project of electrical installation should call on our district office representative and ask him to work out what kind and condition of cable and wire duct would be best adaptable for that particular project.

### F-A Bus Duct



The FRANK ADAM ELECTRIC Co. have for many years designed and manufactured bus duct where this would be more desirable than cable wires for the main and sub-feeders of a building. Where we will build any special design for an architect, the architect should call on our district office representative, who will show photographs and details of the Frank Adam Standardized Bus Duct, which we believe will be more adaptable to the average electrical installation because it is more economical to manufacture and takes less time to install, and is more a permanent part of the building structure.

### F-A Electric Heaters



The Frank Adam QUIKHETER is also a product that we were induced to specialize in because some of our customers, having seen some special heaters that were made up on a customer's demand, decided that they were better than any others on the market, and we first designed and standardized on a built-in heater, and then were practically forced into making the portable heaters because of the demand of our customers. So we now have electric heaters from 1000 to 3000 watts of the built-in type, and 1000 to 1500 watts of the portable type.

### Technical Product

We again want to draw the architect's attention to the fact that we recognize our products as being of a highly technical nature, that we are not just selling a lot of copper, steel and insulating material and various devices, but we are actually having to sell an engineering service to make our products just right for the particular project that the architect has in hand, and our set-up is with a sales organization of experienced sales engineers in electric light and power installation, designing and construction.

# GENERAL ELECTRIC COMPANY

Member of Producers' Council

GENERAL OFFICE

## 1 River Road, SCHENECTADY, N. Y.

SALES OFFICES (ADDRESS NEAREST OFFICE)

AKRON, OHIO, 335 South Main Street
ATLANTA, GA., 187 Spring Street, Northwest
BALTIMORE, MD., 39 West Lexington Street
BANGOR, ME., 600 Main Street
BINGHAMTON, N. Y., 19 Chenango Street
BIRMINGHAM, ALA., 600 North Eighteenth Street
BOSTON, MASS., 140 Federal Street
BUFFALO, N. Y., 1 West Genesee Street
BUTTE, MONT., 20 West Granite Street
CEDAR RAPIDS, IOWA, 203 Second Street, Southeast
CHARLESTON, W. VA., 304 Capitol Street
CHARLOTTE, N. C., 200 South Tryon Street
CHATTANOOGA, TENN., 536 Market Street
CHICAGO, ILL., 230 South Clark Street
CINCINNATI, OHIO, 215 West Third Street
CLEVELAND, OHIO, 4966 Woodland Avenue
COLUMBUS, OHIO, 40 South Third Street
DALLAS, TEX., 1801 North Lamar Street
DAVENPORT, IOWA, 511 Pershing Avenue
DAYTON, OHIO, 25 North Main Street
DENVER, COLO., 650 Seventeenth Street
DES MOINES, IOWA, 418 West Sixth Avenue
DETROIT, MICH., 700 Antoinette Street
DULUTH, MINN., 14 West Superior Street
EL PASO, TEX., 109 North Oregon Street
ERIE, PA., 10 East Twelfth Street
EVANSVILLE, IND., 123 Northwest Fourth Street
FORT WAYNE, IND., 1635 Broadway
FORT WORTH, TEX., 408 West Seventh Street
GRAND RAPIDS, MICH., 148 Monroe Avenue, Northwest
HARTFORD, CONN., 338 Ann Street
HOUSTON, TEX., 1312 Live Oak Street
INDIANAPOLIS, IND., 110 North Illinois Street
JACKSON, MICH., 212 Michigan Avenue, West
JACKSONVILLE, FLA., 237 West Forsyth Street
KANSAS CITY, MO., 106 West Fourteenth Street
KNOXVILLE, TENN., 602 South Gay Street
LOS ANGELES, CALIF., 5201 Santa Fe Avenue
LOUISVILLE, KY., 455 South Fourth Street
MEMPHIS, TENN., 8 North Third Street
MILWAUKEE, WIS., 940 West St. Paul Avenue
MINNEAPOLIS, MINN., 107 South Fifth Street
NASHVILLE, TENN., 234 Third Avenue, North
NEWARK, N. J., 744 Broad Street
NEW HAVEN, CONN., 129 Church Street
NEW ORLEANS, LA., 837 Gravier Street
NEW YORK, N. Y., 570 Lexington Avenue
NIAGARA FALLS, N. Y., 201 Falls Street
OKLAHOMA CITY, OKLA., 119 North Robinson Street
OMAHA, NEB., 409 South Seventeenth Street
PHILADELPHIA, PA., 1405 Locust Street
PHOENIX, ARIZ., 435 West Madison Street
PINE BLUFF, ARK., 501 Main Street
PITTSBURGH, PA., 436 Seventh Avenue
PORTLAND, ME., 25 Bedford Street
PORTLAND, ORE., 621 Southwest Alder Street
PROVIDENCE, R. I., 111 Westminster Street
RICHMOND, VA., 700 East Franklin Street
ROCHESTER, N. Y., 89 East Avenue
ST. LOUIS, MO., 112 North Fourth Street
SALT LAKE CITY, UTAH, 200 South Main Street
SAN ANTONIO, TEX., 201 Villita Street
SAN FRANCISCO, CALIF., 235 Montgomery Street
SCHENECTADY, N. Y., 1 River Road
SEATTLE, WASH., 821 Second Avenue
SPOKANE, WASH., 421 Riverside Avenue
SPRINGFIELD, ILL., 607 East Adams Street
SPRINGFIELD, MASS., 95 State Street
SYRACUSE, N. Y., 113 South Salina Street
TACOMA, WASH., 1019 Pacific Avenue
TOLEDO, OHIO, 420 Madison Avenue
TULSA, OKLA., 409 South Boston Street
UTICA, N. Y., 258 Genesee Street
WASHINGTON, D. C., 806 Fifteenth Street, Northwest
WATERBURY, CONN., 72 West Liberty Street
WICHITA, KAN., 116 South Main Street
WORCESTER, MASS., 165 Commercial Street
YOUNGSTOWN, OHIO, 25 East Boardman Street

FOR CANADIAN BUSINESS REFER TO CANADIAN GENERAL ELECTRIC COMPANY, LTD., TORONTO
FOR HAWAIIAN BUSINESS REFER TO W. A. RAMSAY, LTD., HONOLULU

Motor Dealers and Lamp Agencies in All Large Cities and Towns

SERVICE SHOPS

ATLANTA, 496 Glenn Street, S. W.
BUFFALO, 318 Urban Street
CHICAGO, 509 East Illinois Street
CINCINNATI, 215 West Third Street
CLEVELAND, 4966 Woodland Avenue
DALLAS, 1801 North Lamar Street
DETROIT, 5950 Third Avenue
HOUSTON, 1312 Live Oak Street
KANSAS CITY, 819 East 19th Street
LOS ANGELES, 5203 Santa Fe Avenue
MILWAUKEE, 940 West St. Paul Avenue
MINNEAPOLIS, 410 Third Avenue, North
NEW YORK, 416 West 13th Street
PHILADELPHIA, 429 North Seventh Street
PITTSBURGH, PA., 16 Terminal Way, S.S.
ST. LOUIS, 1110 Delmar Boulevard
SALT LAKE CITY, 360 West Second South Street
SAN FRANCISCO, 361 Bryant Street
SEATTLE, 1508 Fourth Avenue, South

Special service divisions are also maintained at the following Works of the Company: Erie, Pa.; Ft. Wayne, Ind.; Pittsfield, Mass.; Schenectady, N. Y., and West Lynn, Mass. (River Works and West Lynn Works)

BROADCASTING STATIONS

WGY, W2XAD, W2XAF, Schenectady, N. Y. KOA, Denver, Colo. KGO, Oakland, Calif.

Distributor for the General Electric Company Outside of the United States and Canada

INTERNATIONAL GENERAL ELECTRIC COMPANY, INC.

NEW YORK, N. Y., 570 Lexington Avenue General Sales Offices, SCHENECTADY, N. Y.

Foreign Offices and Associated Companies in Principal Cities of the World

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For Floodlighting Projectors, Electric Refrigerators, Air Conditioning Equipment and Wiring Devices, see File Index

AFFILIATED COMPANIES ALSO LISTED IN SWEET'S ARCHITECTURAL CATALOG

THE TRUMBULL ELECTRIC MFG. CO. WARREN TELECHRON COMPANY

OTHER AFFILIATED COMPANIES

GENERAL ELECTRIC VAPOR LAMP COMPANY
*Mercury Vapor Lamps*
HOBOKEN, N. J.

LOCKE INSULATOR CORPORATION
*Insulators*
BALTIMORE, MD. VICTOR, N. Y.

GENERAL ELECTRIC X-RAY CORPORATION
*X-Ray Apparatus and Coolidge Tubes*
CHICAGO, ILL.

*Sales Offices in Principal Cities*

## GENERAL ELECTRIC SERVICE TO THE ARCHITECTURAL PROFESSION

The GENERAL ELECTRIC COMPANY offers an engineering service to architects for the co-ordination of elements manufactured by it to meet given needs or demands for the building trade. The services of its experts are available for any problem that may develop, or for data on special apparatus and materials. On the opposite page is a list of branch offices located at the most important centers of the country. Here expert service and information may be quickly obtained.

### Electric Service

The distribution center of a building is that point from which the light and power feeders radiate to the different parts of the building. The center may be a substation taking in electric energy from a utility, or it may be a private plant, or it may be a combination of both.

The simplest distribution center may consist of a switchboard with incoming service and feeder panels. A more complicated equipment is involved if the incoming service is at a voltage higher than would be distributed through the building, so that transformers are required. A still more elaborate equipment is involved where the energy is purchased as alternating current and is to be converted into direct current by synchronous converters or motor-generator sets. The plant may include engine driven direct-current generators, or engine driven alternators, or direct-current or alternating-current turbo-generators. The GENERAL ELECTRIC COMPANY manufactures a complete line of apparatus for all of these services.

Recognizing that the requirements of electrical energy distribution in commercial buildings call for high grade equipment, securing the utmost continuity of service, high operating efficiency, low maintenance expense, and the least possible attendance, the GENERAL ELECTRIC COMPANY has designed its apparatus for such service particularly with this thought in view. Architectural engineers may specify General Electric apparatus for building equipment with a certainty that its design and application are supervised by a corps of engineers who have building service problems in mind and the experience to solve them.

The problem of whether to install direct current or alternating current in a building is one that has to be taken up in each individual instance. In general, it may be said that with the development of variable voltage control for elevators and quiet running alternating-current motors for fans, there is little need for the conversion of alternating to direct current where alternating current is purchased from the utility.

### General Electric System

The GENERAL ELECTRIC COMPANY offers a complete, comprehensive electrical system to meet the varied requirements of present-day practices, and not merely a collection of apparatus and material. Some of the elements of the General Electric System are described in this volume.

## SUPPLY AND DISTRIBUTION OF ELECTRIC ENERGY IN BUILDINGS

The data presented in this catalogue relate to general problems involved in the supply and distribution of electrical energy for office buildings, banks, hotels, theaters, department stores, hospitals, educational and public buildings, large apartment houses, and similar structures.

Other sections of this catalogue describe apparatus and supplies for the generation and utilization of electrical energy for such structures.

For buildings of the character defined in the first paragraph of this section, electricity is used for:

(1) Lighting.

(2) Power for elevators, pumps, fans, air compressors, ice machines, kitchen and laundry machinery, vacuum cleaners, office appliances, and miscellaneous uses.

(3) Heating.

### Sources of Electrical Energy

Electrical energy for buildings is derived as follows:

**Purchased Energy from a Public Utility**—This may involve one, two, or even three incoming sets of supply mains, according to the degree of protection desired against possible shutdown. It may be concerned with energy purchased as alternating or direct current, or both. Proper and efficient utilization of the energy may require substation equipment for stepping down a voltage too high for interior distribution, or machines designed for conversion from alternating current or direct current.

**Electrical Energy Manufactured on the Premises**—To use energy obtained from this source necessitates the choice of a system, whether alternating or direct current; the selection of the type of prime mover; and the determination of the number and size of the generating units.

**Combined Purchased and Manufactured Energy**—Such a source of supply involves the problems of tie-in with emergency sources of energy; throw-over connections, etc.

### Electrical Requirements of a Supply and Distribution System

The essential elements of a system of purchased electrical energy are:

(1) The incoming line or lines.

(2) The disconnecting switches, circuit breakers, or other protective devices, and the meters, installed by the utility company or considered as part of the incoming lines.

(3) The interior distribution center occasionally called the substation, involving as the case may be, transformers, switches, circuit breakers, relays, meters, instruments, motor-generators, synchronous converters, exciters, regulators, and their control and protective devices.

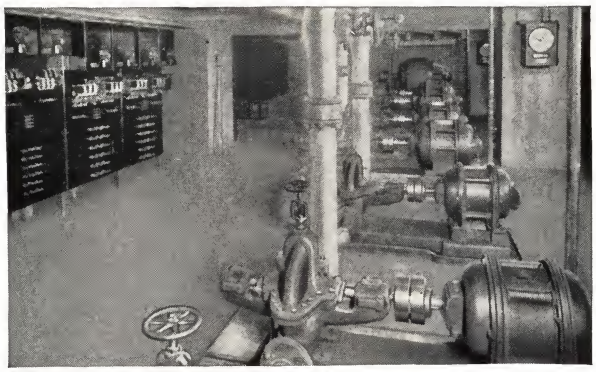
(4) A system of circuits, buses, cables and conduits between the various incoming lines and switches at the distribution center, apparatus at the distribution center and the outgoing feeders.

(5) A number of power and light feeders and their branches, with cables, conduits and devices for their control and protection. Insulated cable for complete lighting and power system, including supply and distribution cables and cable for vertical suspension in high buildings.

(6) Various distribution panels for power and light, at proper locations on the feeders.

(7) The various energy-consuming devices themselves, for light, power and heat, with their respective controlling and protective equipments.

When energy is generated at the premises there is involved in place of (1) and (2) above, or in addition thereto, the generating apparatus with its auxiliaries, and its control and protective equipment. Usually, where energy is generated on the premises, there is less substation apparatus (3).



**7 G-E Induction Motors Coupled to 6 House and 1 Fire Pump, Respectively, G-E Control Equipment at Left**

### A-C. and D-C. Generators

G-E alternators are designed for good over-all efficiency. For building services, alternators should be equipped with automatic voltage regulators. General Electric direct-current engine driven generators are designed for high efficiency and for close maintenance of voltage with varying loads. When applying engine driven generators to lighting and power services in commercial buildings, special attention has to be paid to securing the desired flywheel effect on the engine in order to maintain the most uniform voltage on the lamps. With a-c. generators, however, lamp flicker is always a problem, and it is practically impossible to eliminate it entirely when lights and power are taken from a common bus. Where the elevator load is a large proportion of the generator capacity, and especially where rheostatic controlled elevators of high starting currents are employed in a building which generates its own power, a problem is introduced that requires special study to receive satisfactory service. Built in capacities of 15 k.w. and upwards.

# TRANSFORMERS AND CAPACITORS

While the distribution of alternating current in commercial buildings is usually made by circuits of low voltage, there is an increasing tendency to bring 2300, 4600, 13200 volts and higher into the building, and transform it on the premises—thereby obtaining the benefit of lower line losses and the lowest possible cost for power. General Electric Pyranol or oil-filled transformers meet all requirements for circuits above 600 volts. For use on lower voltage circuits, G-E air-cooled transformers are recommended.

## Pyranol Transformers



**G-E Single-phase Pyranol Transformer**

100 kva—13,750 to 125/216Y volts for use in buildings where submersion is not expected

For all indoor installations in buildings such as apartments, offices, hospitals, hotels, schools, theaters and industrial plants, savings in installed costs are usually obtained by using G-E Pyranol Transformers, designed and built especially for use with Pyranol, the new nonflammable and nonexplosive cooling and insulating liquid. It is possible to meet the safety requirements of the National Electrical Code more economically for such installations with G-E Pyranol Transformers than with oil-filled units, because with Pyranol Transformers many restrictions are eliminated. As expensive fireproof vaults are not required with Pyranol Transformers, they can be installed inexpensively, directly at the load center. This is often highly advantageous owing to the improved voltage regulation and efficiency of the distribution circuit. The dependability of these transformers is proved by the excellent service record of more than 450 units, many of which have been in operation for more than four years.

G-E distribution transformers are available in both oil-filled and Pyranol-filled designs. Features of modern G-E transformers include:

Interiors of higher electrical strength and better regulation than heretofore obtainable.

Mechanical structures of unique design, to assure permanence in core, windings and insulation, should short circuits occur.

Sturdy steel tanks with all seams carefully welded to make them permanently liquid-tight.



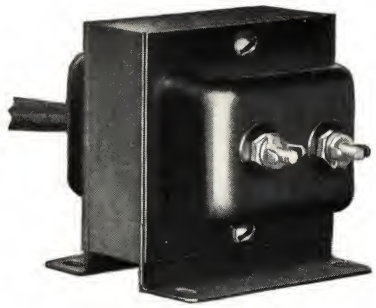
**G-E Single-phase Distribution Transformer**

15 kva, 60 cycles, 2400 to 120/240 volts

## Small Air-Cooled Transformers

General Electric Company offers a complete line of small air-cooled transformers for use on circuits 600 volts and lower. These units can be installed without the use of fireproof vaults. They can be supplied with junction boxes for conduit wiring and, because of their small size and compact construction, can be placed in any convenient location. These units are valuable for reducing, balancing or boosting voltage, for insulating one circuit from another and for phase changing. By the use of these transformers, small 115-volt devices such as drills, compressors, vacuum cleaners, fans, soldering irons, etc., can be operated from the power circuit rather than from the lighting circuit. This is often more economical. Better lighting service will also result from the removal of these fluctuating loads from lighting circuits.

Small air-cooled transformers are also advantageous for deriving circuits of 25 volts or less from 115- or 460-volt circuits—for the operation of furnace dampers, solenoid operated valves, fans and blowers, small motors, bells, buzzers, annunciators and signal lamps. Normal-reactance transformers are available for use with standard code wiring and high-reactance transformers for use with annunciator wiring.



**Typical G-E Control Transformer**

## Pyranol Capacitors

In many buildings, the installation of G-E Pyranol Capacitors for power-factor improvement has improved operating conditions in the building and effected remarkable savings in power costs. In those cases where power contracts include a penalty for low power factor, or a bonus for its improvement, substantial returns have been made on the investment.

For example, a power-factor survey was made for a large Detroit office building before its construction. As a result, a 120-kva G-E Capacitor Unit was included in the specifications by the architects. The installed cost of the equipment, according to the consulting engineers who designed the electrical system for the building, was approximately $2500. Calculations based on estimated power costs showed that the equipment would pay for itself within four years, since the Power Company allowed a discount of 5% for power factor over 95% average. Records for the first two years of operation showed the power factor to be close to 100% and the discount earnings were such as to return annually 25% on the investment. Absolutely no service or maintenance was required during this period.

Often even greater savings will be enjoyed by the use of capacitors, which frequently pay for themselves in less than two years.

Pyranol, because of its superior dielectric characteristics, has made possible great savings in space ever since it was introduced in 1931. The size of G-E Capacitors has steadily decreased until now some ratings are as much as 75% smaller than the corresponding units of that time. Pyranol Capacitors have a remarkable record: reported electrical failures amounting to less than .18%—a service record of more than 99.82% perfect.



**Installation of Pyranol Capacitor**

Rated 3-phase, 60 cycles, 100 kva, 460 volts, with enclosed fused switch

Pyranol Capacitors are available in sizes ranging from the small enclosed units for connection at motor terminals, up to large capacitors consisting of single phase units arranged in racks, complete with fuses and discharge devices. Fusible switches are supplied for connecting and disconnecting the smaller capacitors and oil-circuit breakers for the large capacitors. Standard ratings range from .5 up to 1260 kva, and from 230 up to 6900 volts.

# SWITCHING EQUIPMENTS

G-E manufactures a complete line of switchgear for all systems of electrical distribution. This includes switchboards and switching equipments for the control of generators, transformers, feeders, motors, etc.

Switchboards—Panels are made of steel, or ebony asbestos, slate, marble, or other material as specified by the purchaser.

To meet usual demands and conditions that have been found to occur repeatedly, a comprehensive line of **Standard Panels** has been developed. When conditions are such that standard panels cannot be applied, the Company's long experience assures the best service in the selection and design of the switchboard to meet the requirements.

Publications giving descriptive information, or detail information, on any equipment, are available.

Switchboards may consist of plain vertical panels or of hinged and duplex panels, or they may be of the safety enclosed type, or benchboards.

Semi-flush type instruments, meters, and relays in uniform types of cases, together with semi-flush mountings of other devices, provide a "streamline" effect that gives to the G-E switchboard a conspicuously improved front of board appearance and allows better visibility of the instruments, due to only one plane view.



**Dead-front Switchboard with Air Circuit Breakers**

## Metal-enclosed Switchgear

**Metal-clad Switchgear**—This comprises a line of moderate and heavy-duty switching equipment that affords maximum safety to personnel and property, reliability of service, and decreased fire risk, maintenance and installation expense.



**G-E Cubicle Switchboard with Semi-flush Devices**

**Cubicles**—A metal housing for manual and automatic switchgear that provides a neat and compact arrangement with safety to personnel and property. Available in isolated units or in combinations to form a switchboard as illustrated.

*An outstanding feature of the G-E steel panel and fabricated metal switchgear is the* ***"shipped assembled"*** *construction.*

*The compact design is factory built and delivered to the purchaser completely assembled. This means not only a reduction in installation, maintenance, and engineering costs, but also a saving in floor space. The number of units which can be shipped assembled together is limited only by transportation and handling facilities.*

## Automatic Switching Equipments

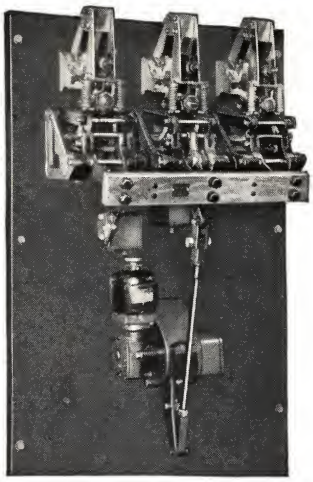
Automatic switchgear is available for practically all classes of service regardless of the size of the machines or units to be controlled.

Automatic supervisory equipments provide for the centralized control and indication of various types of switchgear located at outlying stations.

Automatic telemetering equipments are used to transmit readings of meters, instruments, indicators, etc., to a load supervisor's office.

## General Electric Switches

A complete line of switches for switchgear application is available including knife switches, disconnecting switches, control switches, instrument switches and enclosed switches, in all commercial ratings and to meet all usual requirements.



**Type AL-2**

Motor-operated air circuit breaker, nonautomatic, triple-pole, 250 volts a-c., 2000 amperes

## Air Circuit Breakers

The line of G-E air circuit breakers is complete for all purposes. Ratings range from 3 to 10,000 amperes and up, 750 volts, a-c. or d-c. Single pole or multipole, open or safety enclosed type, manually or electrically operated breakers in any desired arrangement can be furnished.

## Oil Circuit Breakers

G-E oil circuit breakers include all sizes and styles. They are available rated 200, 400, 600, 1200, 2000 amperes and up; 5000, 7500, 15,000 volts and up; 20,000, 25,000, 50,000, 100,000 kva. and up interrupting ratings; indoor and outdoor, oil blast interruption, manually or electrically operated or with automatic reclosing feature, for any application.

## G-E Relays

G-E relays, direct and alternating current, for protection against overcurrent, reverse current, unbalanced current, overvoltage, undervoltage, unbalanced voltage, overpower, underpower, reverse power, reverse phase, reverse polarity and abnormal temperature, are manufactured for all possible applications. Auxiliary, control and signal relays are also available. Relays may be obtained for instantaneous, time-delay or time-limit action. They are simple, durable, accurate and unusually reliable.

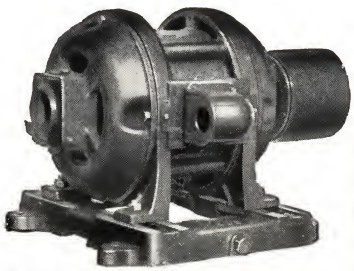
## Fittings and Accessories

While G-E switchgear is furnished complete, ready to install, a line of fittings and accessories is available, including pipe fittings, supports, bus clamps, terminals, contact nuts, etc.

## When Specifying

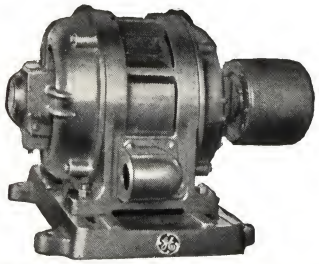
In order to specify correct type of switchboard panels and instruments for each installation, the architect or contractor should consult with the switchgear specialist in the nearest G-E Sales Office.

## G-E MOTORS



G-E 3-or-2-phase, 15 Hp. Squirrel Cage Motor

The GENERAL ELECTRIC COMPANY manufactures a complete line of motors and motor controllers for both alternating and direct current service. Motors are available in a variety of ratings from fractional horsepower sizes to 200 hp. and larger and with many different electrical characteristics and mechanical modifications for both general purpose and special duty applications. Specific detailed data on motors and their controllers will be supplied by the nearest G-E sales office on request.

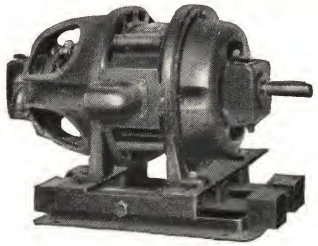


G-E 50 Hp., 3-or-2-phase Squirrel Cage Motor

## G-E QUIET MOTORS

Of particular interest to architects and engineers is the G-E line of quiet motors developed to meet the requirements of the building trade. G-E Quiet Motors bear a special additional name plate as shown below which is your guarantee that the motors have been specially designed and tested for this service.



For all applications where quiet operating equipment is necessary, specifications should definitely call for "Quiet Motors."

Motors developed to meet this requirement are the product of years of study of noise problems by our research laboratory and designing engineers in connection with motors and generators and their application in buildings.

In buildings where quietness is desirable, such as hospitals, schools, clubs, hotels, apartment houses, and office buildings, it is common practice to mount motors on concrete foundation blocks supported on more or less efficient vibration-insulating material. The G-E sound-isolating bases are built to replace such hit-or-miss methods and to eliminate guesswork.

These bases are not intended to isolate air-borne noises at audible frequencies, or those disturbances caused by unbalanced pulleys or belt flapping, or sounds caused by propelled air which are, in general, at frequencies below the audible range, but they will greatly reduce the transmission of audible-frequency vibration through the motor frame to the building structure. Objectionable air-borne noises must be confined by suitable acoustic treatment of the machinery room.

These bases are equally effective at any motor speed between 100 per cent and 66 per cent of normal.

The belt-tightening features of the standard bases are included in the construction of these bases.

These bases are for use with G-E Motors only. For best results they should be used with G-E Quiet Motors.

### SOME G-E MOTORS AND THEIR USES

| Classification | Speed | Type | Type Winding | Horsepower range | Some applications |
|---|---|---|---|---|---|
| Direct current | Constant or adjustable | B and CD* | Shunt | ⅛–200 | Fans and Centrifugal Pumps |
| | | B and CD* | Compound | ⅛–200 | Reciprocating pumps and compressors |
| Single phase alternating current | Constant | KH* | Resistance split phase | 1/40–⅓ | Small direct connected fans |
| | | KX | Reactance split phase | 1/6–⅓ | |
| | Constant or 3-speed | KC* | Low torque capacitor | 1/50–10 | |
| | Constant or 2-speed | KC* | High torque capacitor | ¼–10 | Belted fans, centrifugal pumps |
| | Constant | KC* | High torque capacitor | ⅛–10 | Pumps, compressors, fans |
| | | SCR | Repulsion induction | ⅛–10 | |
| Polyphase alternating current | | K or KB* | Squirrel cage | ¼–1000 | |
| | | KF | Low starting current | 7½–75 | |
| | | KG | High starting torque | 3–100 | Reciprocating pumps and compressors |
| | Constant or adjustable | M and MB* | Wound rotor | ½-1000 | Pumps, compressors, fans |
| | Constant | TS | Synchronous | 25–2000 | |

*Quiet motor.
This list covers only the principal motors used in buildings, for other types and modifications (Vertical, Enclosed, etc.) refer to nearest sales office.

# MOTOR CONTROLLERS

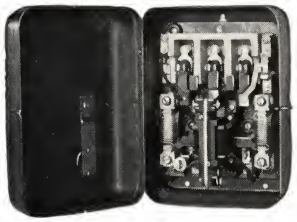
*Special Control Developed to Meet Your Application*

Illustrations Usually Show Covers Removed

## ENCLOSED CONTROLLERS FOR A-C. SQUIRREL CAGE MOTORS—FULL VOLTAGE



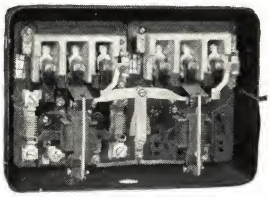
**Manual Starting Switches, Type CR-1062**—Available in two sizes. Maximum rating: size 1, 2 hp., 600 volts; size 2, 7½ hp., 600 volts. Single-throw, 2 or 3-pole. Thermal overload protection; hand reset. Suitable for group fusing.



**Magnetic Switches, Type CR-7006**—For starting squirrel cage motors and for use as primary switch for wound rotor induction motors up to 600 hp., 600 volts; 750 hp., 2200 volts, 25 to 60 cycles, overload and undervoltage protection.

**Magnetic Reversing Switches, Type CR-7009**—

Similar to CR-7006 (above) except for reversing service.



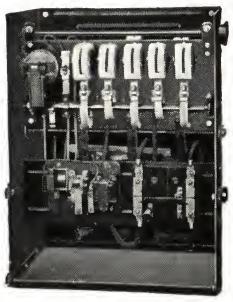
## REDUCED VOLTAGE

**Hand Starting Compensators, Type CR-1034**—



5 hp. and larger. 60 to 25 cycles. 110 to 550 volts. 2 or 3-phase. Undervoltage release: Instantaneous undervoltage release (standard) or time delay (extra). Overload protection; 2-pole thermal relay.

**Starting Switches, Type CR-7051**—Standard automatic starting compensators. 600 hp. and smaller, 550 volts and less, 60 to 25 cycles, 2 or 3-phase, undervoltage and overload protection. Sizes 50 hp. and smaller, mounted in dust-tight boiler-plate enclosing case are available for use in such places as mills, foundries and refineries.

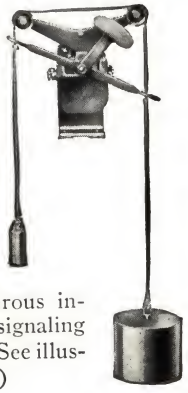


## ACCESSORIES

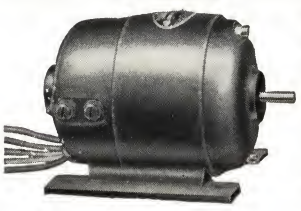


**General-purpose Push-button Station, Type CR-2940**—This general-purpose push-button station is for use with any of the magnetic controllers described and illustrated on this page.

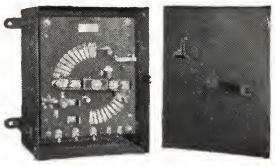
**Float Switches, Type CR-2931**—For tank or sump operation. Are suitable for use in the control circuit of a-c. or d-c. magnetic starters. (See illustration at right.)



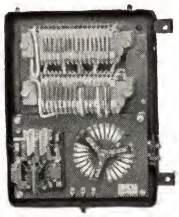
**Selsyn Devices, Type CR-9890**—For transmission and reproduction of angular motion over electrical conductors. Controls motor starters, etc., from remote points and can be used for numerous indicating and signaling applications. (See illustration at left.)



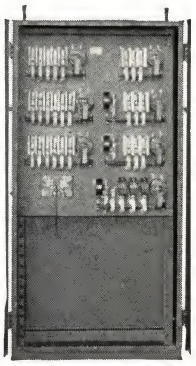
## ENCLOSED CONTROLLERS FOR WOUND-ROTOR A-C. MOTORS



**Manual Starting Rheostats, Type CR-1028**—For use with wound-rotor induction motors. 15 hp. and smaller. 60 to 25 cycles. 110 to 550 volts. 2 or 3-phase.



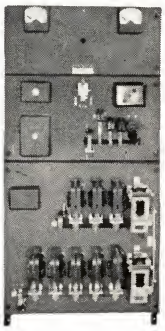
**Speed Regulating Controller, Type CR-7764**—For fan service. Standard enclosed controller, 50 hp. and smaller, 110, 220, 440 and 550 volts, 25 to 60 cycles, 3-phase. Undervoltage and overload protection.



**Remote Speed Indicating Controller, Type CR-7761.**

For Fan Service. An enclosed controller with push-button station for use with varying speed wound-rotor induction motors. 5 to 50 hp., 220 volts, 25 to 60 cycles, 3-phase. Time-limit acceleration. Undervoltage and overload protection.

## MAGNETIC CONTROLLERS FOR SYNCHRONOUS MOTORS



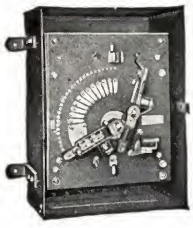
**Type CR-7061 Reduced Voltage Controller (illustrated) and CR-7065 Full Voltage Controller** — Provide undervoltage protection, automatic field removal and re-applying and overload protection for both stator and squirrel cage windings.

CR-7061 is for medium and high speed.

CR-7065 is for low speed.

## ENCLOSED CONTROLLERS FOR D-C. MOTORS

**Manual Speed Regulating Rheostats, Type CR-1203**—¼ to 50 hp. 115 and 230 volts. For shunt-wound adjustable-speed motors. Starting duty and speed variation by field control. Undervoltage protection.





**Magnetic Controller, Type CR-4065**—For constant speed motors. These magnetic controllers provide definite-time acceleration for d-c. motors ranging from ¾ to 150 hp., overload and undervoltage protection.

# THE HART MANUFACTURING CO.

Manufacturers of Diamond H Remote Control Switches for Lighting Circuits

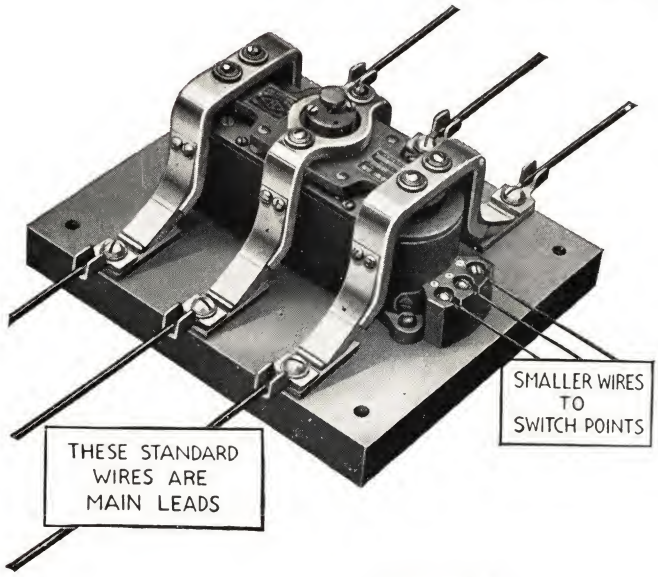
HARTFORD, CONN.

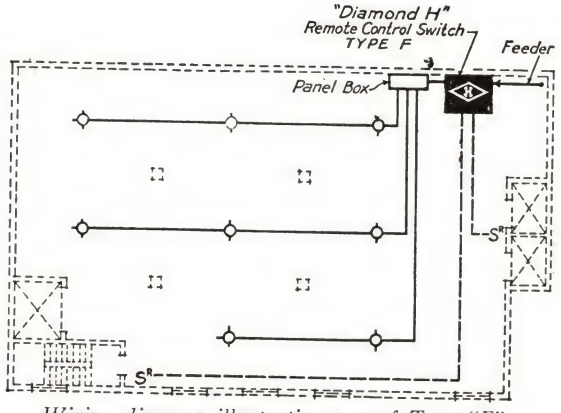
BRANCH OFFICES—NEW YORK. N. Y. and CHICAGO, ILL. FACTORIES—LONDON, ENGLAND and TORONTO, ONT., CANADA

Representatives in All the Large Cities (see Telephone Book)

## DIAMOND H SWITCHES

### TYPE "F" SINGLE THROW REMOTE CONTROL SWITCH




*Wiring diagram illustrating use of Type "F". $S^R$ are the momentary contact switches*

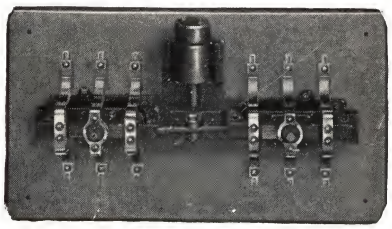
In locations where many circuits with groups of lights are concentrated, the simple and economical method of controlling these circuits is by the use of Remote Control switches, through Momentary Contact switches placed at convenient control points. For banks, schools, office buildings, airports, stadiums, for window and flood lighting, the possibilities are endless. Savings are made in wire cost since smaller wire is used to MC switch points.

**DIMENSIONAL DATA FOR TYPE "F" SWITCHES OF VARIOUS CAPACITIES**

| Single Pole | | | Double Pole | | |
|---|---|---|---|---|---|
| Cat. No. | Ampere capacity | Base size, in. | Cat. No. | Ampere capacity | Base size, in. |
| 716 | 30 | 7⅜x 8½ | 730 | 30 | 7⅜x 8½ |
| 717 | 60 | 7⅜x 8½ | 740 | 60 | 7⅜x 8½ |
| 718 | 75 | 7⅜x 8½ | 750 | 75 | 7⅜x 8½ |
| 719 | 100 | 9¾x10 | 760 | 100 | 9¾x10 |
| 723 | 150 | 9¾x10 | 770 | 150 | 9¾x10 |
| 724 | 200 | 9¾x10 | 780 | 200 | 9¾x10 |
| 725 | 300 | 14 x14 | 781 | 300 | 14 x14 |
| 726 | 400 | 18 x16 | 792 | 400 | 14 x14 |

| Three Pole | | | Four Pole | | |
|---|---|---|---|---|---|
| Cat. No. | Ampere capacity | Base size, in. | Cat. No. | Ampere capacity | Base size, in. |
| 790 | 30 | 7⅜x 8½ | 610 | 30 | 7⅜x 8½ |
| 800 | 60 | 7⅜x 8½ | 620 | 60 | 7⅜x 8½ |
| 810 | 75 | 7⅜x 8½ | 630 | 75 | 7⅜x 8½ |
| 820 | 100 | 9¾x10 | 640 | 100 | 9¾x10 |
| 830 | 150 | 9¾x10 | 645 | 150 | 9¾x10 |
| 840 | 200 | 9¾x10 | 650 | 200 | 9¾x10 |
| 850 | 300 | 14 x14 | ..... | ..... | ..... |
| 860 | 400 | 18 x16 | ..... | ..... | ..... |

### TYPE "G" AUTOMATIC CHANGEOVER R.C. SWITCH



*Type "G" controls both main and emergency supply automatically*

Wherever emergency lighting circuits are used in addition to the main supply, ie., in locations where failure of light may mean danger to life, as in hospital operating rooms, schools, theatres, etc., this automatic remote control switch throws from one circuit to another instantly, and back again when main current resumes. They may also be controlled manually by momentary contact switches.

## TYPE "G" AUTOMATIC CHANGE OVER R. C. SWITCH (Continued)

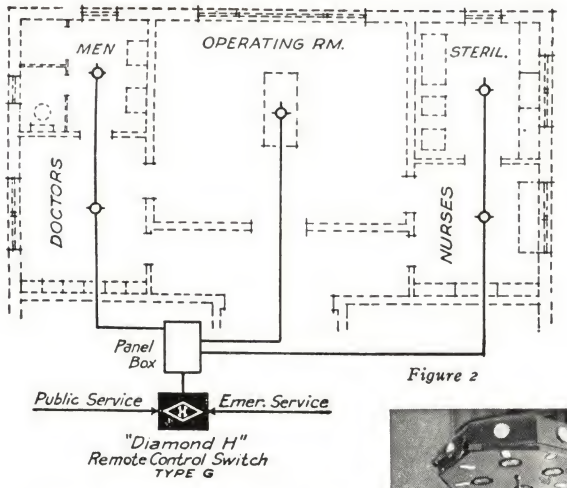



Figure 2

*Wiring diagram of hospital showing control of main and emergency supply by Type "G".*



**TYPE "G" AUTOMATIC DOUBLE THROW**

| Double Pole | | | Three Pole | | |
|---|---|---|---|---|---|
| Cat. No. | Ampere capacity | Base size, in. | Cat. No. | Ampere capacity | Base size. in |
| 73025 | 30 | 14x24 | 79025 | 30 | 14x24 |
| 74025 | 60 | 14x24 | 80025 | 60 | 14x24 |
| 75025 | 75 | 14x24 | 81025 | 75 | 14x24 |
| 76025 | 100 | 14x24 | 82025 | 100 | 14x24 |
| 77025 | 150 | 14x24 | 83025 | 150 | 14x24 |
| 78025 | 200 | 14x24 | 84025 | 200 | 14x24 |
| 78125 | 300 | 14x24 | 78135 | 300 | 14x24 |

Type "G" can be made in 4 poles; also in 500 amperes. Quotations on request.

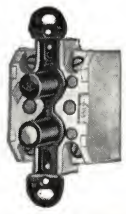
## MOMENTARY CONTACT SWITCHES




**Cat. No. 15009**
**Toggle Type**
Face Plate 7111

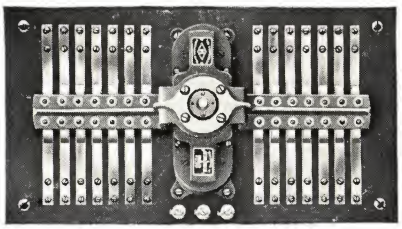
For use with all Remote Control switches. Can be placed on walls wherever convenient control points are desired.

Face plates with bull eye signal light can be supplied.

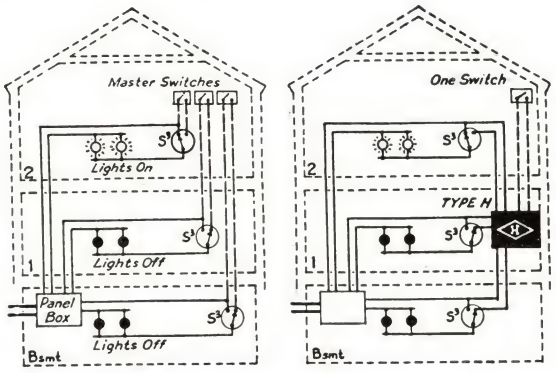


**Cat. No. 090**
**Push Button Type**
Face Plate 1111

## TYPE "H" MULTI-CIRCUIT REMOTE CONTROL SWITCHES



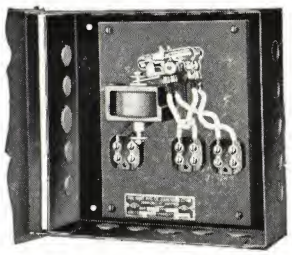
This remote control switch is designed to control all circuits of buildings or grounds where protection from burglar, kidnapper or other trespassers is desired, as for the home and grounds, storage yards and buildings, factories, warehouses, docks and piers, prisons, etc. Made to control from 6 to 48 circuits and operated by master switches conveniently located, this switch instantly lights every light so connected.



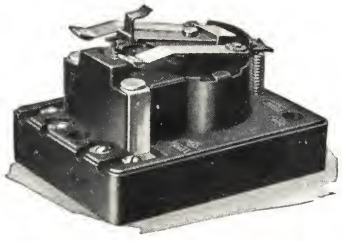

*Wiring diagram illustrating the use of Type "H" switch with master control switches. Does not interfere with normal operation in rooms*

## MERCURY TUBE AND MAGNETIC TYPE RELAYS

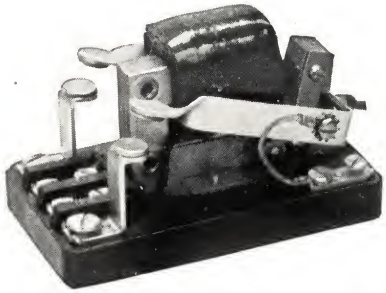
We make many types of relays suitable for the control of current for signal systems, motors, automatic machines, time and temperature, pressure, speed or auxiliary circuits. Our Engineering Department will co-operate to suggest proper relay for any control need.



**Cat. No. 40001 Mercury Tube Relay**
With or without steel box



**Type "C" Single- or Double-Pole Magnetic Relay**



**Type "M" Continuous Current Magnetic Relay**

# THE TRUMBULL ELECTRIC MFG. CO.

Members of Producers Council
PLAINVILLE, CONN.

**BRANCH SWITCH, SWITCHBOARD FACTORIES AND SALES OFFICES**

LUDLOW, KY. LOS ANGELES, CAL. SEATTLE, WASH. SAN FRANCISCO, CAL.
TRENTON, N. J. (Porcelain Factory)

SALES OFFICES

NEW YORK, N. Y., 60 E. 42nd Street
PHILADELPHIA, PA., 1505 Race Street
CHICAGO, ILL., 564 W. Monroe Street
DETROIT, MICH., 2457 Woodward Avenue
ATLANTA, GA.
BOSTON, MASS., 1002 Statler Building
NASHVILLE, TENN.

## THE "CIRCLE T" LINE

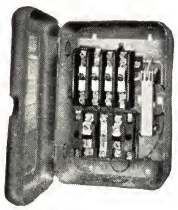
SAFETY SWITCHES; MOTOR CIRCUIT SWITCHES; ENTRANCE SWITCHES; MULTI-BREAKER LOAD CENTERS; MAGNETIC and MANUAL STARTERS and CONTROLLERS; METER SERVICE SWITCHES; TUMBLER SWITCHES; OPEN KNIFE SWITCHES; SPECIAL SWITCHES.

PANELBOARDS; SWITCHBOARDS; BUSS-WA (the copper bar distribution system); FLEX-A-POWER (the convenience outlet for power in industry); CONTROLITE (the theatre control board); CONVERTI-FUSE (the convertible power panel); "R.B.I." (receding blade-interlocking) dead front distribution board.

Catalogues and bulletins listing "Circle T" products gladly sent on request.

## Magnetic Starters

"CM-7½"—Size 1—Maximum 7½ hp.
"CM-25"—Size 2—Maximum 25 hp.
"M-50"—Size 3—Maximum 50 hp.
All maximum ratings at 440, 550-600 v. a-c.



"CM-7½"

These starters are equipped either for remote push button control or local control with push button stations in the starter box. Relay heaters ranging in capacity from 1 to 80 amps. provide overload protection. These starters in their various ampere capacities are interchangeable.

When starter has opened on overload, thermostatic trip automatically resets after a short interval necessary for relay heaters to cool. Hand reset can be furnished on request.

These starters are easily accessible from the front. They can also be furnished in water-tight and weatherproof cast iron boxes.

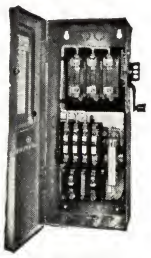
The entire line is described and illustrated in detail in Motor Starter Bulletin, No. 148, sent on request.

**HORSEPOWER RATINGS FOR MAGNETIC STARTERS**

| | Type "CM-7½" | | | Type "CM-25" | | | Type "M-50" | | |
|---|---|---|---|---|---|---|---|---|---|
| Volts, A.C.... | 110 | 220 | 440,550 | 110 | 220 | 440,550 | 110 | 220 | 440,550 |
| Polyphase ... | 3 | 5 | 7½ | 7½ | 15 | 25 | 10 | 25 | 50 |
| Single phase.. | 1½ | 3 | 5 | 3 | 7½ | 10 | 7½ | 15 | 25 |

## Magnetic Combination Starters—Types "CM-7½" and "CM-25"

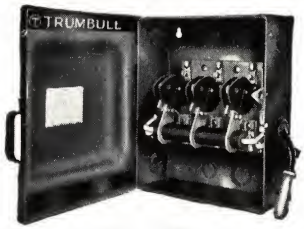
A combination of a magnetic starter for either local, remote, or automatic control, wired to a manually operated fusible or no-fuse motor circuit switch in one box. Listed as standard by the Underwriters' Laboratories, Inc., for a manually operated disconnect switch ahead of a magnetic starter with thermal overload protection. Both starter and switch are capable of breaking the stalled rotor current of motors for which rated and may be readily removed from the box for wiring by loosening the mounting screws.



"CM-7½" Combination

## Type "A" Safety Switches

Supplied either single or double throw, in fusible or no fuse types and will break full load at listed ratings.




Type "A"

These quick positive make and quick break switches have an interlocking safety cover. Switches are made of milled foot block construction with built-up contact jaws sweated and pinned into the foot blocks on the larger sizes and swedged into the foot blocks on the smaller sizes. Rated 2, 3 and 4 poles, 30 to 2400 amps. at 230 and 575 v. a-c. and 250 and 600 v. d-c.

## Type "R.B." Safety Switches

This line of safety switches has the following features: self-aligning, double break contacts of very high interrupting capacity and long life; compact moulded bases; interlocking covers. VYSTIPE fuse clamps furnished on all fusible switches, the fuse clamp that grips like a vise. The positive fuse contact clamping screw used on these VYSTIPE fuse terminals permit ease in inserting and removing fuses and at the same time eliminates fuse contact heating.




Type "R.B."

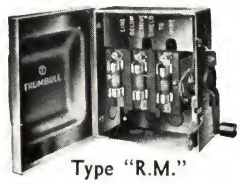
Rating: 30 to 800 amps. 2, 3 and 4 poles, 230 and 575 v. a-c., and 250-600 v. d-c.

Available either side or front operated in bent up steel boxes.

Cast iron, water-tight and dust-tight switches available side-operated in 30 to 600-amp. capacities.

## Type "R.M." Safety Switches

Double break blade construction with *rotor movement* in both fusible and no-fuse types. This design results in a very compact switch for breaking full rated loads. When switch is opened, blades are thrown into deep, narrow slots in the base, cooling and snuffing out the arc. In 2, 3 or 4-pole switches for 30 and 60 amps. and 250 or 600 v. in either drawn steel or cast iron boxes. Also available in 2-position manual starters with the fuses shunted in the starting position.




Type "R.M."

## Type "C" Safety Switches

Externally operated, single throw, quick positive make and quick break switches in no-fuse and fusible types.

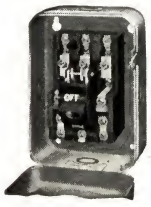
High class punched clip construction is used, giving maximum electrical and mechanical strength for this type of design.

The box cover does not interlock with the switch handle as in the Type "A," "R.B." and "R.M." switches.

These switches are available 2 to 5 poles, inclusive, in 230 v. a-c. and 250 v. d-c. ratings, and 3 and 4 poles at 575 v. a-c. No fuse or fusible 30-600 amps.

## Type "T.M." Manual Starters

These manual starters provide thermal protection against overload or damage due to phase failure. Externally operated by simple "on" and "off" movement of the handle. Overload in any phase trips the entire starter mechanism. To reset, just throw the starter "on" after the thermal element has cooled. Handle returns to "off" when starter trips from an overload.



"TM-2"

Starters will break stalled rotor current at listed ratings. Ampere capacity regulated by interchangeable relay heaters, ½ to 20 amps.

Double butt wiping contacts close under pressure.

Type "T.M.-2" front operated, *maximum rating 2 hp. at 110-500 v. a-c. polyphase.*

Type "T.M.-7½," available front or side operated, *maximum rating 7½ hp. at 575 v. a-c. polyphase.*

# PANELBOARDS

*Lighting and Distribution Type*

## "Circle T" Panelboards



NTP 320-L Safety Type

Trumbull "Circle T" panelboards, irrespective of type, are neat and trim, in keeping with the best surroundings—particular care being taken to provide ample room for running of wires and making connections.

Unit sections are of moulded bakelite—all types of sections being interchangeable with each other.

For a more detailed description of the various types of panelboards, a manual on panelboards is available.

## Unit Panelboards



Narrow Type Unit Panelboard

Trumbull unit panelboards are regularly furnished in boxes 20 in. wide. For those applications where space is at a premium, a narrow type panelboard is available for use with a box only 12½ in. wide. The individual sections are of the same high quality as used with standard unit panelboards—the individual units being of bakelite, and except in the case of plug fuse only panels, are of single branch construction. Plug fuse only panels are double branch. Wiring gutters are 3 in. instead of the standard 4 in. usually sufficient for this type of panel.

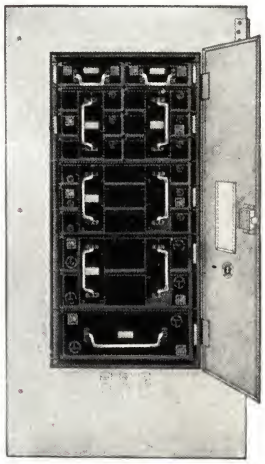
## Circuit Breaker Panelboards



Circuit Breaker Type Panelboard

Circuit breaker panelboards are available, not only for branch circuit lighting applications, but for lighting and distributing problems as well. Panelboard branch circuit breakers are nominally calibrated at 15 amps. although the individual breakers are 50 amps. frame size maximum, permitting interchange of breakers from 15 to 50-amp. rating. It is possible to replace two single pole with one 2-pole breaker in any of the ratings mentioned above, providing maximum flexibility. Circuit breakers are also available in load center construction—an ideal distribution device for residential work. A more detailed description furnished upon request.

## ConverTi-Fuse Panelboards



ConverTi-Fuse Panelboard

ConverTi-Fuse offers one of the most popular types of lighting and power distribution panelboards available today. 100% dead front design is provided—the individual base sections and removable caps being of bakelite. With ConverTi-Fuse, the fuses are located within a moulded bakelite cap which in turn fits into moulded bakelite sections forming the panel. The cap, therefore, not only serves as a holder for the fuses, but when pulled, acts as a switch.

When it is desired to inspect or replace fuses, the cap is pulled and fuses may be examined in full safety—away from the panel. A detailed description is covered in Bulletin No. 97.

# SWITCHBOARDS

## "R.B.I." Distribution Switchboards



"R.B.I." Switchboard

"Circle T" offers all types of distribution switchboards from the more simple live front fused knife switch type, all forms of dead front steel distribution boards—to highly intricate designs for involved applications.

Illustrated is a typical "R.B.I." type of board of dead front construction, composed of individual cubicles. The construction of "R.B.I." switchboards is adaptable to meet any special or unusual requirements.

Complete information may be obtained in any of our sales offices, and a bulletin is available on "R.B.I." switchboards, also containing a wealth of information on switchboard design in general.

## Buss-Wa and Flex-A-Power



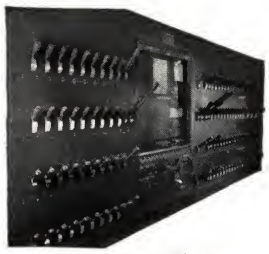
Buss-Wa Method of Distribution

Buss-Wa is an enclosed copper busbar method of distribution. Illustrated is a portion of a Buss-Wa run between a main switchboard and a large distribution center, this particular capacity being 3-pole, 2500 amps., 3-phase, 250-volt capacity.

"Flex-A-Power" is better known as the heavy duty convenience outlet for industry.

Both of these products are described in much detail in a bulletin on these two products.

## "Controlite"



"Controlite" Theatre Control Board

The Trumbull Electric Mfg. Co. manufactures all types of stage and auditorium lighting control boards. Long study of theatre lighting problems has shown that a combined switchboard and interlocking dimmer bank, provides the most desirable control which is the basis of the "Controlite" design. "Controlites" are available for the smallest school or lodge room to the largest auditorium and stage problems.

## "Handi-Lugs"



"Handi-Lugs"

Solderless connectors are meeting with an ever increasing popularity. As an outstanding manufacturer of electrical distribution equipment for over thirty-five years, we offer a line of solderless connectors, suitable for use not only on our own equipment, but for any application.

"Handi-Lugs" possess many features not common to other forms of solderless connectors.

Detailed literature is available upon request.

MEMORANDA




# 1938

# ARCHITECTS AND ENGINEERS

# BUILDING AND CONSTRUCTION

# DATA BOOK

# *Useful Information....*

# FOR ARCHITECTS AND ENGINEERS

**TYPICAL SPECIFICATION** **PRICE ESTIMATING CURVES**

Special attention has been given to the inclusion of typical specifications in a manner that will be useful to architects and engineers. Furthermore some price estimating curves have been included at the back of this section. The information on each piece of equipment has been arranged to include all the information given under the following headings:

**APPLICATION** . . . . The conditions under which this particular piece of equipment would be used in building are stated briefly.

**FEATURES** . . . . . The distinctive or outstanding design features of the device particularly those important in building are given. Westinghouse features are covered with a maximum of fact and a minimum of ballyhoo.

**HOW TO SELECT** . . The procedure to be followed and the necessary steps to be taken in selecting the proper device for the conditions under which it will operate are given.

**DIMENSIONS** . . . . Sufficient tabular information is given wherever practical to obtain such information as height, width, depth and weight. This information often very necessary in design can be obtained from the tables after the proper size has been selected.

**TYPICAL ARCHITECTS SPECIFICATION** . . . The suggested specifications have been carefully reviewed by architects and engineers familiar with this type of equipment. They are written so that you will be sure to get the type of equipment you expect. However, the specifications do not in any way limit you to Westinghouse equipment.

**WHERE TO BUY** . . . Under this heading the source of additional information has been indicated as well as the publication from which more detailed information can be obtained.

## WESTINGHOUSE PRODUCTS

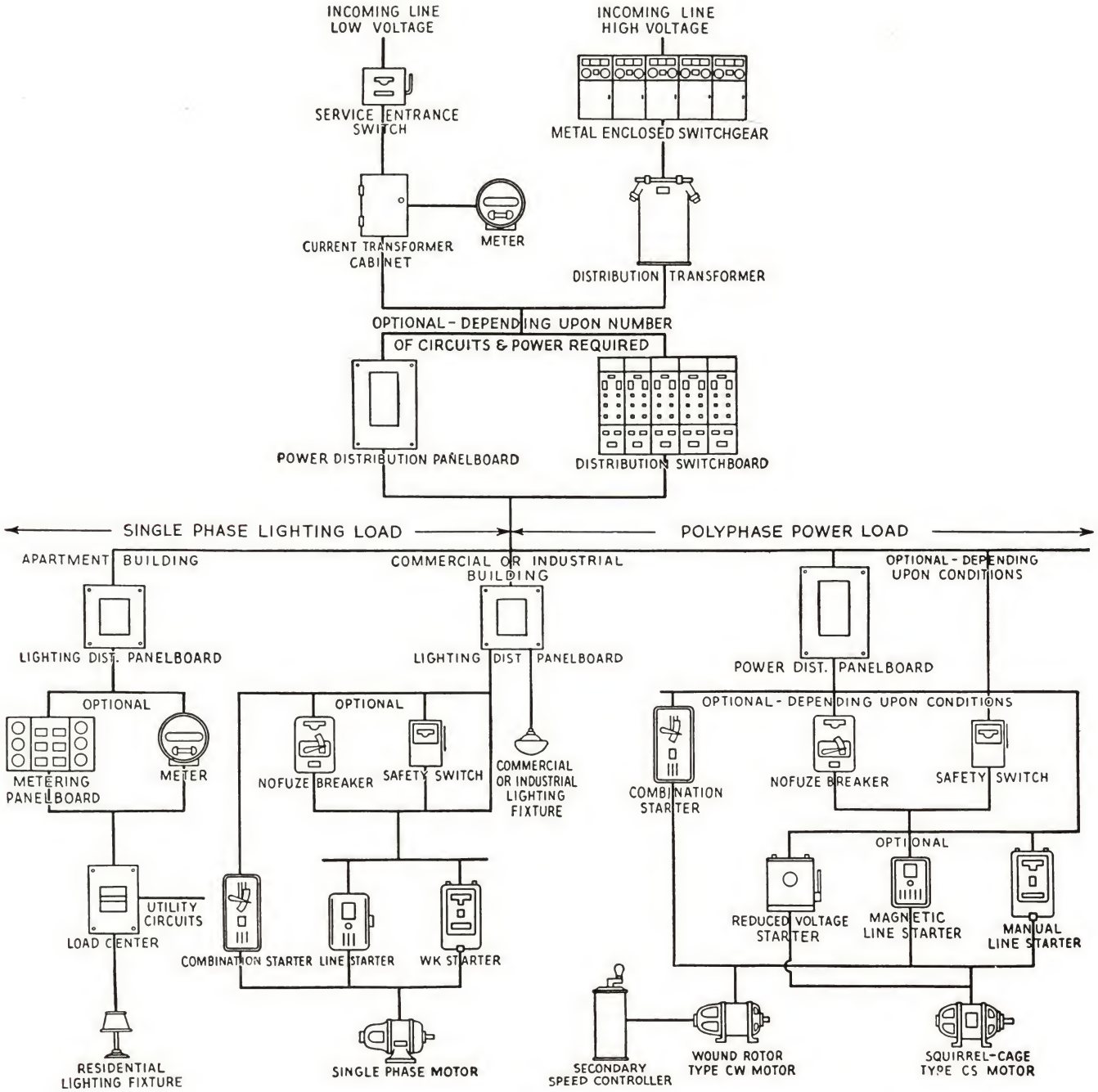
From incoming power line to driven machine and lighting Westinghouse can supply full electrical needs. This list includes hundreds of items including motors of all sizes, control, protective devices—circuit breakers, nofuze load centers, panelboards—lighting equipment, mazda lamps, elevators, household equipment and mechanical equipment such as stokers turbines.

## WESTINGHOUSE SERVICE

District warehouses and service shops make possible prompt service and delivery on orders. These facilities are supplemented by more than a hundred agent jobbers who in addition to Westinghouse equipment have a complete line of electrical wiring supplies.

For specialized assistance in any of your problems Westinghouse maintains a Construction Industry Department at Headquarters and in District Offices. This staff of engineers is experienced in the electrical problems of the building industry. They will be glad to assist you with any of your electrical problems.

# DIAGRAMMATIC INDEX SHOWING WESTINGHOUSE EQUIPMENT FOR THE DISTRIBUTION, CONTROL AND UTILIZATION OF ELECTRICAL ENERGY

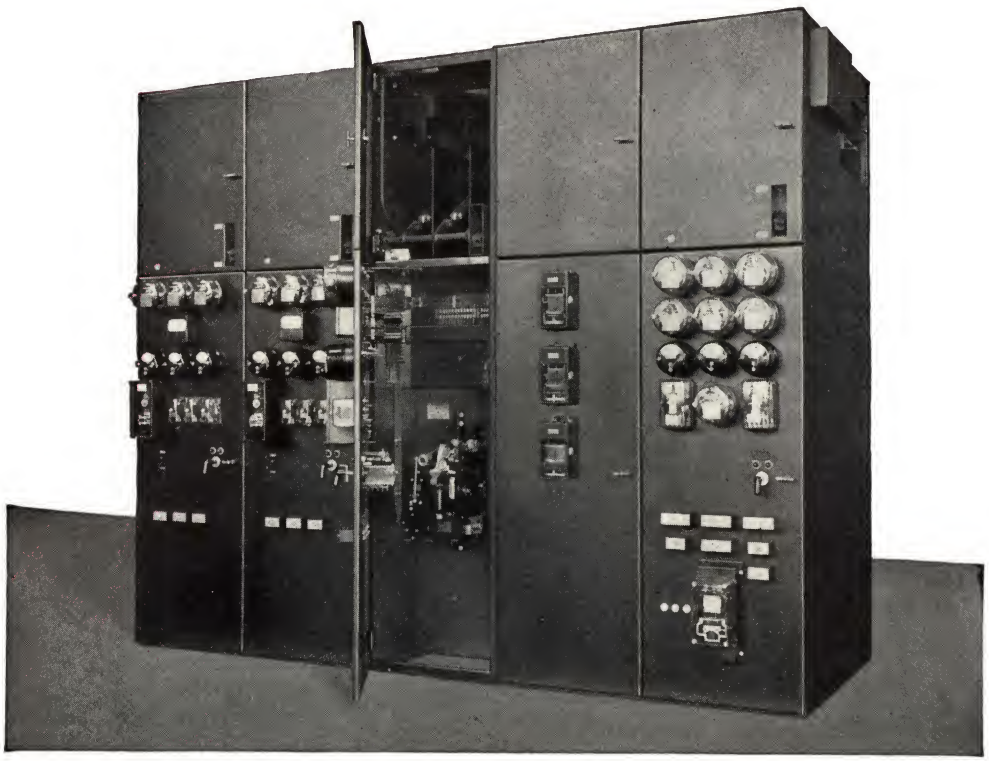



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For Micarta, Lighting Equipment, Kitchen Equipment, Refrigeration, and Air Conditioning, see File Index.

# CUBICLE TYPE SWITCHGEAR



Front View of Typical Cubicle Structure

## APPLICATION

Indoor cubicles provide complete factory assembled, steel enclosed, safety type switching equipment at minimum expense. They can be used for distribution substations, providing control for motors, generators, incoming lines and feeders. The units are for either manually or electrically-operated oil circuit breakers and may be equipped with automatic reclosing relays, if electrically-operated, which will reclose the circuit breaker a definite number of times on a predetermined schedule.

## FEATURES

COMPACT—The oil circuit breakers, switchboard, instrument transformers and disconnecting switches are combined in one structure.

EASY TO INSTALL—Cubicles are factory assembled.

SAFETY FOR THE STATION ATTENDANT—All live parts are completely enclosed to prevent accidental contact. The high tension compartment is isolated from the low-tension compartment if the extended front hinged panel arrangement is selected.

LOW MAINTENANCE—The steel enclosure provides maximum protection for the component parts. Hinged doors and removable steel plates allow ready access to the interior of the cubicles.

GOOD APPEARANCE—The cubicles are neatly finished in dull black and present a pleasing appearance.

EASY TO MOVE—The cubicles can be moved from one location to another with a minimum of expense.

## HOW TO SELECT

The base item (consisting of circuit breaker, enclosure, disconnecting switches, copper bus, ground bus and secondary and control wiring) should be selected from the table, after determining the required breaker rating. The base item covers the simplest arrangement. Additional features should be selected from the optional equipment and specified as required.

## TYPICAL SPECIFICATIONS

### Base Item

ENCLOSURE—The cubicles are to be constructed of formed sections of 1/8 inch thick cold rolled stretcher leveled steel welded together, and reinforced, where necessary, with structural steel members. The completed units to be rigid and self-supporting and each unit to be isolated from adjacent units by steel barriers. The oil circuit breaker compartment is to be enclosed on the rear by means of a removable steel plate. Provide a hinged door for access to disconnecting switches.

FRONT PANEL—Provide a stationary panel for mounting instruments, relays, control switches, oil circuit breaker mechanisms and other devices.

DISCONNECTING SWITCHES—All disconnecting switches are to be hook-stick operated, provided with latches to prevent opening during short-circuits. Supply insulating barriers between disconnecting switches.

BUSES—Bare copper buses are to be carried on porcelain bus supports near the top of the structure. All main primary connections inside the cubicles to be made with bare copper bars.

CIRCUIT BREAKERS—Each cubicle is to be equipped with a three-pole, single throw, oil circuit breaker of required rating. The circuit breaker will be (a) manually operated, (b) direct current, solenoid operated or (c) alternating current, Retox-Solenoid operated. The circuit breaker to be provided with necessary auxiliary devices, including an alternating current or a direct current tripping coil.

Cubicle No.....shall be equipped with a 3 pole, single throw oil circuit breaker—Westinghouse Type.....or

approved equal, rated at.....Volts.....Amps..... KVA interrupting capacity. (Repeat for each cubicle.)

GROUND BUS—The cubicles are to be equipped with a ground bus of 2 inch by ¼ inch copper bar, bolted to the cubicle steel work and connected to breaker frame by a copper strap.

SECONDARY AND CONTROL WIRING—Necessary secondary and control wiring complete with accessories is to be supplied. Provide terminal blocks for all secondary and control connections leaving the cubicle structure.

FACTORY TESTS—The cubicles are to be completely assembled, wired, and tested at the factory. Primary and control circuits are to be given over-potential tests to make certain that the insulation is ample for the service voltage. In addition to a careful inspection and check of wiring, the equipment is to be given an operation test to make sure that it functions properly. The cubicles and all apparatus included in them are to conform to the latest standards of the A.I.E.E.

INSTALLATION—The cubicles are to be shipped completely assembled so that the installation work will consist only of bolting the units to the foundation and to each other, installing the bus bars, attaching the main and control cables to their terminal points, taping joints in main connections (where required) and filling the circuit breaker tanks with oil.

## Optional Equipment

*{Select and Specify as required}*

OPTION 1—CURRENT TRANSFORMERS—The necessary current transformers of required ratio are to be supplied.

OPTION 2—POTENTIAL TRANSFORMERS—The necessary potential transformers of required ratio, complete with primary fuse and resistors are to be supplied. (Where transformers cannot be mounted inside cubicle, they shall be enclosed in a separate sheet steel compartment mounted above cubicle.)

OPTION 3—INSTRUMENTS AND RELAYS—The necessary instruments and relays, and control, instrument and test switches, as indicated on the plans or specified herein are to be supplied. (Specify to suit requirements.)

OPTION 4—EXTENDED FRONT HINGED PANEL AND ISOLATING BARRIER—Provide a hinged front panel of ⅛ inch thick cold-rolled stretcher-leveled sheet steel, for mounting instruments, relays, control switches and other devices. A steel barrier is to be supplied for isolating the oil circuit breaker mechanism and all control equipment from the high tension equipment. (Omit stationary front panel from base item.)

OPTION 5—HINGED REAR DOORS—Provide a hinged steel door on rear of each cubicle to allow access to breaker compartment. (Omit removable steel plate from base item.)

OPTION 6—WIRE-GLASS WINDOW—Provide a wire-glass window in the door in front of the disconnecting switches to permit observation of the disconnecting switch position.

OPTION 7—GANG-OPERATED DISCONNECTING SWITCHES—All disconnecting switches are to be gang-operated by means of a removable operating handle. (Omit hook stick operated disconnecting switches from base item.)

OPTION 8—INTERLOCK BETWEEN BREAKER AND GANG-OPERATED DISCONNECTING SWITCHES—Provide an interlock between oil breaker and gang-operated disconnecting switches, which will prevent the disconnects from being operated when breaker is in closed position.

OPTION 9—INTERLOCK BETWEEN GANG-OPERATED DISCONNECTING SWITCHES AND DOOR—Provide an interlock between gang-operated disconnects and rear door to prevent access to breaker compartment unless switches are open.

OPTION 10—INSULATED BUS—Copper buses are to be supported on insulated bus supports and insulated for full-working voltage. (Omit uninsulated bus from base item.)

OPTION 11—INSULATED CONNECTIONS—All main primary connections inside cubicles are to be made with copper bar, insulated for full-working voltage, or with insulated cable. To insure that connections are tight before equipment is put into service, joints are to be left open for inspection and taping during installation. Material for taping these joints and the outgoing breaker terminals is to be supplied with the equipment.

OPTION 12—BARRIER BETWEEN BREAKER AND DISCONNECTING SWITCHES—Horizontal insulating barriers to be provided between oil breaker and disconnecting switches.

OPTION 13—BARRIER BETWEEN DISCONNECTING SWITCHES AND BUS—Horizontal insulating barriers are to be provided between disconnecting switches and bus. (Option applies only when hook stick operated switches are specified.)

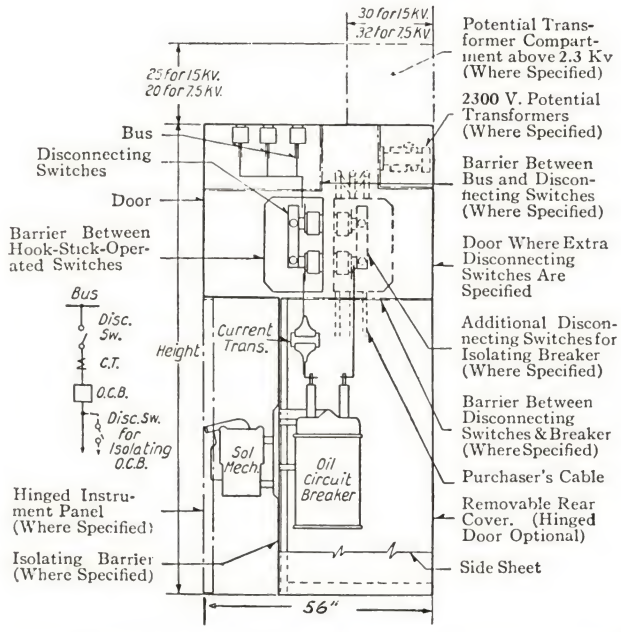
## WHERE TO BUY

See your nearest Westinghouse District Office. See list on the inside back cover.

For complete information on cubicle Type Switchgear, request a copy of Descriptive Data 32-165.

## RATINGS and DIMENSIONS

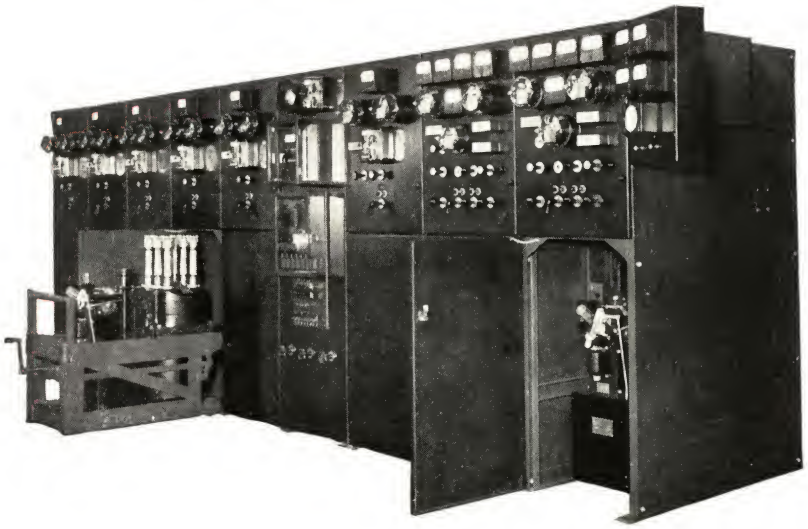
| Type of Breaker | Breaker Rating | | | 7500-Volt Single Bus | | 15000-Volt Single Bus | |
|---|---|---|---|---|---|---|---|
| | Thousands of Kv-a. | Amp. | Kv. | Dimensions in Inches | | Dimensions in Inches | |
| | | | | W. | H. | W. | H. |
| F-11 | 15 | 200 | 5.0 | 24 | 90 | ..... | ..... |
| F-11 | 15 | 400 | 5.0 | 24 | 90 | ..... | ..... |
| F-122 | 25 | 400 | 7.5 | 24 | 90 | ..... | ..... |
| F-122 | 25 | 600 | 7.5 | 24 | 90 | ..... | ..... |
| F-122 | 25 | 800 | 5.0 | 24 | 90 | ..... | ..... |
| F-124 | 50 | 600 | 15.0 | 28 | 114 | 36 | 124 |
| F-124 | 50 | 1200 | 7.5 | 28 | 114 | ..... | ..... |
| F-124 | 50 | 2000 | 5.0 | 32 | 114 | ..... | ..... |
| F-75 | 75 | 600 | 15.0 | 28 | 114 | 36 | 124 |
| F-75 | 75 | 1200 | 7.5 | 28 | 114 | ..... | ..... |
| F-75 | 75 | 2000 | 5.0 | 32 | 114 | ..... | ..... |
| F-100 | 100 | 600 | 15.0 | 28 | 114 | 36 | 124 |
| F-100 | 100 | 1200 | 15.0 | 28 | 114 | 36 | 124 |
| F-100 | 100 | 2000 | 7.5 | 32 | 114 | ..... | ..... |
| B-7-A | 100 | 600 | 15.0 | 42 | 114 | 42 | 124 |
| B-7-A | 100 | 1200 | 15.0 | 42 | 114 | 42 | 124 |
| B-20-B | 150 | 600 | 15.0 | 32 | 114 | 36 | 124 |
| B-20-B | 150 | 1200 | 15.0 | 32 | 114 | 36 | 124 |
| B-8-A | 150 | 600 | 15.0 | 42 | 114 | 42 | 124 |
| B-8-A | 150 | 1200 | 15.0 | 42 | 114 | 42 | 124 |
| B-24-B | 250 | 600 | 15.0 | 32 | 114 | 36 | 124 |
| B-24-B | 250 | 1200 | 15.0 | 32 | 114 | 36 | 124 |
| B-28BS | 250 | 2000 | 15.0 | 42 | 124 | 42 | 134 |
| B-10-A | 250 | 600 | 15.0 | 52 | 114 | 52 | 124 |
| B-10-A | 250 | 1200 | 15.0 | 52 | 114 | 52 | 124 |
| B-10-A | 250 | 2000 | 15.0 | 52 | 114 | 52 | 124 |
| B-28-B | 500 | 600 | 15.0 | 42 | 124 | 42 | 134 |
| B-28-B | 500 | 1200 | 15.0 | 42 | 124 | 42 | 134 |
| B-28 B | 500 | 2000 | 15.0 | 42 | 124 | 42 | 134 |




SINGLE BUS WITH EXTENDED FRONT

Note: Depth without extended front, 36". Depth with two sets of disconnecting switches, 56" for 7500-volt; 70" for 15,000-volt.

# METAL-CLAD SWITCHGEAR



Metal Clad Structure with Front Enclosure with Instruments and Relays for Generator and Feeder Circuits; Self-Contained, Factory Assembled and Tested. Breaker at the right is in test position, breaker at the left shown on transfer truck is being removed for inspection.

## APPLICATION

Metal-Clad Switchgear is designed to give the advantage of complete factory assembled, steel enclosed, safety type switching equipment. It can be used for distribution substations, providing control for motors, generators, incoming lines and feeders. The units are for either manually or electrically operated oil circuit breakers and may be equipped with automatic reclosing relays, if electrically operated, which will reclose the circuit breaker a definite number of times on a predetermined schedule.

The principal advantage of metal-clad switchgear is that it is equipped with *removable* oil breakers which may be easily and quickly replaced with a spare unit. This type of switchgear is desirable where it is important that service be maintained during inspection and maintenance of the breakers.

## FEATURES

SAFETY—All high voltage circuits are completely enclosed. The oil circuit breaker can be inspected only by removing it from the housing. The breaker is interlocked so that it cannot be raised or lowered without tripping it open.

ACCESSIBILITY—The breaker unit is completely accessible when removed by means of the Transfer Truck. Inspection racks are available permitting maximum accessibility for removal of the tank, inspection, maintenance and checking its operation before returning it to service. Spare breakers can be used to replace those removed for maintenance since units of the same capacity are interchangeable.

SAVINGS—Installation costs are low since the equipment is shipped completely assembled. The floor space required is less than for any other type of switchgear.

## HOW TO SELECT

There are two types of metal-clad switchgear, Type "F" light duty and Type "FB" heavy duty.

The two types are similar except for capacity as shown in the table and the type "FB" has insulated bus and connections in the standard base item. The buses and main connections in the Type "F" are uninsulated in the standard base item but can be insulated as covered by Option 6. The type "FB" switchgear also includes oil tight breakers as a part of the standard base item

THE BASE ITEM (consisting of the stationary unit with disconnecting devices, copper bus, secondary and control wiring and removable oil circuit breaker) should be selected from the table after determining the required breaker rating.

Accessories, additional equipment and arrangements not covered by the base item should be selected from the list of options.

## TYPICAL SPECIFICATIONS

Switchgear shall be of the metal-clad type with removable oil circuit breakers as manufactured by Westinghouse Elec. & Mfg. Co. or approved equal. Circuit breakers shall be (1) manually (2) D.C. solenoid (3) A.C. Rectox solenoid operated.

Control voltage to be .... volts.

### Base Item

STATIONARY UNIT—Each stationary unit or section shall include primary and secondary disconnecting devices, buses, main connections and secondary wiring. The units shall be designed so that additional units can readily be added in the future. The circuit breaker unit shall be lifted from the test, or disconnected position, to the operating position by an elevating device mounted in the stationary structure. Guide rails shall insure proper alignment of the primary contacts.

HINGED INSTRUMENT PANELS of 1/8 inch cold rolled stretcher levelled steel shall be provided at the front of the units for the instruments, meters, relays and control switches. (This is provided for Type "FB" heavy duty only and accommodates a limited amount of equipment. For Type "F" light duty and for Type "FB" with a large number of relays and instruments, additional panel space will be required. This may be provided by means of extended front panels, rear panels or separate panels.)

BUS AND CONNECTION COMPARTMENTS—The bus shall be of flat copper bars rigidly held in place within the bus compartment by means of insulating supports. The buses shall be insulated and provision shall be made for insulating the joints between sections during installation. Wiping sleeves or stuffing boxes shall be supplied in the current transformer compartments for the outgoing cables. (Insulated bus and wiping sleeves or stuffing boxes are supplied as standard equipment on Type "FB" heavy duty but must be added as an additional feature on Type "F" light duty—see options 6 and 7.) The current transformers shall be mounted in the outgoing cable compartment.

PRIMARY CONTACTS—The primary circuits between the removable oil circuit breaker units and the stationary units shall be made by means of contacts mounted on the circuit breaker studs which engage with solid cylindrical contacts in the stationary structure.

SECONDARY CONTACTS—The control circuits between the stationary units and the circuit breaker units shall be made by means of automatic, self-aligning, multi-contact, plug type connectors. The receptacle shall be mounted in the stationary unit, and the plug shall be mounted on the removable circuit breaker unit. The contacts in the receptacle shall be recessed to prevent accidental short circuiting of the control circuits.

A test jumper consisting of a plug and a receptacle connected by a multi-conductor cable shall be used in operating the circuit breakers electrically after they have been lowered to the test position.

REMOVABLE BREAKER UNIT—The circuit breaker clos-

ing mechanism shall be mounted directly on the circuit breaker frame. The circuit breakers shall be equipped with devices which clearly indicate the open and closed positions.

The circuit breaker units shall be equipped with mechanical interlocks, which prevent raising or lowering the breaker in the stationary structure without tripping open the breaker.

Each removable oil circuit breaker unit shall be equipped with an exhaust valve and piping which shall be automatically connected to an exhaust header in the stationary structure when the circuit breaker unit is lifted to the operating position. (Exhaust valves and headers are standard equipment on Type "FB" heavy duty but cannot be supplied on Type "F" light duty.)

Section No.....shall be equipped with a 3 pole single throw removable oil circuit breaker unit rated at.....Volts .....Amps.....KVA interrupting capacity. (Repeat for each section.)

INTERCHANGEABILITY—The removable circuit breaker units shall be assembled in jigs which accurately locate the contacts, holding devices, and interlocks. Similar jigs shall be used in the construction of the stationary units. All circuit breaker units of the same type and rating shall then run through one stationary unit, and each stationary unit shall be checked with one breaker unit to insure complete interchangeability.

GROUND BUS—The stationary units shall be equipped with a ground bus, consisting of one 2 inch x ¼ inch copper bar, which shall be effectively grounded by the contractor. Ground contacts mounted on the removable circuit breaker unit shall make contact with a ground bar at the back of the stationary unit when the circuit breaker is elevated to the operating position.

SECONDARY AND CONTROL WIRING—The secondary wiring shall be brought to terminal blocks in a junction box at the rear of the housing where conduit and control cable may be terminated. All wiring on the unit shall be enclosed in metal conduit or sheet metal enclosures.

FACTORY TESTS—The primary and secondary connections shall be given an over-voltage test to insure that the insulation is ample for the service voltage. The units shall receive a careful inspection and check of the wiring to make sure that the equipment will function properly.

INSTALLATION—The units shall be shipped completely assembled so that the installation work will consist only of bolting the stationary units to the foundation and to each other, attaching the main and control cables to their terminal points, making the necessary bus connections, insulating the bus joints, and filling the circuit breaker tanks with oil.

### Optional Equipment

*(Select and Specify as Required)*

OPTION 1—CURRENT TRANSFORMERS—The necessary current transformers of required ratio, single or double secondary, shall be supplied.

OPTION 2—INSTRUMENTS AND RELAYS—The necessary instruments and relays, and control, instrument and test switches, as indicated in the plans or specified herein shall be supplied. (Specify requirements.)

OPTION 3—POTENTIAL TRANSFORMER COMPARTMENTS—The potential transformers, where required, shall be mounted in separate metal enclosed compartments located above the bus compartment. The compartments shall enclose the transformers, primary fuse blocks and fuses, and the current limiting resistors. Hinged doors at the front of the compartments shall allow access to the potential transformer primary fuses. One compartment shall be supplied for each set of transformers.

OPTION 4—TRANSFER TRUCK—A transfer truck shall be provided for use in removing the circuit breaker units from the stationary units and in moving them about the station. The truck shall be equipped with a lifting device, having sufficient travel to permit setting the circuit breaker units on the floor. The front wheels of the truck shall be swiveled. One truck shall be provided for each unit of a different physical size.

OPTION 5—INSPECTION RACK—An inspection rack shall be provided consisting of a self-supporting frame with a built-in elevating device, control wiring, control conduit, electrically trip-free control relay, and a control switch for operating the breaker electrically. The elevating device shall have sufficient travel to permit the use of the inspection rack in removing the tanks from the oil circuit breakers.

The transfer truck shall be so designed that it can be used in connection with the inspection rack for removing the tanks from a circuit breaker which has been placed in the inspection rack.

OPTION 6—INSULATED BUS AND CONNECTIONS—The bus and connections shall be insulated and provision shall be made for insulating the joints between sections during installation. (This option applies to Type "F" only. Insulated bus is included as part of the base item for Type "FB".)

OPTION 7—WIPING SLEEVES—Wiping sleeves or stuffing boxes shall be supplied in the current transformer compartments for the outgoing cables. (This option applies to Type "F" only. Wiping sleeves are supplied as a part of the standard base item for Type "FB".)

OPTION 8—HINGED FRONT DOORS—Provide Hinged Front Doors for enclosing front of breaker compartment. (Base item for both Type "FB" and Type "F" has open front on the breaker compartment. Addition of these doors makes unit completely enclosed.) For Type "F," front enclosure increases depth 12" for hand operated 50,000 KVA breakers and 8" for electrically operated 50,000 KVA and all 25,000 KVA breakers.

## RATINGS and DIMENSIONS

### TYPE "FB" HEAVY DUTY

| Approx. Kv-a. Interrupting Capacity | Breaker Rating | | Dimensions in Inches Indoor Units | | | |
|---|---|---|---|---|---|---|
| | Voltage | Amp. | Width | †A | B | H |
| 50000 | 15000 | 600 | 24 | 60 | 60 | 66 |
| 75000 | 7500 | 1200 | 24 | 60 | 60 | 66 |
| 75000 | 5000 | 2000 | 24 | 60 | 60 | 66 |
| 100000 | 15000 | 600 | 24 | 60 | 60 | 66 |
| 100000 | 15000 | 1200 | 24 | 60 | 60 | 66 |
| 100000 | 7500 | 2000 | 24 | 60 | 60 | 66 |
| 150000 | 15000 | 600 | 28 | 60 | 60 | 72 |
| 150000 | 15000 | 1200 | 28 | 60 | 60 | 72 |
| 250000 | 15000 | 600 | 28 | 60 | 60 | 72 |
| 250000 | 15000 | 1200 | 28 | 60 | 60 | 72 |
| 250000 | 15000 | 2000 | 36 | 68 | 68 | 82 |
| 500000 | 15000 | 600 | 36 | 68 | 68 | 82 |
| 500000 | 15000 | 1200 | 36 | 68 | 68 | 82 |
| 500000 | 15000 | 2000 | 36 | 68 | 68 | 82 |

### TYPE "F" LIGHT DUTY

| Approx. Kv-a. Interrupting Capacity | Breaker Rating | | Dimensions in Inches Indoor Units | | | |
|---|---|---|---|---|---|---|
| | Voltage | Amp. | Width | †A | B | H |
| 25000 | 5000 | 400 | 20 | 36 | 38 | 66 |
| | 5000 | 600 | 20 | 36 | 38 | 66 |
| | 5000 | 800 | 20 | 36 | 38 | 66 |
| 50000 | 5000 | 600 | 20 | 36 | 38 | 66 |
| | 5000 | 1200 | 20 | 36 | 38 | 66 |
| | 5000 | 2000 | 24 | 60 | 60 | 66 |

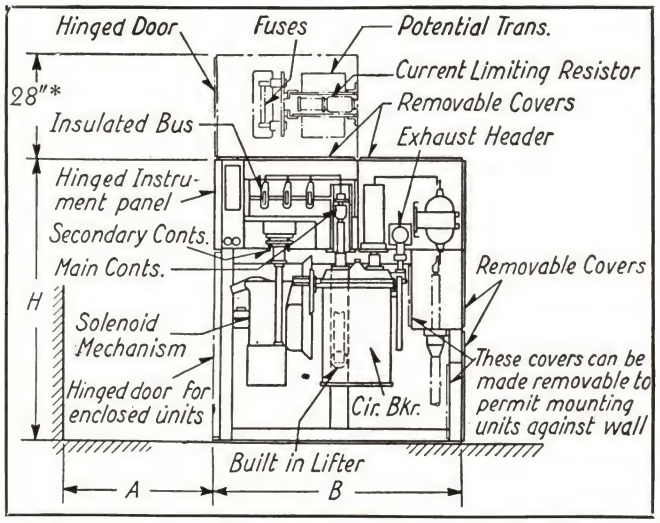
†Minimum aisle space.

Dimensions are for reference only. For official dimensions apply to nearest district office

## WHERE TO BUY

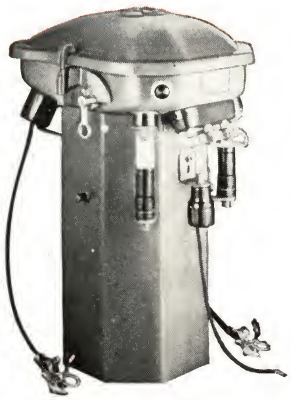
See your nearest Westinghouse District Office. See list on the inside back cover.

For complete information on metal-clad Switchgear request a copy of Descriptive Data 32-150 and 32-160.




*Height of potential transformer compartment can be reduced to 18" for 2300 volt units.

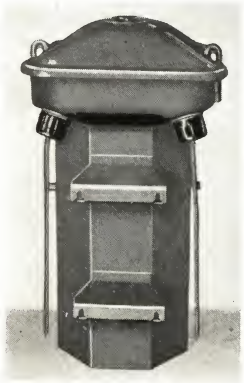
# DISTRIBUTION TRANSFORMERS



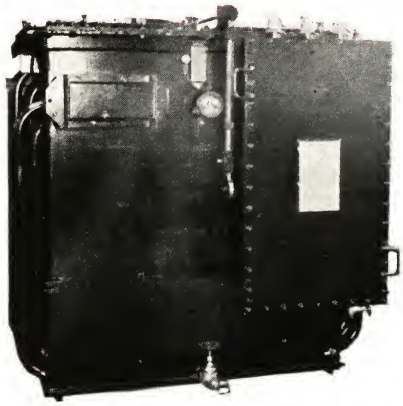
CSP TRANSFORMER
(Completely Self-protected)



SP TRANSFORMER
(Surge protected)



TYPE S TRANSFORMER
(Conventional)



NETWORK
TRANSFORMER



TYPE SM (Subway)
TRANSFORMER

## APPLICATION

It is often desirable and in some cases necessary for the owner of a building or construction project to purchase power at *High Voltages.* This requires the use of distribution transformers of various types and capacities depending upon the type of secondary load and the proposed location of the transformers.

Westinghouse Distribution Transformers are built in six different types for different applications.

1. "S," "SK," "SS," "SL" CONVENTIONAL TRANSFORMERS are for indoor mounting in fire-proof vaults or for outdoor mounting. Lightning protection is provided by separate arresters and cutouts.

2. "SP" SURGE PROTECTED DISTRIBUTION TRANSFORMERS are used for Urban, Suburban or Rural Distribution lines and are for outdoor mounting where built-in lightning protection only is desired.

3. "CSP" COMPLETELY SELF PROTECTING TRANSFORMERS are used for Urban, Suburban or Rural Distribution lines and are for outdoor mounting where Built-In Lightning and overload protection is desired.

4. INERTEEN FILLED TRANSFORMERS are used for indoor applications and eliminate the necessity for fire-proof vaults.

5. "SM" SUBWAY TRANSFORMERS are used for underground mounting in manholes where dampness is prevalent.

6. NETWORK TRANSFORMERS are used on low-voltage network systems in heavily loaded areas of large cities or buildings. These transformers can be supplied in either non-submersible or submersible water-tight designs.

## FEATURES

### 1. Conventional Distribution Transformers

REMOVABLE BUSHINGS—Oil-proof removable type bushings are used on both the high and low voltage sides.

SMALL DIMENSIONS and light weight reduce handling costs and simplify mounting.

OIL-TIGHT case and cover permits shipping and moving transformers when filled with oil.

### 2. "SP" Surge Protected Distribution Transformers

LIGHTNING PROTECTION—Protective De-ion gaps form an integral part of the transformer design and assure surge-proof three-point protection.

### 3. "CSP" Completely Self-Protecting Transformers

LIGHTNING PROTECTION is provided by built-in De-ion gaps which are able to discharge direct lightning strokes without damage.

OVERLOAD PROTECTION is provided by an internally mounted thermal breaker which protects against cumulative overloads and short circuits.

HIGH VOLTAGE PROTECTIVE LINKS are built into the transformer to clear the transformer from the line in case of winding faults.

ADVANCE WARNING of excessive copper temperatures is given by an indicating lamp so condition can be corrected.

NO SEPARATELY MOUNTED PROTECTIVE DEVICES REQUIRED. Complete protection is built into the transformer.

### 4. Inerteen Filled Transformers

NON-INFLAMMABLE Inerteen is non-explosive and is approved by the Underwriters. (See their Bulletin No. MH-2689

ELIMINATES FIRE-PROOF VAULTS or protective housing necessary for oil filled transformers.

FLEXIBILITY—Inerteen filled transformers of the conventional, manhole, or network designs are available in all standard commercial ratings.

### 5. "SM" Subway Distribution Transformers

WATER-PROOF—"SM" transformers are water-tight and of submersible design. All materials, finish, and construction have been selected to protect the exposed parts against moisture.

### 6. Network Transformers

SAFETY is provided through the use of electrical and mechanical interlocks which make it impossible to operate the grounding switch or the tap changer when the transformer is energized.

CONVENIENCE in installation and reliability in operation have been given paramount consideration in these transformers.

# HOW TO SELECT

Transformer types should be determined by the proposed application and location. Standard kv-a. ratings, voltages, taps, etc., can be selected from the tables shown below for the proper system voltage.

## DIMENSIONS

Dimensions and weights are given in Westinghouse Catalog 46-000.

## TYPICAL SPECIFICATIONS

APPLICATION (Select One): The {lighting / power}

PHASE (Select One): {one / two / three} phase filled with

INSULATING MEDIUM (Select One): {oil / Inerteen} for transforming from .....volts...../phase .....cycle.....wire on the high voltage side to .....volts.....phase.....cycle.....wires on the low side

Transformers shall be of the

TYPE (Select One): {conventional / surge protected / completely self-protecting / subway / network} type shall be furnished and installed where shown on the plans and of the capacities noted

TAPS (Select One): {2—5% / 4—2½%} Full capacity taps shall be provided on the high voltage winding
.....taps above normal (number)
.....taps below normal (number)

Transformers shall be suitable for

LOCATION (Select One): {outdoor / indoor / vault / subway} service and shall be arranged for

MOUNTING (Select One): {floor / wall / pole} mounting

BUSHINGS—High voltage bushings shall be (stud, wiping sleeve, pothead) type, (cover, side, pocket) mounted. Low voltage bushings shall be (stud, wiping sleeve, pothead) type, (cover, side, pocket) mounted. All bushings shall have suitable gaskets to provide a tight fit.

GUARANTEE—Bidders shall state and guarantee the following—
(a) Efficiencies at ¼, ½, ¾ and full load at unity power factor and 75 deg. C.
(b) No load loss
(c) Total full load loss
(d) Regulation at 100% and 80% power factor
(e) The net and shipping weights
(f) Gallons of liquid required per transformer
(g) The limiting dimensions of each transformer

TESTING—Sufficient tests shall be made by the manufacturer to see that the guarantees will be met. Testing shall conform to the A.I.E.E. Transformer Standards and transformers must meet the A.I.E.E. acceptance tests.

WINDINGS—The individual high voltage and low voltage coils shall be wound on separately formed barriers in order to facilitate removal of the coils in case of repairs.

The windings shall consist of copper coils, suitably insulated, thoroughly dried and vacuum treated.

CORE—The core shall be manufactured of high grade non-ageing sheet steel laminations, properly annealed, treated and insulated from each other in accordance with the latest approved practice.

TANK AND COVER—The tanks shall be of welded steel construction free from leaks and seepage.

The surfaces of the tank and cover shall be thoroughly cleaned of all dirt, grease and other impurities, painted with at least two coats of paint which shall not affect or be affected by the cooling and insulating liquid.

A gasket shall be placed between tank and cover to make a tight joint.

ACCESSORIES—Transformers shall be equipped with the following accessories.

Select accessories desired
1—Drain plug
2—Diagram name plate
3—Dial type indicating thermometer (with, without) alarm contacts
4—Tap changing switch to permit changing connections in the high voltage winding from the outside of the tank. (For operation only when transformer is disconnected.)
5—Sampling valve
6—Fluid gauge
7—Top and bottom filter press connections

Transformers shall meet the latest requirements of the A.I.E.E. and shall be Westinghouse Type.....or approved equal.

## WHERE TO BUY

See your nearest Westinghouse District Office or Agent Jobber listed on the inside back cover.
For complete information request a copy of Westinghouse Catalog 46-000.

## NEMA STANDARDS — Single-phase Distribution Transformers

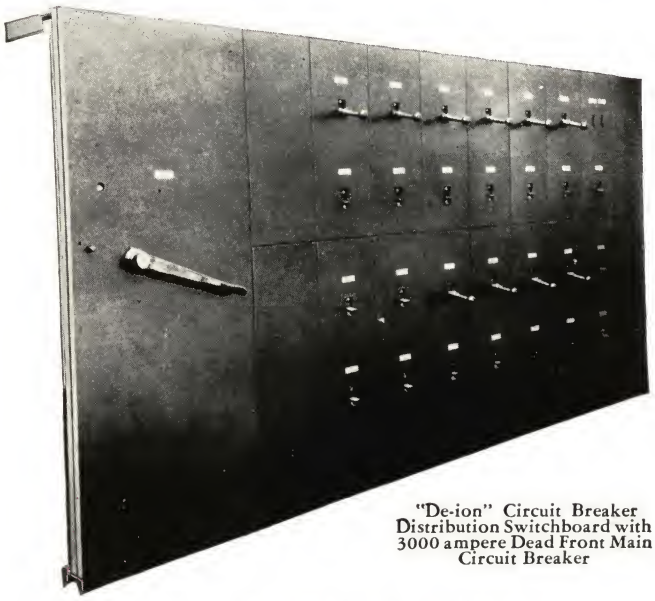
Sizes 500 Kv-a. and Below—Standard Types—Oil-Immersed—Self-Cooled

Standard Kv-a. Ratings at 55 Deg. C. Rise 1.5, 2.5, 3, 5, 7.5, 10, 15, 25, 37.5, 50, 75, 100, 150, 200, 250, 333, 500

| Nominal System Voltage | STANDARD SIZES, VOLTAGE RATINGS, AND TAPS OF TRANSFORMERS FOR THE VARIOUS SYSTEM VOLTAGES | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Standard Kv-a. Sizes For Each Voltage Class | Rated Voltage—High Voltage | HIGH VOLTAGE TAPS | | | Rated Voltage—Low Voltage | | |
| | | | Full Capacity | | Reduced Capacity | | | |
| 440 | 1.5, 3 to 200 incl. | 480 | 456 | 432 | ..... | 120/240 | | |
| 550 | 1.5, 3 to 200 incl. | 600 | 570 | 540 | ..... | 120/240 | | |
| 2,300 and 4,000 | 1.5, 3 to 50 incl. | 2,400/4,160 Y<br>2,500/4,330 Y | ..... | ..... | ..... | 120/240<br>125/250 | 240/480 | 600 |
| | 75 to 500 incl. | 2,400/4,160 Y<br>2,500/4,330 Y | 2,280<br>2,375 | 2,160<br>2,250 | ..... | 120/240<br>125/250 | 240/480 | 600 |
| 4,600 | 1.5, 3 to 100 incl. | 2,400/4,800<br>2,500/5,000 | ..... | ..... | ..... | 120/240<br>125/250 | 240/480 | 600 |
| | 150 to 500 incl. | 2,400/4,800<br>2,500/5,000 | 2,280<br>4,560<br>2,375<br>4,750 | 2,160<br>4,320<br>2,250<br>4,500 | .....<br>.....<br>.....<br>..... | 120/240<br>125/250 | 240/480 | 600 |
| 6,600 and 11,000 | 1.5, 3 to 500 incl. | 6,900/11,950 Y<br>7,200/12,470 Y | 6,585<br>6,875 | 6,275<br>6,545 | 5,960<br>6,220 | 115/230<br>120/240 | 230/460<br>240/480 | 575<br>600 |
| | 5 to 500 incl. | 6,600/11,430 Y | 6,270 | 5,940 | ..... | 2,300 | | |
| | 2.5, 5, 10 to 500 incl. | 11,500<br>12,000 | 10,925<br>11,400 | 10,350<br>10,800 | .....<br>..... | 115/230<br>120/240 | 230/460<br>240/480 | 575<br>600 |
| | 5, 10 to 500 incl. | 11,000 | 10,450 | 9,900 | ..... | 2300/4000 Y | | |
| 13,200 | 1.5, 3 to 500 incl. | 7,620/13,200 Y<br>7,940/13,750 Y | 7,240<br>7,545 | 6,860<br>7,145 | .....<br>..... | 120/240<br>125/250 | 240/480 | 600 |
| | 5 to 500 incl. | 7,620/13,200 Y | 7,240 | 6,860 | ..... | ..... | ..... | 2400 |
| | 2.5, 5, 10 to 500 incl. | 13,200<br>13,750 | 12,540<br>13,060 | 11,880<br>12,375 | .....<br>..... | 120/240<br>125/250 | 240/480 | 600 |
| | 5, 10 to 500 incl. | 13,200 | 12,540 | 11,880 | ..... | 2400/4160 Y..... | | |

Westinghouse

# LOW VOLTAGE DISTRIBUTION SWITCHBOARDS



"De-ion" Circuit Breaker Distribution Switchboard with 3000 ampere Dead Front Main Circuit Breaker

## APPLICATION

Circuit breaker distribution switchboards are used to distribute secondary electrical energy for power and lighting circuits of 600 volts AC or 250 volts DC. They are designed to give fuseless protection to all circuits.

AB "De-ion" circuit breakers are used on all circuits up to and including 600 amperes, 600 volts AC or 250 volts DC. Type CL back of board, front operated air circuit breakers are used above 600 amperes.

## FEATURES

LOW INSTALLATION COST—Steel construction and simple design make possible safe transportation, easy assembly, and economical installation.

SAFETY—Metal built dead-front safety type construction. No live parts exposed on front of the board.

COMPACT CONSTRUCTION—Takes less space. Makes a fine appearance and can accommodate meter equipment.

SAVINGS—Space economy due to compact design of breaker saves up to ⅓ or ½ the usual board space.

## HOW TO SELECT

Determine the number and current carrying capacity of the branch feeders required. From page 37 select the proper breakers to give suitable conductor protection.

1—If circuits are to feed motors, the proper rating of branch circuit breaker should be selected from the table page 36.

2—For all circuits other than motor circuits, it is essential that the branch circuit wire size be known so that a breaker of the proper capacity is used and not one of a capacity larger than the wire size it is protecting. Nofuze De-ion Breakers are rated by ampere capacities corresponding to the current carrying capacity of commercial rubber covered wire.

3—The actual load on the circuit should be given full consideration, so that in case an extra heavy wire is being used to avoid voltage drop, a breaker larger than necessary to carry the load is not used. For instance, a No. 00 (150 ampere) wire might be used to avoid voltage drop when under ordinary circumstances a No. 1 wire would be satisfactory, since the actual load being carried is not over 100 amperes. In this case a 100-ampere breaker would be satisfactory as it would afford full protection to the wire used, and at the same time be able to carry the load.

Main breaker sizes depend upon the connected load and the portion of it expected to be 'on' at any one time.

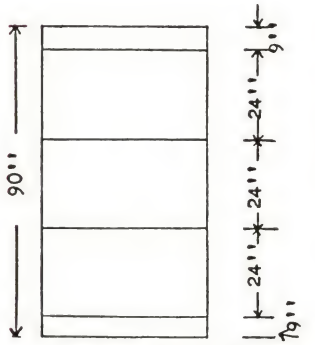
## DIMENSIONS

MINIMUM PANEL REQUIREMENTS

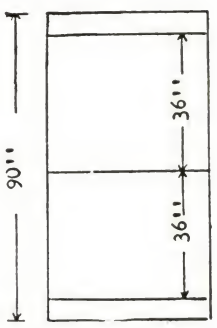
For 600 V., A.C. or less—250 V., D.C.

Thermal Type Circuit Breakers MOUNTED ON STEEL PANELS ONLY

Table A




| Frame Capacity of Breaker | 2 Pole | | 3 Pole | |
|---|---|---|---|---|
| | Wide | High | Wide | High |
| 50 A. | 3½" | 12" | 5½" | 12" |
| 100 A. | 7" | 12" | 10" | 12" |
| 225 A. | 7" | 18" | 10" | 18" |
| 400 A. | 10" | 24" | 10" | 24" |
| 600 A. | 10" | 24" | 10" | 24" |




The 9" sections may be reduced when overall height of board is less than 90". The 36" and 24" high sections for mounting breakers are standard and cannot be reduced.

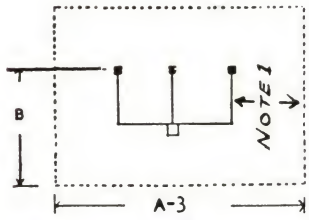
There are only two widths of panels used for mounting thermal type trip breakers—these are 12" and 16".

The 12" widths are for mounting three pole breakers of all sizes up to 225 ampere frame, and the 600 ampere two pole frame, either with or without risers. The 12" widths are to be used for 600 ampere three pole breakers only when risers are used. The 12" widths will permit mounting two 50 ampere three pole breakers or only one each of the higher capacities in a horizontal row.

The 16" widths are for mounting two-pole, 50 ampere, 100 ampere, and 225 ampere frame breakers. It will permit four of the 50 ampere frames in one horizontal row and two of the 100 ampere or 225 ampere two-pole frames in one horizontal row. It must be used for the three-pole, 600 ampere size when supplied without risers to provide sufficient cable clearance. Only one 600 ampere breaker can be mounted in a horizontal row.

Space Required on Switchboard for Air Circuit Breakers Other Than Thermal Type

Table B




| A2 = Double Pole<br>A3 = Three Pole | Dead Front 2 and 3 Pole Dimensions (Steel Panels Only) | | | Add to Height B for Reverse Current | Add to Width A for Reverse Current | Add to Width A for Under V. or Shunt T. | Add to Height B for Elec. Operate |
|---|---|---|---|---|---|---|---|
| Amperes | A2 | A3 | B | | | | |
| 800 | 24 | 28 | 30 | 3 | 4 | 3 | 17 |
| 1200-1600 | 24 | 32 | 30 | 8 | 5 | 3 | 20 |
| 2000-3000 | 32 | 44 | 68 | 8 | 6 | 3 | 27 |
| 4000 | 32 | 44 | 68 | 6 | 4 | 1 | 27 |

Note (1) The minimum distance between width dimensions and the edge of the panel is 2 inches.

Space Required on Switchboards for Instruments, etc.

(1) Increase the actual dimensions of instruments or any other equipment not specifically mentioned by 1½ inches in both width and height.
(2) The distance to the edge of the panel for this equipment shall not be less than 2 inches.
(3) The space required by rheostats shall be the space actually required on the back of the panel.

It will be seen from the illustrations that the front of the panel is sectionalized. For a standard 90-inch high panel, sections nine inches in height are usually provided at the top and bottom in order that the breakers may be located at convenient heights for operation and to provide space for meters or instruments at the top when required. The intermediate sections which cover the breakers may be either two sections, 36″ high, or three sections 24 high, depending upon the breakers to be used.

For "De-ion" breakers two widths of panel fronts are provided, 12 inches and 16 inches.

The 9″ sections may be reduced when overall height of board is less than 90″. The 36″ and 24″ high sections for mounting breakers are standard and cannot be reduced.

There are only two widths of panels used for mounting thermal type trip breakers—these are 12″ and 16″.

The 12″ widths are for mounting three pole breakers of all sizes up to 225 ampere frame, and the 500 ampere two-pole frame, either with or without risers. The 12″ widths are to be used for 600 ampere three-pole breakers only when risers are used. The 12″ widths will permit mounting two 50 ampere three-pole breakers or only one each of the higher capacities in a horizontal row.

The 16″ widths are for mounting two-pole, 50 ampere, 100 ampere, and 225 ampere frame breakers. It will permit four of the 50 ampere frames in one horizontal row and two of the 100 ampere or 225 ampere two-pole frames in one horizontal row. It must be used for the three-pole 600 ampere size when supplied without risers to provide sufficient cable clearance. Only one 600 ampere breaker can be mounted in a horizontal row.

## TYPICAL SPECIFICATIONS

Switchboard shall be the dead front safety type consisting of panels and circuit breakers of the number shown on the drawings. The construction shall consist of a structural or formed steel frame carefully braced and welded into a rigid structure which shall maintain its alignment and not be damaged in shipment or erection or by stresses resulting from short circuits. The frame shall be completely enclosed on front, sides, and back with sheet steel plates not less than ⅛-inch thick, except that removable front sections not supporting breakers may be 1/16-inch thick.

The front surfaces shall be flanged sheet steel panels rolled with ¼-inch radius on inside edges. Butt joints on front surfaces will not be permitted. Electrical interconnections between compartments (when required) shall be made through insulating barriers. For breaker 600-A or less the front plate shall be held in place by two or more oral head screws.

The air circuit breakers above 600-A capacity shall be mounted on a frame located sufficiently back of a swinging front door to provide, together with barriers, adequate electrical clearance. Necessary louvres shall be provided on the back panels and/or doors of the enclosure to provide proper ventilation.

The closing handle for breakers over 600-A capacity shall be of the rotary type removable only in the trip position. The doors shall be arranged to permit opening after the handle is removed and door latch thumb screws released. A manual trip button shall be provided projecting through the swinging door panel. The position of the circuit breaker shall be indicated by a suitable colored semaphore directly in the rear of the door and visible through an opening provided.

Plates for front panels shall be stretcher leveled steel. A pull box of the same type of construction not less than three feet in depth shall be provided at the top of each switchboard which shall match the switchboard in dimension and finish. Bottom of pull box shall be slate or asbestos board and cables to circuit breaker studs dropped vertically through individual openings in bottom to their respective studs. The entire unit shall be securely bolted to channel iron sills grouted into the floor. Each entire unit shall be painted two coats both inside and out, the first being a rust-resisting coat and the second a dull black. The front shall be finished to present a dull gloss appearance. Surfaces damaged or scratched during erection shall be refinished and the whole unit rubbed down with an approved polish. Switchboard shall be sectionalized vertically and each section shall be readily removable to permit access to the circuit breakers.

CIRCUIT BREAKERS—Circuit breakers shall be 1, 2, or 3-pole with trip elements calibrated in wire size capacities as shown on drawings. Circuit breakers 600 amperes and less shall be of the "De-ion" thermal type (see Spec. A, page 00). Air Circuit breakers above 600 amperes shall be of the back of board mounted front operated type (see Spec. B, page 00).

BUS SYSTEM—Buses on switchboard shall be of hard drawn copper or 98 per cent conductivity. Connections shall be bolted and laminations interleaved to secure maximum contact areas. All contact surfaces shall be clean and bright when assembled. All laminations shall have a ¼-inch space between them. All buses and circuit breaker stub connections shall be of such size as to limit the temperature rise to 30 degrees centigrade when carrying full-load current at room temperature, but not to exceed a current density of 1000 amperes per square inch. Buses shall be suitably arranged for single phase 3 wire, 3 phase 3 wire, or 3 phase 4 wire distribution as shown on drawings or called for in the specification. The neutral bus shall be separately grounded by an approved grounding conductor. This ground connection shall be entirely separate from all other ground connections

## WHERE TO BUY

See your nearest Westinghouse District Office or agent jobber. For further information request Catalog 29-000.

A list of offices and agent jobbers is shown on inside the back cover.

# NOFUZE PANELBOARDS

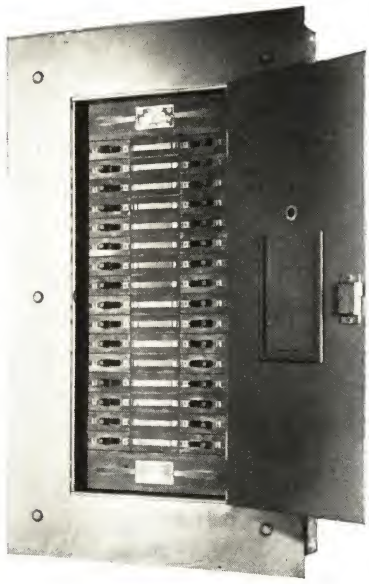


NOFUZE CONVERTIBLE DISTRIBUTION PANELBOARD



MODERNISTIC FLUSH TYPE LOCK

LIGHTING BRANCH CIRCUIT PANELBOARD



## APPLICATION

Nofuze panelboards are used for the distribution of secondary electrical energy for power and lighting circuits of 600 volts a-c. or 250 volts d-c. and below with capacities from 15 to 600 amperes, one, two and three poles.

There are three types of Nofuze panelboards (not including the Multi-Breaker Panelboard):

1—Convertible distribution panelboards
2—Low capacity distribution panelboards
3—Lighting branch circuit panelboards

CONVERTIBLE (OR HIGH CAPACITY PANELBOARDS) are available with two or three pole main and branch breakers in capacities from 15 to 600 amperes.

LOW CAPACITY DISTRIBUTION PANELBOARDS are designed for low capacity power and lighting applications in which the capacity of any branch circuit need not exceed 50 amperes, 230 volts a-c. although one feeder up to 225 ampere capacity may be supplied. Main lugs up to 400 ampere capacity or main breakers up to 225 ampere capacity can be supplied.

NOFUZE LIGHTING BRANCH CIRCUIT BREAKERS are used for protecting and controlling branch lighting circuits. They are available in ratings from 15-50 ampere, 230 volt a-c. or 125 volt d-c. with from 4 to 42 single pole branch breakers and from 4 to 20 two-pole branch breakers, either with or without main breakers.

## FEATURES

ELIMINATES FUSES AND SWITCHES—The use of Nofuze "De-ion" circuit breakers in mains and branches gives full circuit protection and makes the use of switches and fuses unnecessary.

ATTRACTIVE APPEARANCE—Cabinet Fronts finished in an attractive olive green Duco. The modernistic chromium plated combination lock and catch, and flush type hinges adds to the finished appearance of the front.

## HOW TO SELECT

Before laying out a panel, all circuit capacities must be carefully checked for the following three requirements:

1—If circuits are to feed motors, the proper rating of branch circuit breaker should be selected from the table page 36.

2—For all circuits other than motor circuits, it is essential that the branch circuit wire size be known so that a breaker of the proper capacity is used and not one of a capacity larger than the wire size it is protecting. Nofuze De-ion Breakers are rated by ampere capacities corresponding to the current carrying capacity of commercial rubber covered wire. See table, page 37.

3—The actual load on the circuit should be given full consideration, so that in case an extra heavy wire is being used to avoid voltage drop, a breaker larger than necessary to carry the load is not used. For instance, a No. 00 (150 ampere) wire might be used to avoid voltage drop when under ordinary circumstances a No. 1 wire would be satisfactory, since the actual load being carried is not over 100 amperes. In this case a 100-ampere breaker would be satisfactory as it would afford full protection to the wire being used, and at the same be able to carry the load.

LIGHTING BRANCH CIRCUIT PANELBOARDS may be selected from the tables on page 14.

NARROW OR LOW CAPACITY DISTRIBUTION PANELBOARDS may be selected from the tables on page 15.

CONVERTIBLE OR HIGH CAPACITY DISTRIBUTION PANELBOARDS are built to order according to requirements. To determine the layout for specific requirements, it is necessary to determine the number of "X" areas as explained below.

## DIMENSIONS

Dimensions for LIGHTING BRANCH CIRCUIT PANELBOARDS and LOW CAPACITY DISTRIBUTION PANELBOARD CABINETS are 20 inches wide, 5¾ inches deep and of the height given in the tables on page 14 and page 15.

CONVERTIBLE OR HIGH CAPACITY PANELBOARDS: Determine the number of "X" areas required for the complete panel, and then the dimensions may be obtained from the tables on page 15.

TO DETERMINE THE NUMBER OF X AREAS—In the construction of the panelboards, three types of sections are employed. These are designated as "A," "B," and "C" sections. The "A" sections accommodate the 50 and 100-ampere frame breakers and have a length equal to one-half the width of the panel (two rows of "A" sections being necessary to make up the complete width). The "B" section extends the full width of the panel and accommodates the 225-ampere frame breaker, as well as the neutral and main lug sections. The "C" sections are 2 inches longer (the horizontal dimension when assembled) than the "B" sections, but otherwise are the same and accommodate the 400 and 600-ampere frame breakers. All sections, however, can be assembled in the same panel.

In order to facilitate laying out the panel, it has been split up into units of area called "X" which are one-half the panel width

and 1⅜ inches high. Each branch circuit, or frame size, is a multiple of "X" units. Diagram shows the correct number of "X" units per section or frame size. For instance, a 3-pole, 100 ampere frame breaker requires a space of 6X. This being an "A" section means that it occupies one-half the width of the panel and is 8¼ inches high. A 3-pole, 225 ampere frame breaker occupies a space of 12 X but is a type "B" section. Therefore, it is only 8¼ inches high, since it extends the full width of the panel.

The neutral section, when the panel has main lugs only, is always placed at the opposite end of the panel from the main lugs and its main feed lug is brought to the main lug section. Under these conditions the neutral section occupies 6 X space when the capacity of its largest branch lug is not over 400 amperes.

When a neutral section is required on panels having a main breaker, it is placed at the same end of the panel as the main breaker. In such cases its space requirement should be the same as a main lug section of capacity equal to main breaker capacity.

## TYPICAL SPECIFICATIONS

CIRCUIT BREAKERS—(See page 16, Circuit breaker specification A.)

PANELBOARDS—Furnish and install where shown on plans or specified, panelboards mounted in enclosing cabinets on which shall be mounted equipment, as required, specified or shown in the drawings.

Panelboards shall be of the dead front type and shall be equipped with automatic branch circuit breakers for each branch circuit. Automatic branch circuit breakers shall conform to the detailed specifications as hereinafter specified. Number of branch circuits shall be as indicated on plans, specified or required by the number of branch circuits which will be connected to the panel.

Panelboards shall be of the unit type construction so designed that individual units can be removed from the front of the panel without disturbing adjacent units after first removing the trim.

Current carrying parts exclusive of circuit breakers shall be based on a maximum density of 1000 amp. per square inch.

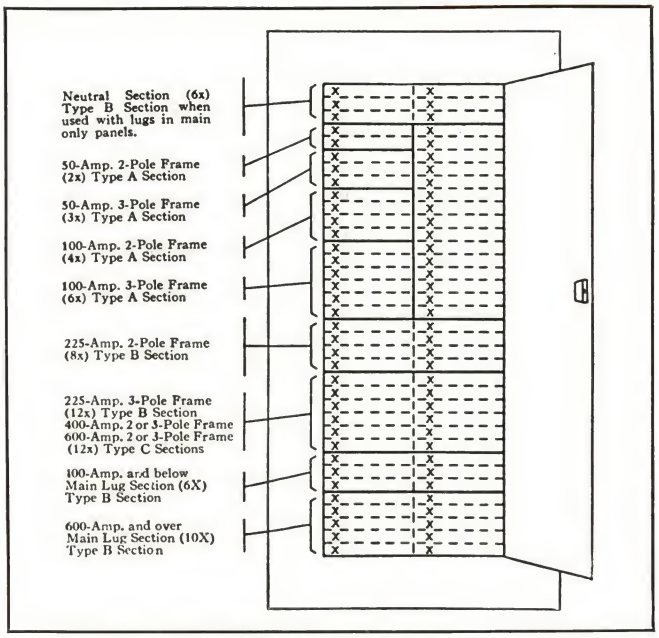
Panelboards shall have bus bars and branch circuits designed to suit the system and voltage.

### CONVERTIBLE OR HIGH CAPACITY DISTRIBUTION PANELBOARDS
### PANEL AND BOX DIMENSION DATA

All Inside Dimensions, in Inches

| Total "X" Panel Space (obtained from diagram above) | Panel Only Height, Inches | Main Bus Capacity | |
|---|---|---|---|
| | | 100, 200 and 400-Ampere Box Height Inches | 600, 800 and 1000-Ampere Box Height Inches |
| 24X | 16½ | 29½ | 35 |
| 25X to 32X | 22 | 35 | 40½ |
| 33X to 40X | 27½ | 40½ | 46 |
| 41X to 48X | 33 | 46 | 51½ |
| 49X to 56X | 38½ | 51½ | 57 |
| 57X to 64X | 44 | 57 | 62½ |
| 65X to 72X | 49½ | 62½ | 68 |
| 73X to 80X | 55 | 68 | 73½ |
| 81X to 88X | 60½ | 73½ | 79 |
| 89X to 96X | 66 | 79 | 84½ |

| LARGEST BREAKER IN THE PANEL | Box Width | Box Depth |
|---|---|---|
| FOR 50, 100 AND 225-AMPERE FRAME SIZE 2 AND 3-POLE BREAKERS | 30 Inches | 8 Inches |
| FOR 226 TO 400-AMPERE, 2 AND 3-POLE BREAKERS—With or Without 50, 100 and 225-Ampere Frame Sizes | 35 Inches | 10 Inches |
| FOR 401 TO 600-AMPERE, 2 AND 3-POLE BREAKERS—With or Without 50, 100, 225 or 400-Ampere Frame Sizes | 40 Inches | 10 Inches |




LAYOUT DIAGRAM USED WITH NOFUZE CONVERTIBLE DISTRIBUTION PANELBOARDS

Bus bars shall run up the center of the panel and shall have connected thereto the various branch circuits.

Unless otherwise specified, bus bars for each panelboard shall be equipped with main lugs only, the capacity of which shall be as required and shown on the plans. Where main protection is required automatic circuit breakers shall be used.

All current carrying parts exclusive of circuit breakers shall be of copper firmly fastened to the panelboard and arranged so as not to be displaced during installation.

Where several panelboards are fed by one feeder, solid through connections shall be made in the gutters as required.

Unless otherwise specified all panelboards shall be mounted in enclosing cabinets consisting of a code gauge, sheet steel box with trim and door. The box shall be manufactured from commercial galvanized sheet steel with corners lapped and riveted or by other approved methods. The trim shall be manufactured from one piece of full finish sheet steel (not galvanized).

Cabinets shall be of sufficient size to allow a gutter space of at least 4″ on all sides around lighting panelboards.

Trim shall be fastened to cabinet by means of approved adjustable clamps.

Doors and trims of enclosing cabinet for lighting panelboards shall be painted with two coats of paint, the first being a primary coat and the second a finish coat of olive green lacquer.

All trims shall have door equipped with chrome plated flush type combination lock and catch, two keys being supplied with each lock. Doors over 48″ in height shall be equipped with a chrome plated vault handle and 3 point catch with built-in lock using same key as flush locks and arranged to fasten door at top, bottom and center.

A directory holder with metal frame shall be furnished and installed upon the inside of the door of each cabinet.

All panelboards shall be built in accordance with the requirements of Underwriters' Laboratories specifications and recommendations of NEMA, and shall bear the Underwriters' Inspection Label.

Panelboards shall be as manufactured by the Westinghouse Electric & Manufacturing Company or approved equal.

## WHERE TO BUY

See nearest Westinghouse Office or agent jobber shown on back cover. For further information request Catalog 29-000.

Westinghouse

# NOFUZE LIGHTING BRANCH CIRCUIT PANELBOARDS

| Number of Circuits | Main Amps. | Types NA1B-3L and NA1B-3AB—Single Pole—Solid Neutral Mains 125/250 Volt, 3 Wire—Branches 125 Volt, 2 Wire | | | Types NA1B-4L and NA1B-4AB—Single Post—Solid Neutral Mains 125/250 Volt, 3-Phase, 4 Wire Branches 125 Volt, 2-Wire | | |
|---|---|---|---|---|---|---|---|
| | | Panel, box and front Cat. No. | Height of Box I. d., In. | Approx. Ship. Wt., Lb. | Panel, box and front Cat. No. | Height of Box I. d., In. | Approx. Ship. Wt., Lb. |
| **LUGS IN MAINS** | | | | | | | |
| 4 | 50 | NA1B04-3L050 | 16¼ | 75 | NA1B04-4L050 | 16¼ | 75 |
| 6 | 50 | NA1B06-3L050 | 19 | 86 | NA1B06-4L050 | 19 | 86 |
| 8 | 50 | NA1B08-3L050 | 19 | 95 | NA1B08-4L050 | 19 | 95 |
| 10 | 50 | NA1B10-3L050 | 21¾ | 101 | NA1B10-4L050 | 21¾ | 101 |
| 12 | 100 | NA1B12-3L100 | 21¾ | 105 | NA1B12-4L050 | 21¾ | 105 |
| 14 | 100 | NA1B14-3L100 | 24½ | 112 | NA1B14-4L050 | 24½ | 112 |
| 16 | 100 | NA1B16-3L100 | 24½ | 120 | NA1B16-4L100 | 24½ | 120 |
| 18 | 100 | NA1B18-3L100 | 27¼ | 127 | NA1B18-4L100 | 27¼ | 127 |
| 20 | 100 | NA1B20-3L100 | 27¼ | 135 | NA1B20-4L100 | 27¼ | 135 |
| 22 | 100 | NA1B22-3L100 | 30 | 142 | NA1B22-4L100 | 30 | 142 |
| 24 | 100 | NA1B24-3L100 | 30 | 150 | NA1B24-4L100 | 30 | 150 |
| 26 | 100 | NA1B26-3L100 | 32¾ | 155 | NA1B26-4L100 | 32¾ | 155 |
| 28 | 100 | NA1B28-3L100 | 32¾ | 160 | NA1B28-4L100 | 32¾ | 160 |
| 30 | 100 | NA1B30-3L100 | 35½ | 179 | NA1B30-4L100 | 35½ | 179 |
| 32 | 100 | NA1B32-3L100 | 35½ | 180 | NA1B32-4L100 | 35½ | 180 |
| 34 | 200 | NA1B34-3L200 | 38¼ | 200 | NA1B34-4L100 | 38¼ | 200 |
| 36 | 200 | NA1B36-3L200 | 38¼ | 215 | NA1B36-4L100 | 38¼ | 215 |
| 38 | 200 | NA1B38-3L200 | 41 | 222 | NA1B38-4L100 | 41 | 222 |
| 40 | 200 | NA1B40-3L200 | 41 | 230 | NA1B40-4L100 | 41 | 230 |
| 42 | 200 | NA1B42-3L200 | 43¾ | 238 | NA1B42-4L100 | 43¾ | 238 |
| **MAIN NOFUZE CIRCUIT BREAKER** | | | | | | | |
| 4 | 50 | NA1B04-3AB050 | 21¾ | 105 | NA1B04-4AB050 | 21¾ | 105 |
| 6 | 50 | NA1B06-3AB050 | 24½ | 112 | NA1B06-4AB050 | 24½ | 112 |
| 8 | 50 | NA1B08-3AB050 | 24½ | 125 | NA1B08-4AB050 | 24½ | 120 |
| 10 | 50 | NA1B10-3AB050 | 27¼ | 130 | NA1B10-4AB050 | 27¼ | 133 |
| 12 | 100 | NA1B12-3AB100 | 32¾ | 140 | NA1B12-4AB050 | 27¼ | 145 |
| 14 | 100 | NA1B14-3AB100 | 35½ | 145 | NA1B14-4AB050 | 30 | 150 |
| 16 | 100 | NA1B16-3AB100 | 35½ | 150 | NA1B16-4AB100 | 35½ | 155 |
| 18 | 100 | NA1B18-3AB100 | 38¼ | 160 | NA1B18-4AB100 | 38¼ | 165 |
| 20 | 100 | NA1B20-3AB100 | 38¼ | 170 | NA1B20-4AB100 | 38¼ | 175 |
| 22 | 100 | NA1B22-3AB100 | 41 | 182 | NA1B22-4AB100 | 41 | 187 |
| 24 | 100 | NA1B24-3AB100 | 41 | 195 | NA1B24-4AB100 | 41 | 200 |
| 26 | 100 | NA1B26-3AB100 | 43¾ | 202 | NA1B26-4AB100 | 43¾ | 207 |
| 28 | 100 | NA1B28-3AB100 | 43¾ | 210 | NA1B28-4AB100 | 43¾ | 215 |
| 30 | 100 | NA1B30-3AB100 | 46½ | 217 | NA1B30-4AB100 | 46½ | 222 |
| 32 | 100 | NA1B32-3AB100 | 46½ | 225 | NA1B32-4AB100 | 46½ | 230 |
| 34 | 200 | NA1B34-3AB200 | 54¾ | 255 | NA1B34-4AB100 | 49¼ | 243 |
| 36 | 200 | NA1B36-3AB200 | 54¾ | 275 | NA1B36-4AB100 | 49¼ | 255 |
| 38 | 200 | NA1B38-3AB200 | 57½ | 300 | NA1B38-4AB100 | 52 | 270 |
| 40 | 200 | NA1B40-3AB200 | 57½ | 325 | NA1B40-4AB100 | 52 | 285 |
| 42 | 200 | NA1B42-3AB200 | 60¼ | 350 | NA1B42-4AB100 | 54¾ | 300 |

| Number of Circuits | Main Amps. | Types A2B-2L and A2B-2AB—Double Pole Mains 125 Volt, 2 Wire—Branches 125 Volt, 2 Wire | | | Types NA2B-3L and NA2B-3AB, 3 Wire Mains, 3 Wire Branches—Mains 125/250 Volt, 3 Wire Solid Neutral Branches 125/250 Volt, 3 Wire Solid Neutral | | |
|---|---|---|---|---|---|---|---|
| | | Panel, box and front Cat. No. | Height of Box I. d., In. | Approx. Ship. Wt., Lb. | Panel, box and front Cat. No. | Height of Box I. d., In. | Approx. Ship. Wt., Lb. |
| **MAIN LUGS ONLY** | | | | | | | |
| 4 | 50 | A2B04-2L050 | 19 | 85 | NA2B04-3L050 | 19 | 87 |
| 6 | 100 | A2B06-2L100 | 21¾ | 95 | NA2B06-3L100 | 21¾ | 97 |
| 8 | 100 | A2B08-2L100 | 24½ | 115 | NA2B08-3L100 | 24½ | 117 |
| 10 | 100 | A2B10-2L100 | 27¼ | 125 | NA2B10-3L100 | 27¼ | 127 |
| 12 | 200 | A2B12-2L200 | 30 | 140 | NA2B12-3L200 | 30 | 142 |
| 14 | 200 | A2B14-2L200 | 32¾ | 155 | NA2B14-3L200 | 32¾ | 157 |
| 16 | 200 | A2B16-2L200 | 35½ | 170 | NA2B16-3L200 | 35½ | 172 |
| 18 | 200 | A2B18-2L200 | 38¼ | 200 | NA2B18-3L200 | 38¼ | 202 |
| 20 | 200 | A2B20-2L200 | 41 | 215 | NA2B20-3L200 | 41 | 217 |
| | | Same Dimensions for 250 Volt, 2 Wire A.C. Panels | | | | | |
| **MAIN NOFUZE CIRCUIT BREAKER** | | | | | | | |
| 4 | 50 | A2B04-2AB050 | 24½ | 115 | NA2B04-3AB050 | 24½ | 117 |
| 6 | 100 | A2B06-2AB100 | 32¾ | 130 | NA2B06-3AB100 | 32¾ | 132 |
| 8 | 100 | A2B08-2AB100 | 35½ | 145 | NA2B08-3AB100 | 35½ | 147 |
| 10 | 100 | A2B10-2AB100 | 38¼ | 160 | NA2B10-3AB100 | 38¼ | 162 |
| 12 | 200 | A2B12-2AB200 | 46½ | 215 | NA2B12-3AB200 | 46½ | 217 |
| 14 | 200 | A2B14-2AB200 | 49¼ | 230 | NA2B14-3AB200 | 49¼ | 232 |
| 16 | 200 | A2B16-2AB200 | 52 | 245 | NA2B16-3AB200 | 52 | 247 |
| 18 | 200 | A2B18-2AB200 | 54¾ | 260 | NA2B18-3AB200 | 54¾ | 262 |
| 20 | 200 | A2B20-2AB200 | 57½ | 275 | NA2B20-3AB200 | 57½ | 277 |

# LOW CAPACITY NOFUZE DISTRIBUTION PANELBOARDS

| Number of Circuits | Main Amps. | Types A3B-3HL and A3B-3HAB 250 Volt Service Mains 250 or 125 V., 3 Ph., 3 W. Branches 250 V., 3 Ph., 3 W. | | | Types A2B-3HL and A2B-3HAB 250 Volt Service Mains 250 or 125 V., 3 Ph., 3 W. Branches 250 V., 1 Ph., 2 W. | | | Types A2B-2HL and A2B-2HAB 250 V. a-c. or 125 V. d-c. service Mains 250 V. a-c. or 125 V. d-c., 2 Wire Branches 250 Volt, 2 Wire | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Panel box, and front Cat. No. | Height of Box I.d., In. | Approx. Ship. Wt. Lb. | Panel, box and front Cat. No. | Height of Box I.d, In. | Approx. Ship. Wt. Lb. | Panel, box and front Cat. No. | Height of Box I.d., In. | Approx. Ship. Wt. Lb. |
| | | | MAIN LUGS | | | | | | MAIN LUGS | |
| 4 | 50 | A3B04-3HL050 | 21¾ | 112 | A2B04-3HL050 | 19 | 102 | A2B04-2HL050 | 19 | 100 |
| 6 | 50 | A3B06-3HL050 | 27¼ | 134 | A2B06-3HL050 | 21¾ | 112 | A2B06-2HL050 | 21¾ | 110 |
| 8 | 50 | A3B08-3HL050 | 30 | 157 | A2B08-3HL050 | 24½ | 127 | A2B08-2HL050 | 24½ | 125 |
| 10 | 50 | A3B10-3HL050 | 35½ | 186 | A2B10-3HL050 | 27¼ | 142 | A2B10-2HL050 | 27¼ | 140 |
| 12 | 50 | A3B12-3HL050 | 38¼ | 215 | A2B12-3HL050 | 30 | 157 | A2B12-2HL050 | 30 | 155 |
| 14 | 50 | A3B14-3HL050 | 43¾ | 242 | A2B14-3HL050 | 32¾ | 167 | A2B14-2HL050 | 32¾ | 165 |
| 16 | 50 | | | | A2B16-3HL050 | 35½ | 187 | A2B16-2HL050 | 35½ | 185 |
| 18 | 50 | | | | A2B18-3HL050 | 38¼ | 212 | A2B18-2HL050 | 38¼ | 210 |
| 20 | 50 | | | | A2B20-3HL050 | 41 | 224 | A2B20-2HL050 | 41 | 222 |
| 4 | 100 | A3B04-3HL100 | 21¾ | 113 | A2B04-3HL100 | 19 | 103 | A2B04-2HL100 | 19 | 101 |
| 6 | 100 | A3B06-3HL100 | 27¼ | 135 | A2B06-3HL100 | 21¾ | 113 | A2B06-2HL100 | 21¾ | 111 |
| 8 | 100 | A3B08-3HL100 | 30 | 158 | A2B08-3HL100 | 24½ | 128 | A2B08-2HL100 | 24½ | 126 |
| 10 | 100 | A3B10-3HL100 | 35½ | 188 | A2B10-3HL100 | 27¼ | 143 | A2B10-2HL100 | 27¼ | 141 |
| 12 | 100 | A2B12-3HL100 | 38¼ | 217 | A2B12-3HL100 | 30 | 158 | A2B12-2HL100 | 30 | 156 |
| 14 | 100 | A3B14-3HL100 | 43¾ | 242 | A2B14-3HL100 | 32¾ | 169 | A2B14-2HL100 | 32¾ | 167 |
| 16 | 100 | | | | A2B16-3HL100 | 35½ | 189 | A2B16-2HL100 | 35½ | 187 |
| 18 | 100 | | | | A2B18-3HL100 | 38¼ | 214 | A2B18-2HL100 | 38¼ | 212 |
| 20 | 100 | | | | A2B20-3HL100 | 41 | 226 | A2B20-2HL100 | 41 | 224 |
| 4 | 225 | A3B04-3HL225 | 24½ | 114 | A2B04-3HL225 | 21¾ | 104 | A2B04-2HL225 | 21¾ | 102 |
| 6 | 225 | A3B06-3HL225 | 30 | 136 | A2B06-3HL225 | 24½ | 114 | A2B06-2HL225 | 24½ | 112 |
| 8 | 225 | A3B08-3HL225 | 32¾ | 159 | A2B08-3HL225 | 27¼ | 129 | A2B08-2HL225 | 27¼ | 122 |
| 10 | 225 | A3B10-3HL225 | 38¼ | 189 | A2B10-3HL225 | 30 | 144 | A2B10-2HL225 | 30 | 142 |
| 12 | 225 | A3B12-3HL225 | 41 | 218 | A2B12-3HL225 | 32¾ | 159 | A2B12-2HL225 | 32¾ | 157 |
| 14 | 225 | A3B14-3HL225 | 46½ | 245 | A2B14-3HL225 | 35½ | 170 | A2B14-2HL225 | 35½ | 168 |
| 16 | 225 | | | | A2B16-3HL225 | 38¼ | 190 | A2B16-2HL225 | 38¼ | 188 |
| 18 | 225 | | | | A2B18-3HL225 | 41 | 215 | A2B18-2HL225 | 41 | 213 |
| 20 | 225 | | | | A2B20-3HL225 | 43¾ | 227 | A2B20-2HL225 | 43¾ | 225 |
| 4 | 400 | A3B04-3HL400 | 27¼ | 116 | A2B04-3HL400 | 24½ | 106 | A2B04-2HL400 | 24½ | 104 |
| 6 | 400 | A3B06-3HL400 | 32¾ | 138 | A2B06-3HL400 | 27¼ | 116 | A2B06-2HL400 | 27¼ | 114 |
| 8 | 400 | A3B08-3HL400 | 35½ | 161 | A2B08-3HL400 | 30 | 131 | A2B08-2HL400 | 30 | 129 |
| 10 | 400 | A3B10-3HL400 | 41 | 192 | A2B10-3HL400 | 32¾ | 146 | A2B10-2HL400 | 32¾ | 144 |
| 12 | 400 | A3B12-3HL400 | 43¾ | 221 | A2B12-3HL400 | 35½ | 163 | A2B12-2HL400 | 35½ | 161 |
| 14 | 400 | A3B14-3HL400 | 49¼ | 246 | A2B14-3HL400 | 38¼ | 173 | A2B14-2HL400 | 38¼ | 171 |
| 16 | 400 | | | | A2B16-3HL400 | 41 | 193 | A2B16-2HL400 | 41 | 191 |
| 18 | 400 | | | | A2B18-3HL400 | 43¾ | 218 | A2B18-2HL400 | 43¾ | 216 |
| 20 | 400 | | | | A2B20-3HL400 | 46½ | 230 | A2B20-2HL400 | 46½ | 228 |
| | | | MAIN BREAKER | | | | | | MAIN BREAKER | |
| 4 | 50 | A3B04-3HAB050 | 27¼ | 150 | A2B04-3HAB050 | 24½ | 144 | A2B04-2HAB050 | 24½ | 142 |
| 6 | 50 | A3B06-3HAB050 | 32¾ | 168 | A2B06-3HAB050 | 27¼ | 162 | A2B06-2HAB050 | 27¼ | 161 |
| 8 | 50 | A3B08-3HAB050 | 35½ | 195 | A2B08-3HAB050 | 30 | 180 | A2B08-2HAB050 | 30 | 178 |
| 10 | 50 | A3B10-3HAB050 | 41 | 220 | A2B10-3HAB050 | 32¾ | 198 | A2B10-2HAB050 | 32¾ | 196 |
| 12 | 50 | A3B12-3HAB050 | 43¾ | 255 | A2B12-3HAB050 | 35½ | 216 | A2B12-2HAB050 | 35½ | 214 |
| 14 | 50 | A3B14-3HAB050 | 49¼ | 282 | A2B14-3HAB050 | 38¼ | 234 | A2B14-2HAB050 | 38¼ | 232 |
| 16 | 50 | | | | A2B16-3HAB050 | 41 | 252 | A2B16-2HAB050 | 41 | 250 |
| 18 | 50 | | | | A2B18-3HAB050 | 43¾ | 270 | A2B18-2HAB050 | 43¾ | 268 |
| 20 | 50 | | | | A2B20-3HAB050 | 46½ | 298 | A2B20-2HAB050 | 46½ | 296 |
| 4 | 50 | A3B04-3HAB100 | 32¾ | 157 | A2B04-3HAB100 | 30 | 146 | A2B04-2HAB100 | 30 | 144 |
| 6 | 50 | A3B06-3HAB100 | 38¼ | 175 | A2B06-3HAB100 | 32¾ | 164 | A2B06-2HAB100 | 32¾ | 162 |
| 8 | 50 | A3B08-3HAB100 | 41 | 202 | A2B08-3HAB100 | 35½ | 182 | A2B08-2HAB100 | 35½ | 180 |
| 10 | 50 | A3B10-3HAB100 | 46½ | 227 | A2B10-3HAB100 | 38¼ | 200 | A2B10-2HAB100 | 38¼ | 198 |
| 12 | 50 | A3B12-3HAB100 | 49¼ | 262 | A2B12-3HAB100 | 41 | 218 | A2B12-2HAB100 | 41 | 216 |
| 14 | 50 | A3B14-3HAB100 | 54¾ | 289 | A2B14-3HAB100 | 43¾ | 236 | A2B14-2HAB100 | 43¾ | 234 |
| 16 | 50 | | | | A2B16-3HAB100 | 46½ | 254 | A2B16-2HAB100 | 46½ | 252 |
| 18 | 50 | | | | A2B18-3HAB100 | 49¼ | 272 | A2B18-2HAB100 | 49¼ | 270 |
| 20 | 50 | | | | A2B20-3HAB100 | 52 | 300 | A2B20-2HAB100 | 52 | 298 |
| 4 | 225 | A3B04-3HAB225 | 41 | 175 | A2B04-3HAB225 | 38¼ | 169 | A2B04-2HAB225 | 38¼ | 167 |
| 6 | 225 | A3B06-3HAB225 | 46½ | 193 | A2B06-3HAB225 | 41 | 187 | A2B06-2HAB225 | 41 | 185 |
| 8 | 225 | A3B08-3HAB225 | 49¼ | 220 | A2B08-3HAB225 | 43¾ | 205 | A2B08-2HAB225 | 43¾ | 203 |
| 10 | 225 | A3B10-3HAB225 | 54¾ | 245 | A2B10-3HAB225 | 46½ | 223 | A2B10-2HAB225 | 46½ | 221 |
| 12 | 225 | A3B12-3HAB225 | 57½ | 280 | A2B12-3HAB225 | 49¼ | 231 | A2B12-2HAB225 | 49¼ | 229 |
| 14 | 225 | A3B14-3HAB225 | 63 | 307 | A2B14-3HAB225 | 52 | 259 | A2B14-2HAB225 | 52 | 257 |
| 16 | 225 | | | | A2B16-3HAB225 | 54¾ | 277 | A2B16-2HAB225 | 54¾ | 275 |
| 18 | 225 | | | | A2B18-3HAB225 | 57½ | 295 | A2B18-2HAB225 | 57½ | 293 |
| 20 | 225 | | | | A2B20-3HAB225 | 60¼ | 323 | A2B20-2HAB225 | 60¼ | 321 |

## INCREASE IN BOX HEIGHTS FOR INCREASED MAIN BUS CAPACITY

### FOR LUGS ONLY IN THE MAINS

| Type of Panelboard | From 50 Amperes to 100 Amperes | From 50 Amperes to 200 Amperes | From 100 Amperes to 200 Amperes |
|---|---|---|---|
| NA1B-3L | None | None | None |
| A2B-2L | None | None | None |
| NA2B-3L | None | None | None |
| NA1B-4L | None | None | None |
| A2B-3L | None | None | None |

### FOR CIRCUIT BREAKER IN MAINS

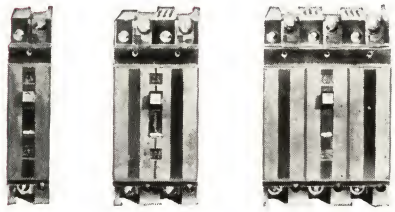
| Type of Panelboard | From 50 Amperes to 100 Amperes | From 50 Amperes to 200 Amperes | From 100 Amperes to 200 Amperes |
|---|---|---|---|
| NA1B-3AB | 5½″ | 11″ | 5½″ |
| A2B-2AB | 5½″ | 11″ | 5½″ |
| NA2B-3AB | 5½″ | 11″ | 5½″ |
| NA1B-4AB | 5½″ | 11″ | 5½″ |
| A2B-3AB | 5½″ | 11″ | 5½″ |

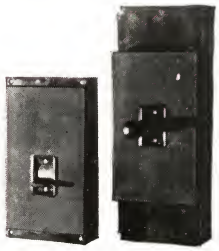
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# TYPICAL SPECIFICATIONS FOR AUTOMATIC CIRCUIT BREAKERS

## TYPICAL SPECIFICATION A

De-ion Circuit Breakers 600 Amperes and Below





"AB" DE-ION SWITCHBOARD AND PANELBOARD BREAKERS 600 AMPERES AND BELOW

Except for circuit breakers in lighting panelboard branch circuits which shall be single pole calibrated at 15 ampere, automatic circuit breakers shall be 2 pole or 3 pole, with trip elements calibrated for 15 to 600 amperes, in wire size capacities as shown on plans. Multi-pole breakers shall be so designed that all poles will break simultaneously and all poles shall be effectively barried from one another. All breakers shall be approved by the Underwriters for at least 250 volt a-c. per pole.

Breakers of 50 ampere frame capacity or less shall be unit type with permanent trip elements. Breakers of 70 to 600 ampere capacity shall have removable trip elements for ready interchangeability.

Pole spacing on all 50-A frame breakers shall be uniform. Pole spacing on 100 to 600 ampere frames shall be uniform and twice that of the 50 ampere frame.

Automatic tripping of 50 ampere frame breakers is to be secured by means of a bimetallic thermal element on each pole engaging a common trip. All breakers above the 50 ampere frame size shall have a similar trip arrangement supplemented by an instantaneous trip on current values not less than 5 times normal and above. The trip of elements shall insure constant calibration and be capable of withstanding excessive short circuit conditions without injury.

The individual tripping elements shall be enclosed and sealed in units of approved molded composition to eliminate tampering or unauthorized changes in calibration.

The circuit breakers shall have inverse-time-limit characteristics, so that tripping will be prevented on momentary overloads but will occur before dangerous values are reached.

The breakers shall be operable in any position and removable from the front of panelboard without disturbing adjacent units.

The mechanism shall trip free from the handle so that contacts cannot be held closed against short circuit or abnormal overloads.

The breaker shall have a quick make and quick-break toggle mechanism whether actuated automatically or manually. Contacts shall be non-welding under operating conditions. The stationary contacts shall be an integral part of the breakers.

Automatic tripping shall be positively indicated from the manual "on" and "off" by the position of the handle.

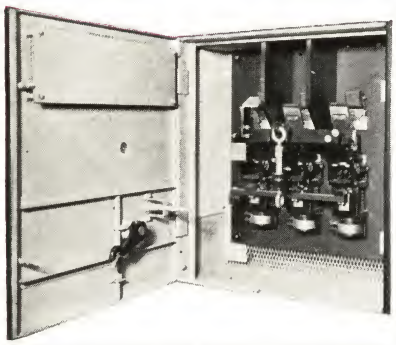
Current-carrying parts, except thermal elements, if of copper or copper alloy, shall not rise in temperature in excess of 30 deg. C. while carrying rated current at rated frequency.

All individual breakers shall bear the Underwriters' Laboratories Inspection Label.

## TYPICAL SPECIFICATION B

AIR CIRCUIT BREAKERS ABOVE 600 AMPERES

Air Circuit Breakers shall be rated (select rating).
480 Volts A.C. or 250 Volts D.C. without Barriers
650 Volts A.C. or 750 Volts D.C. with Barriers
Breakers shall have interrupting capacities of: (specify)
20,000 amps.
40,000 amps.
60,000 amps.
80,000 amps.



SWITCHBOARD AIR CIRCUIT BREAKERS ABOVE 600 AMPERES

Amp. Capacities and number of poles shall be as indicated on the drawings or as specified herein.

Silver shall be furnished on the main contact surfaces. All main conductors shall be of high conductivity copper. Arcing and auxiliary contacts shall provide adequate protection to the main contacts when opening current.

The breakers shall be of the type known as "trip free" which cannot be held closed on overload. The latch tripping device shall have a preliminary movement so that the tripping point will be independent of latch friction.

All breaker parts shall be easily accessible for inspection and repairs. The breaker frame will be of sturdy construction, yet provide accessibility to both the upper and lower main contacts, and working parts. Means shall be provided for reducing the shock incident to breaker opening and also for preventing excessive rebound of the mechanism or contacts, once they have opened.

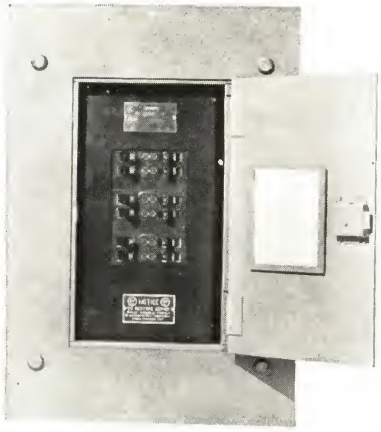
The breaker mechanism shall conform with N.E.M.A. Standards for live frame construction, and shall be furnished with insulated handles. The mechanism shall be so designed that equal pressures will be maintained on both the upper and lower contacts, when the breaker is closed.

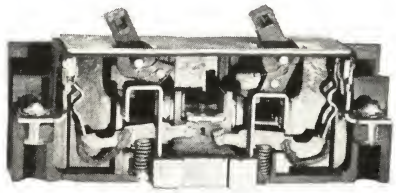
Circuit breakers shall be provided with

| | |
|---|---|
| SELECT REQUIREMENTS | Series Overload Trip attachment (1, 2 or 3)<br>Inverse Time Limit attachment<br>Shunt Trip attachment (Give control voltage)<br>Under Voltage attachment<br>Reverse Current attachment<br>Auxiliary Switches (A and B stages required)<br>Bell Alarm Switch<br>Field Discharge Switch<br>and arranged for |
| SELECT DESIRED METHOD OF OPERATION | Manual<br>D.C. Solenoid (..... Volts)<br>A.C. Rectox Solenoid operation |

The millivolt drop shall not exceed 4 millivolts across each contact at rated current. No circuit breaker shall exceed a temperature rise of 30° C. on the contacts, when carrying its rated load at 40° C. ambient, in accordance with N.E.M.A. Standards.

# MULTI-BREAKER LIGHTING PANELBOARD
# SAFETY TYPE NM1B





## APPLICATION

The type NM1B Nofuze Panelboard has been designed to meet the need of a low priced circuit breaker type lighting panelboard. It can be used where the service is A-C. and not over 115 volts to ground. It meets all Underwriters' requirements.

## FEATURES

CIRCUIT BREAKER UNITS—The circuit breaker units used are the same as those used in the latest Nofuze load centers and have four single-pole breakers mounted in a common unit. The breakers are slow-make and slow-break when actuated manually although automatic tripping is quick-break.

PANELBOARD CONSTRUCTION—Due to the type of construction, the panelboard is not quite as flexible as to circuit arrangement as the higher priced panels, but it is still of a design that almost any normal lighting application can be taken care of including some cases of light-duty power circuits.

The standard panel is furnished with main lugs only. Service can be arranged for 3/2-wire single-phase or 3-phase 4-wire. While catalog numbers cover branch circuits calibrated at 15 amperes; 20, 25, 35, and 50-ampere calibrations can be furnished if specifically requested.

The design provides for branch circuits from 4 to 40 single-pole or 18 double-pole. However, in order to meet heating limitations certain requirements must be adhered to in the layout and construction of the assembly. The established limitation is a maximum of 100 amperes total capacity in a single unit. Furthermore, not more than two 50-ampere circuits can be supplied per unit. It is to be noted, however, that with maximum circuit and main bus capacities, this panelboard is suitable for use at the high demand factor of 60 to 70 per cent which is better than that normally obtained without undue heating in other than circuit breaker types of panel-boards. This should be considered when computing circuit capacities.

The boxes are of the same high-grade construction as employed for other lines of Westinghouse panelboards.

## HOW TO SELECT

First determine the number, size and type of branch circuits and mains. Branch breaker ratings should be selected from the table on page 37 to protect the size wire used. Then select the proper panel from Westinghouse Catalog 29–000.

Unless otherwise specified, boxes will be furnished with standard knockouts, but in the event users desire to drill their own boxes or require special drillings either will be furnished at no extra charge provided the information accompanies the order and that where special drillings are required no changes in box dimensions are necessary in order to place the knockouts.

Under no conditions will knockouts be furnished in the back of the boxes nor will special size cabinets or cabinets to include other apparatus than listed be manufactured.

This is necessary because of the fact that the low cost of these panelboards can only be maintained by manufacturing a standardized product.

## DIMENSIONS

Width of all boxes is approximately 15″, depth 4½″ inside dimensions. Box heights for the various panels are given in Catalog 29-000.

## TYPICAL SPECIFICATIONS

Lighting panelboards shall be of the safety Nofuze automatic Multi-Breaker type.

The branch circuit breakers shall be single pole and shall be rated 115 volt a-c. with trip elements calibrated for 15-20-25-35 or 50 amperes as shown on plans. Automatic release is to be secured through action of a bimetallic thermal trip element engaging the releasing latch of the mechanism.

The circuit breakers shall have inverse-time-limit characteristics and shall be trip free on overloads.

The breakers shall be in groups of 4 poles and shall be enclosed and sealed in units of approved moulded composition to eliminate tampering or unauthorized change in calibration.

They shall be interchangeable and operable in any position and removable from the front of the panelboard without disturbing adjacent units. Each branch circuit shall be distinctly numbered.

All panelboards shall be arranged with main terminal lugs at bottom.

The assembled panelboard shall be not over 7 inches wide and fastened to the cabinet by adjustable supports to provide for proper alignment.

Boxes shall be constructed of code gauge galvanized sheet steel. They shall be provided with 4-inch wiring gutters at top, bottom and sides.

Fronts shall be of code gauge stretcher leveled sheet and steel with trim of proper width. The door shall be fastened to the trim with concealed hinges and provided with flush type chrome-plated combination latch and lock. The front shall have a priming coat of paint over which shall be supplied a finished coat of green duco.

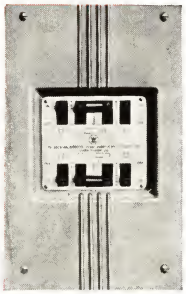
The panelboards and cabinets shall conform to the requirements of the Underwriters' Laboratories.

## WHERE TO BUY

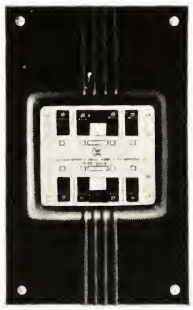
See nearest Westinghouse Office or agent jobber listed on back cover. For further information request Catalog 29-000.

Westinghouse

# NOFUZE LOAD CENTER



FLUSH TYPE FRONT



SURFACE TYPE FRONT



SWING OUT INTERIOR MAKES INSTALLATION EASY

## APPLICATION

The new Westinghouse Nofuze Load Center is an ideal form of circuit protection for residences, small stores, farm buildings and elsewhere for the control of range, water heater, lighting and appliance branch circuits. It has been inspected and approved by the Underwriters' Laboratories, Inc., and bears their label.

## FEATURES

ELIMINATES FUSES AND SWITCHES—Westinghouse Nofuze Load Centers completely eliminate the need for replacing fuses when a short circuit or overload endangers the electrical wiring in the home. Instead of fuses, the Westinghouse Nofuze Load Center employs small circuit breakers which automatically trip open under conditions which would cause a fuse to "blow". With Nofuse circuit protection you have merely to remove the cause of the "short" or overload, then flip the breaker handle first to "OFF", then to "ON"—much as you turn the lights on or off with a wall switch. There is nothing to renew or replace. Anyone can easily and safely restore service with a Westinghouse Nofuze Load Center.

LOW COST—Westinghouse Nofuze load center prices are little if any more than the old type switch and fuse.

SAFETY—Factory seal prevents exposure of live parts to unskilled fingers.

POSITIVE PROTECTION FOR WIRING SYSTEM—Factory calibration cannot be changed since the construction is tamper-proof. The breaker handle cannot be held closed against a continuous short circuit or dangerous overload.

CONVENIENCE—Because of its small size and neat appearance you can install the Nofuze Load Center in a hallway or similar location where it will be most convenient to restore service "when the lights go out". You will not even need to light a match or candle. By merely running your fingers over the Nofuze breaker handles in the dark you can immediately locate the handle which has tripped. A flip with your finger and the lights come on.

## HOW TO SELECT

Before attempting to select a load center, determine which type is required. The grounded neutral load center is used primarily as service entrance equipment and is limited to six branch circuits when a main switch is not used (refer to paragraph 2351-A of N.E.C. code). The insulated neutral type is generally required when the installation is made at some point other than the point of entrance of the service conductors.

This load center can be obtained up to 16 single poles.

After the type has been decided, determine the number of circuits required, keeping in mind that each 115/230-volt or 230-volt circuit requires a two-pole breaker (2 poles) and that each 115-volt circuit requires a single-pole breaker (1 pole). 2-pole breakers are actually two single-pole breakers with handles tied together mechanically.

## DIMENSIONS

Outline dimensions of load center boxes are shown in inches on the drawing.

## TYPICAL SPECIFICATION

Load Center equipment shall be of the NOFUZE MULTI-BREAKER LOAD CENTER type. It shall include:

....branch circuits.....ampere single pole (2 wire S/N) 115 volt for lighting

....branch circuits.....ampere single pole (2 wire S/N) 115 volt for appliances

....branch circuits.....ampere two pole (3 wire S/N) 115/230 volt for ranges

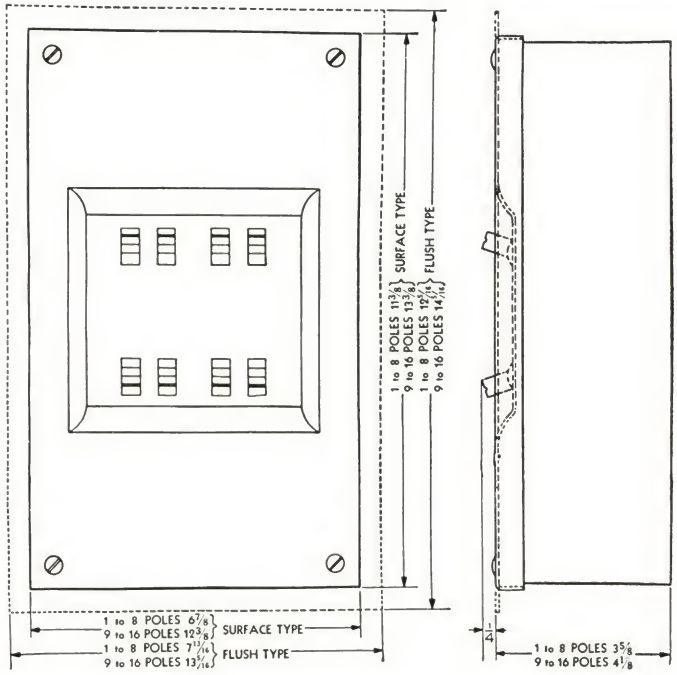
....branch circuits.....ampere two pole (3 wire S/N) 115/230 volt for appliances

The box shall be equipped with a swing-out interior and adapted to (flush) (surface) mounting. Solid mains shall be supplied for (2 wire 115 volt a.c.) (3 wire 115/230 volt a.c.) single phase or 3 phase 4 wire, with.....ampere terminals. When application is for service entrance work, the load center shall bear Underwriters' Service Equipment Label.

## WHERE TO BUY

See your nearest Westinghouse agent jobber. See list on the inside back cover.

For complete information on Nofuze Load Centers request a copy of Catalog 29-300.




OUTLINE DIMENSIONS FOR BOTH 8 AND 16-POLE LOAD CENTERS

Westinghouse

# ENCLOSED "DE-ION" NOFUZE CIRCUIT BREAKERS TYPE ABI




TYPE ABI 100 AMP. INDUSTRIAL BREAKER. SURFACE-MOUNTING DUST-RESISTING ENCLOSURE, 250 VOLTS D-C., 600 VOLTS A-C. MAX.






ABI LIGHT DUTY BREAKER WITH COVER REMOVED, 125/250 VOLTS



TYPE ABI BREAKER IN CAST ALUMINUM WEATHER-RESISTING ENCLOSURE, 250 VOLTS D-C., 600 VOLTS A-C. MAX.



EXPLOSION-RESISTING 50 AMPERE, TYPE ABI "NOFUZE" BREAKER, 250 VOLTS D-C., 600 VOLTS A-C. MAX.

## APPLICATION

ABI Circuit Breakers are ideally adapted for the protection of electrical circuits. Ratings are available in single, double and triple pole from 15 amperes up to 50 amperes, 125/250 volts a-c. or d-c.; 15 amperes up to and including 600 amperes, 2 and 3 pole rated 230 volts a-c., 125/250 volts d-c., 250 volts d-c. and 600 volts a-c. Enclosures for practically all applications are available; sheet steel, sheet steel dust-resisting, cast iron or aluminum weather-proof and explosion-proof.

## FEATURES

FUSELESS CIRCUIT PROTECTION. Operation is of the thermal principle and tripping is accomplished by bimetals. There are no elements to renew after circuit interruption.

TIME DELAY TRIPPING. The inverse-time-limit feature of the bi-metallic trip elements prevent unnecessary tripping on momentary overloads, but provides instantaneous tripping on heavy short circuits.

TRIP FREE HANDLE. It is impossible to hold the circuit breaker closed against abnormal overloads or short circuits.

TAMPER PROOF. The tripping mechanisms are sealed to prevent unauthorized changing of calibration.

## HOW TO SELECT

Breakers are calibrated to conform to commercial wire sizes. The proper breaker should be selected from the table on page 37

1—If circuits are to feed motors, the proper rating of branch circuit breaker should be selected from the table page 36.

## DIMENSIONS AND RATINGS

See Westinghouse Catalog 29-500.

## TYPICAL SPECIFICATIONS

Enclosed circuit breakers shall be of the De-ion thermal type either 2 or 3 pole, 250 volts, d-c. or 600 volts, a-c. with trip elements calibrated from 15 to 600 amperes as indicated on the plans or specified herein.

THE ENCLOSURE shall be constructed of code gauge steel protected with a baked black japan finish, Cast Aluminum Water and Dust-Tight, Cast Iron Water and Dust-Tight or Cast Iron Explosion Resisting as indicated on plans or specified herein. The enclosure shall have a front-operated handle with a bracket that permits the use of three padlocks for locking in the "off" position. The code gauge steel enclosure is to be gasketed to make it dust-resisting and the cover interlocked so that it can be opened only when the breaker is in the "off" position. The enclosure shall be equipped with a 2-way centering cover latch with knockouts for padlocking or sealing the cover in place.

AUTOMATIC CIRCUIT BREAKER (See page 16 Spec. A for detailed circuit breaker specifications.)

## WHERE TO BUY

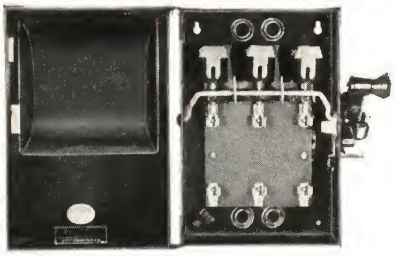
See your nearest Westinghouse district office or agent jobber. For complete information on ABI circuit breakers request a copy of Catalog Section 29-500. Addresses of local offices are given on the back cover.



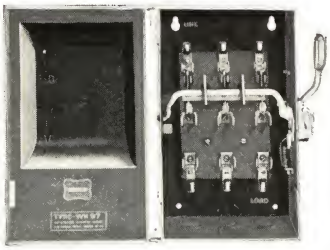
WESTINGHOUSE ELECTRIC

Westinghouse

# SAFETY SWITCHES



60 AMP. TYPE A, QUICK-MAKE AND QUICK-BREAK INTERLOCKING SAFETY SWITCH, 575 VOLTS, EQUIPPED WITH DE-ION ARC QUENCHERS



60 AMP. TYPE C, QUICK-MAKE AND QUICK-BREAK SAFETY SWITCH, 250 VOLTS



100 AMPERE TYPE D SLOW MAKE, QUICK BREAK SAFETY SWITCH, 250 VOLTS

## APPLICATION

Used for the protection of motor and feeder circuits and as motor disconnects. Available in standard ratings from 30 to 1200 amperes (NEMA sizes), 125/250 volts a-c. or d-c, to 600 volts d-c., 575 volts a-c. fusible and non-fusible.

## FEATURES

DIAMOND POINTED BREAK JAW and EXTENDED BLADE construction, used on all switches, carries the arcing outside the contact area.

FRONT REMOVABLE one-piece copper parts are used.

"DE-ION" ARC QUENCHER. The Westinghouse "De-ion" arc quencher is used on all 575 and 600 volt switches. It consists of a series of cadmium plated, slotted steel plates so mounted that the blades of the switch must pass through the slot when the switches are being opened. The arc is divided, cooled and deionized by these plates, causing it to be extinguished instantly.

## HOW TO SELECT

Type A switches are quick make and quick break with interlocked door; Type C switches are quick make and quick break; Type D are quick break. A switch of the rating desired and type required by the application should be selected.

## DIMENSIONS

See Westinghouse Catalog 29-500.

## TYPICAL SPECIFICATIONS

Safety switches shall be of type (A), (C), (D) construction, and shall be fusible or non-fusible as required with ratings as indicated on the plans or as specified herein.

Type "A" Switches shall be Westinghouse or equivalent, externally operated with a quick make and quick break mechanism, and shall be provided with a mechanical interlock to prevent the door being opened unless switch is in the "off" position.

Type "C" Switches shall be Westinghouse or equivalent externally operated with a quick make and quick break mechanism.

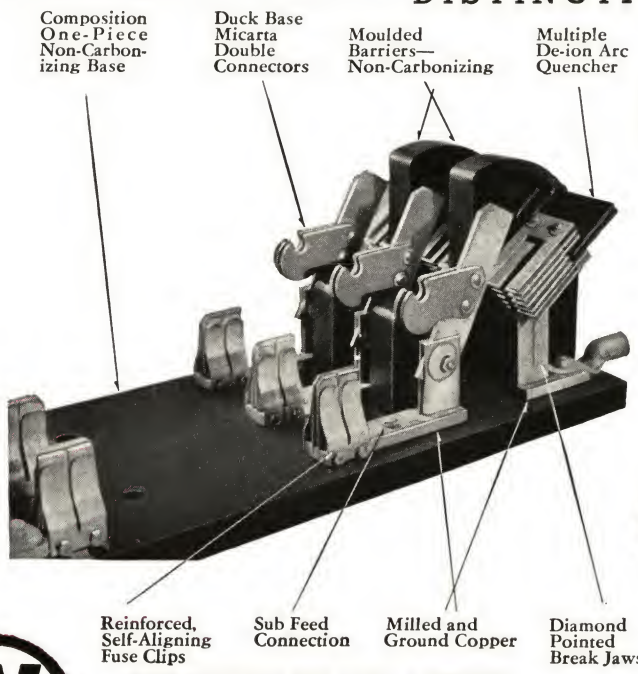
Type "D" Switches shall be Westinghouse or equivalent externally operated with a quick-break mechanism.

All Safety Switches shall conform with the requirements and have the approval of Underwriters' Laboratories, Inc.

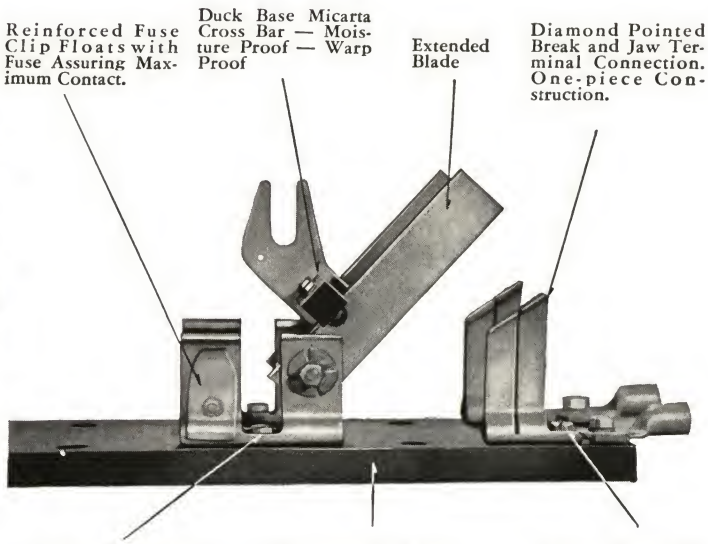
## WHERE TO BUY

See your nearest Westinghouse Agent Jobber listed on back cover. For complete information request catalog 29-500.

## DISTINCTIVE FEATURES




BASE ASSEMBLY FOR TYPE A SWITCH, 400 AMPERES, 575 VOLTS




BASE ASSEMBLY FOR TYPE A SWITCH, 100 AMPERES 250 VOLTS

# MOTORS DESIGNED TO MEET SPECIAL CONDITIONS

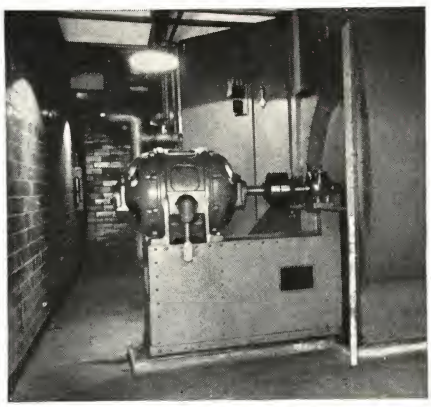
## QUIET OPERATION

Westinghouse Quiet Operating Motors are specially designed and tested under load conditions in a sound-proof room, insuring a high standard of quietness.

Standard motors, though sufficiently quiet for the usual installation, may not be quiet enough for certain building applications. By using specially designed quiet operating motors the noise can be reduced to such an extent that their operation, when properly installed, will be entirely satisfactory for such installations.

Westinghouse Quiet Operating Motors bear a special nameplate. This is your assurance that these motors are designed and tested for the requirements of quiet service.

Where quiet operating motors are necessary, specifications should definitely call for "Westinghouse Quiet Operating Motors, with *nameplates designating them as such.*" Terms such as "noiseless motors" or "commercially quiet motors" should not be used.

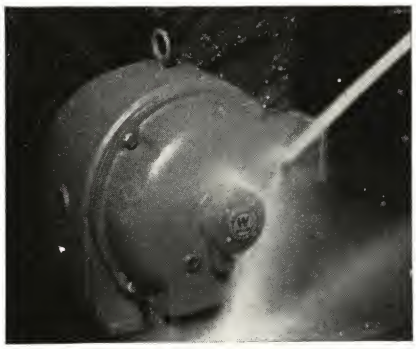


QUIET OPERATING TYPE CS MOTOR DRIVING A FAN

## SPLASH-PROOF

A complete line of Westinghouse motors and control, fully protected against splashing or dripping water, may be used indoors where the hose is used freely for cleaning or they may be installed outdoors with no additional protection.

Liquids or solids, striking the new Westinghouse a-c. motors, cannot enter. The all-cast-iron construction of frame, brackets and conduit boxes of these motors provides maximum protection against rust and corrosion. No sheet steel used. Effective baffles, cast as part of the end brackets, prevent the entrance of water directed at the base of the motors. Their cast-iron conduit box, too, is thoroughly protected. Liberal bottom openings provide unrestricted ventilation. Even distribution of cooling air by means of directed ventilation prevents hot-spots in the windings. Westinghouse *"Tuffernell"* Dual Insulation fully protects the windings. Complete details of these thoroughly protected motors and control are obtainable from your nearest Westinghouse Representative.



WESTINGHOUSE DRIP-PROOF SPLASH-PROOF MOTOR

## VERTICAL PUMP MOTORS

"Bullet Type" Vertical Hollow Shaft Squirrel-Cage Motors are especially designed for deep well pumping service. They are of weather-proof construction —the solid cast frame with weather-proof hood protects the motor from rain or dripping liquids. Water cannot drip in or on to the windings which have *"Tuffernell"* Insulation and are given the dual protection treatment. They are protected against power reversals by a jaw type clutch which automatically disengages should the motor accidentally operate in the reverse direction. Supplied in all commercial speeds, frequencies and voltages.



WESTINGHOUSE BULLET TYPE HOLLOW SHAFT PUMP MOTOR

## EXPLOSION-RESISTING

Westinghouse explosion-resisting type CS squirrel-cage motors have been designed for use in Class 1, Group D Hazardous Locations. They are safe to use in hazardous atmospheres containing gasoline or other petroleum vapors, or similar explosive materials. Their construction is such that live flame cannot escape to the outside of the motor should an explosion occur in the inside.

These motors have Dual Ventilation which is very effective in keeping them thoroughly cooled. This is accomplished by having heated air within the motor circulated through ducts which lie adjacent to ducts carrying cold air. These two sets of ducts are cast in the frame—one set being connected to the inside of the motor and the other set connected to the outside air causing a rapid transfer of heat from the inside to the outside, similar to a heat exchanger. These motors are more uniformly cooled and result in longer life to the windings.

These motors may be used indoors or out, for any constant speed drives such as pumps, blowers, compressors, etc. Made in ratings from ½ to 200 hp., for all commercial voltages and frequencies. Equipped with ball bearings. 55° C. rise.

The Explosion-Resisting Linestarter with its simple push button operation is recommended for use with these motors.

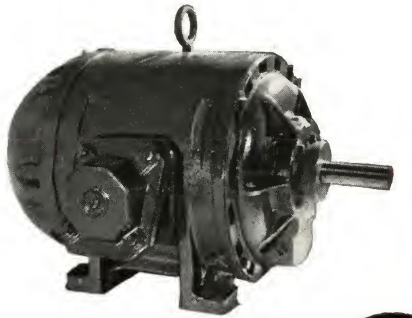
## TOTALLY-ENCLOSED FAN-COOLED MOTORS

These motors are used indoors or outdoors where conditions of abrasive or conducting dust are severe. The primary laminations, windings and all electrical parts are tightly sealed within the rigid cast frame.

The construction of these standard fan-cooled motors is the same as Explosion-Resisting Motors described above except that they have a steel conduit box and steel fan guard. These fan-cooled motors may be supplied for hazardous dusty locations in which case they will be equipped with Underwriter's label indicating they have been listed for Class II Group G locations.

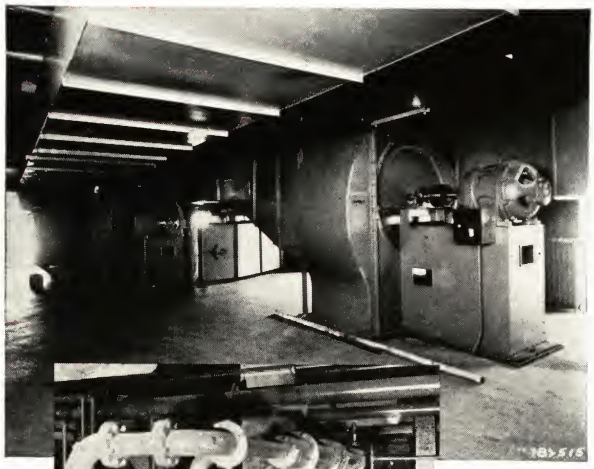


WESTINGHOUSE FAN-COOLED TOTALLY-ENCLOSED CS MOTOR

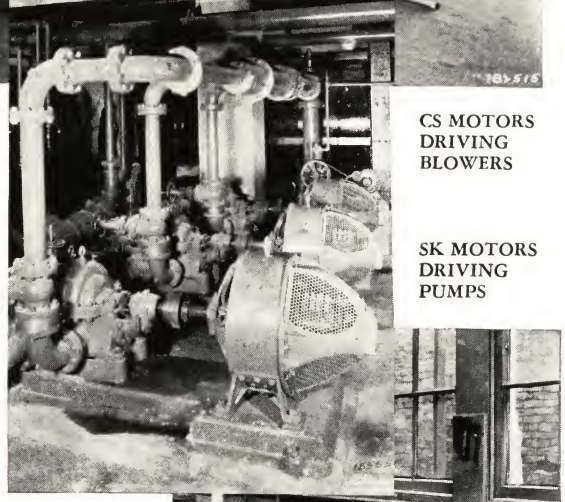


WESTINGHOUSE EXPLOSION-RESISTING TYPE CS MOTOR

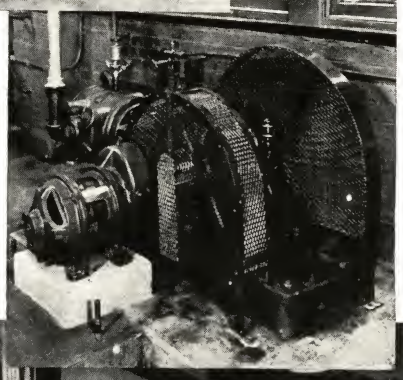
# MOTORS AND CONTROL



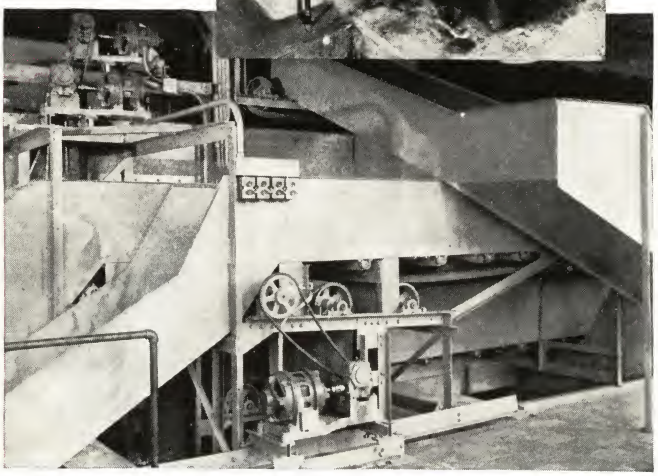
CS MOTORS DRIVING BLOWERS



SK MOTORS DRIVING PUMPS



TYPE S GEARMOTOR DRIVING A COMPRESSOR



TYPE CS BALL BEARING MOTORS DRIVING CONVEYORS THROUGH REDUCTION GEARS AND CHAIN DRIVE

## FANS AND BLOWERS

In the driving of fans and blowers for constant speed application, squirrel-cage motors in the small and medium ratings are used, and squirrel-cage or synchronous motors are used on the large drives. For variable speed operation, 2 or 4-speed squirrel-cage motors can be used, or if a greater speed range is required, wound rotor motors with continuous duty resistors are used. When fans or blowers are installed in office buildings, etc., unless they are installed in sound proofed rooms, it is necessary to furnish *quiet operating motors.*

*Type CS Squirrel-Cage Induction Motors, 1 hp. and up—motor specification, Page 28, control, Page 29. Type G, High Speed Synchronous Motors, 20 hp. and above, 450 rpm. to 1800 rpm., specification, Page 34.*

## PUMPS AND COMPRESSORS

Small and medium size compressors are usually driven by squirrel-cage motors of the linestart or general purpose type. When the compressor is not equipped with an unloader during starting, Linestart Class II high starting torque motors are recommended. Large compressors are usually driven by high-speed belted or low speed direct-connected synchronous motors, unless for stand-by or intermittent service, in which case squirrel-cage motors may be used.

*Type CS Squirrel-Cage Induction Motors, 1 hp. and up—motor specification, Page 28, control, Page 29. Type G, High Speed Synchronous Motors, 20 hp. and above, 450 rpm. to 1800 rpm., specification, Page 34.*

For small centrifugal pumps, squirrel-cage motors of the Linestart Class I or general purpose type are suitable. On large size units, squirrel-cage or synchronous motors are used. On many government building specifications wound rotor motors are specified due to their low starting currents.

*Wound rotor motors, 1 hp. and up—motor specification, Page 30, control, Page 31.*

On plunger pumps we recommend type CS Linestart Class II high starting torque motors so as to take care of the full pump load plus the accelerating load. For boiler feed service and other applications requiring variable speed motors, a wound rotor motor with continuous duty resistors should be used, such as type CW sealed sleeve bearing motors.

*Type CS Squirrel-Cage Induction Motors, 1 hp. and up—motor specification, Page 28, control, Page 29.*

*Wound rotor motors, 1 hp. and up—motor specification, Page 30, control, Page 31.*

# for EVERY BUILDING APPLICATION

## MATERIAL HANDLING EQUIPMENT

In driving conveyors for building installations the Westinghouse Type CS Linestart Class II, Squirrel-cage Induction Motor incorporates all desirable characteristics for the purpose, particularly when the conveyor is driven through a chain, speed reducing unit or gearmotor.

In some cases the wound rotor induction type motor — types CW and CI is preferred in order to produce smoother acceleration at the conveyor than is possible with the across-the-line type starting.

We have developed all desirable combinations of gear motors for a-c. and d-c. motor applications.



CONTROL UNIT FOR FIRE-PROTECTION EQUIPMENT

*Type CS Squirrel-Cage Induction Motors, 1 hp. and up—motor specification, Page 28, control, Page 29.*

*Wound rotor motors, 1 hp. and up—motor specification, Page 30, control, Page 31.*

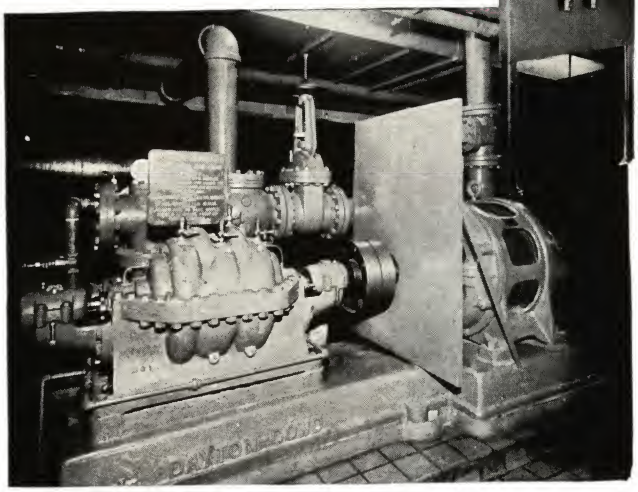
*Type SK, direct current motors, 1 hp. and up—motor specification, Page 32, control, Page 33.*

## FIRE PROTECTION

Both the type CS squirrel-cage and CW wound rotor a-c. motors as well as d-c. fire pump motors have ample starting and maximum running torques so that they are sure to start on short notice.

Underwriters require that a double throw oil circuit breaker be provided to permit operation from either one of two power sources.

*Type CS Squirrel-Cage Induction Motors, 1 hp. and up—motor specification, Page 28, control, Page 29. Wound rotor motors, 1 hp. and up—motor specification, Page 30, control, Page 31.*



CW MOTOR DRIVING A FIRE PUMP

## AIR CONDITIONING AND REFRIGERATION

For the smaller and medium sized compressors, Type CS Linestart Class II, High Torque Squirrel-Cage or Type CW Wound Rotor Induction Motors are used.

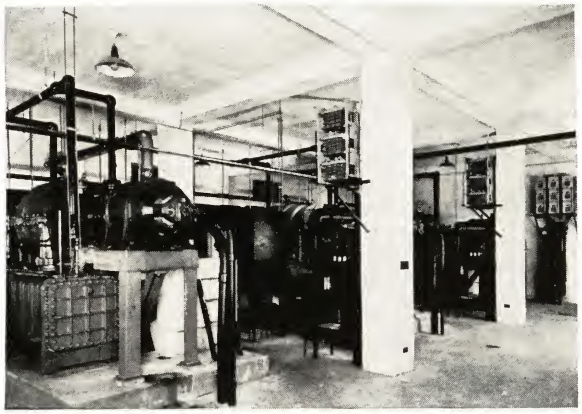
Westinghouse type HR low-speed engine-type synchronous motors are designed especially for driving Freon and other types of reciprocating compressors. Contact is maintained with the leading compressor builders to insure that on each installation the proper motor characteristics are provided. This includes starting performance (torques and starting kv-a.), also operating characteristics, including the fly-wheel effect necessary to limit current pulsations to a satisfactory value. Our engineers cooperate with the compressor builder's engineering departments on all matters pertaining to satisfactory building and operating the complete unit as a whole. It is recognized that noise and vibration are to be avoided as much as possible in an air conditioning installation and type HR engine type synchronous motors are designed to avoid noise producing harmonics.

A large motor installation in buildings frequently requires increment type control to limit the starting current or other control features requiring coordination of motor and control design. The motor characteristics and starting current limitations determine the choice of starting method which may be full voltage or reduced voltage by auto transformer, series reactor, saturable reactor, or primary resistance. Loading and unloading the compressor may also be accomplished by interlocking a magnetic compressor unloader with the control.

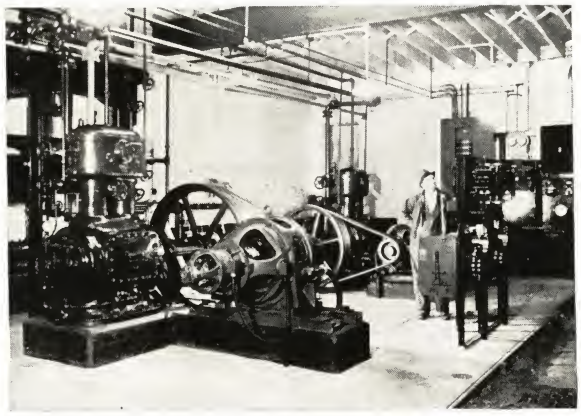
*Type CS Squirrel-Cage Induction Motors, 1 hp. and up—motor specification, Page 28, control, Page 29.*

*Wound rotor motors, 1 hp. and up—motor specification, Page 30, control, Page 31.*

*Type G, High Speed Synchronous Motors, 20 hp. and above, 450 rpm to 1800 rpm, specification, Page 34.*



TYPE CW MOTORS DRIVING COMPRESSORS



100 HP. AND 60 HP. 220 VOLT, 3 PHASE, 60 CYCLE 1200 RPM., 80% POWER FACTOR TYPE G SYNCHRONOUS MOTORS DRIVING 50-TON AND 40-TON AMMONIA COMPRESSORS THROUGH V-BELT DRIVE

# MOTOR CONTROL EQUIPMENT




Type H Sentinel Breaker



Types WK-18 and WK-16 Manual Starters



"De-ion" Linestarter with Built-in Pushbutton



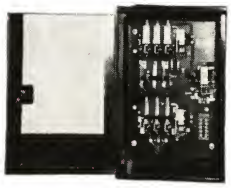
"De-ion" Linestarter with Separate Pushbutton



"De-ion" Linestarter with Built-in Pushbutton



"De-ion" Combination Linestarter and Built-in Disconnect Switches



Class 11-400 Magnetic Reduced Voltage Starter




Linestarter with Hand-Off-Automatic Selector Switch



Class 10-700 Manual Reduced Voltage Starter



D.C. Manual Starter and Speed Regulator



D.C. Magnetic Starter

A complete line of Westinghouse Motor Starters is available for the Building Industry, which can be classified as follows:

Manual Starters for Single Phase Motors
Magnetic Starter for Single Phase Motors
Manual Starters for 2 and 3 Phase Squirrel-Cage Motors
Magnetic Starters for 2 and 3 Phase Squirrel-Cage Motors
Combination Linestarters for 2 and 3 Phase Squirrel-Cage Motors
Control for Constant and Varying Speed Wound Rotor Induction Motors
Control for Direct Current Motors

NEMA Type 1 general purpose sheet metal enclosures are generally suitable for buildings, but special enclosures are available where required. Typical special enclosures are:

Water-tight and dust-tight cast iron cases for breweries, dairies and outside applications (NEMA Type 4)

Gasketed heavy sheet steel dust-tight enclosures for foundries, cement plants, etc. (NEMA Type 5)

Air Break and Oil Immersed starters for hazardous locations (NEMA Types 7, 8 and 9)

## ACROSS-THE-LINE STARTING

The usual method of starting for single phase A.C. motors and polyphase squirrel-cage motors is by connecting the motor windings directly to the line by either manual or magnetic means. This permits the use of the simplest form of control with minimum cost.

Across-the-line starting can be applied wherever induction motors are used. In some cases, where the capacity of the power supply is limited, the power company or local inspection bureau place a maximum hp. limitation for across-the-line starting due to the effect of the motor starting current on the line voltage. For information regarding such limitation on any project consult your Westinghouse representative.

For small A.C. motors, where automatic operation from a thermostat or other pilot device is not required, the Sentinel Breaker and Motor Watchman (Types WK-16 and WK-18) manual starters are recommended for across-the-line starting. They provide thermal protection against locked rotor operation and against overload. All metal parts are corrosion resisting. They are sturdily built for long life and dependable operation.

For larger A.C. motors, or where automatic operation from a pilot device is required or pushbutton operation desired, "De-ion" Linestarters, the outstanding development of recent years, are recommended for across-the-line starting.

## REDUCED VOLTAGE STARTING

For manual reduced voltage starting of polyphase A.C. motors Class 10-700 auto starters are recommended. They provide reliable overload and low voltage protection, and are interlocked to prevent improper starting.

For magnetic reduced voltage starters use Class 11-400 primary resistance type. Class 11-400 starters consist essentially of a "De-ion" Linestarter unit to connect the motor to the line thru an edgewound non-breakable primary resistor, mounted in the same enclosure, and a contactor to short-circuit the resistor after an adjustable time interval determined by the automatic timing relay. They are suitable for operation from float switch or other pilot device. Thermal overload protection is provided. Type Dn. contactors give the same long life, low maintenance, dependable operation that has made "De-ion" Linestarters famous.

## DIRECT CURRENT STARTERS

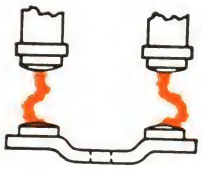
Manual starters and speed regulators, and magnetic starters, are illustrated and listed on page 33.



WESTINGHOUSE ELECTRIC

# "DE-ION" LINESTARTERS

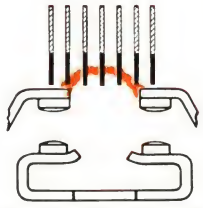
**Only Westinghouse "De-Ion" Linestarters Have All the Advantages of Modern Motor Starters Plus "De-Ion" Design**



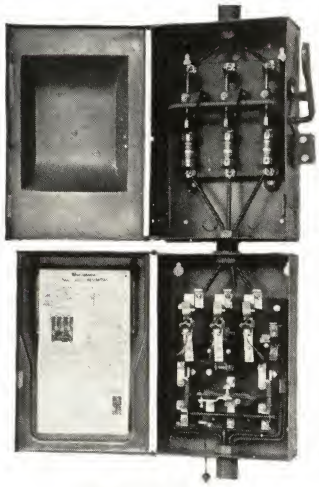
THE OLD WAY



"DE-ION" ARC QUENCHER



THE "DE-ION" WAY



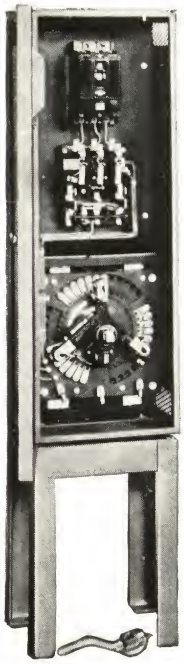
THE OLD WAY STARTER AND DISCONNECT DEVICE INSTALLED SEPARATELY

Left shows an arc being broken between double break silver contacts where stretching alone is depended upon to break the arc. The NEW WESTINGHOUSE LINESTARTERS use this same principle of arc stretching — AND IN ADDITION HAVE "DE-ION" Arc Quenchers. When the contacts of a "DE-ION" contactor separate, the arc is stretched — as shown above. Possibly this stretching is sufficient to break the arc under normal conditions. But if the load is heavy, or some abnormal condition exists, then the PLUS FACTOR—the "DE-ION" QUENCHER—comes into action as shown above right. As the contacts separate, the specially shaped moving contact connector gives a magnetic reaction that forces the two stretching arcs to join as one arc across the stationary contacts, and this arc immediately rises into the "DE-ION" grids where it is "sliced" into a series of arcs. At the next zero point on the current cycle the air adjacent to each grid is deionized instantly, the voltage per grid is insufficient to re-establish the current flow, and the arc is "out."

The "DE-ION" arc quencher confines, divides and extinguishes the arc almost instantaneously without the usual flash and scattering of flame. The result is not only high overload capacity and a high degree of safety due to freedom from flashovers, but also practically unlimited life of arc box and contacts. By application of this distinctive Westinghouse "DE-ION" principle of arc interruption there is obtained a greater degree of safety, reliability, and low maintenance than ever before considered possible in standard motor starters.



THE MODERN WAY "DE-ION" COMBINATION LINESTARTER. STARTER AND NOFUZE BREAKER IN SAME ENCLOSURE



CLASS 12-201 (OPEN VIEW)

# A.C. COMBINATION CONTROLLERS

For applications involving speed regulating duty with wound rotor motors, the combination of primary and secondary control in one enclosure has the advantage of better appearance, maximum convenience in operation, and lower installation cost than where the devices are installed separately.

Class 12-020 consists essentially of a "De-ion" Linestarter unit, with all the advantages of "De-ion" design, combined in the same enclosure with a Class 12-012 starting rheostat or a Class 12-016 starting rheostat and speed regulator.

Complete control of the starting, stopping, and speed adjustment is obtained from the rheostat handle.

The Class 12-201 combines a Nofuze Breaker as disconnect switch in the same enclosure with the "De-ion" primary contactor and rheostat, giving the really modern installation. The Nofuze breaker is so interlocked with the door that it may be locked in either the open or closed positions, and the door of the enclosure cannot be opened by unauthorized persons.

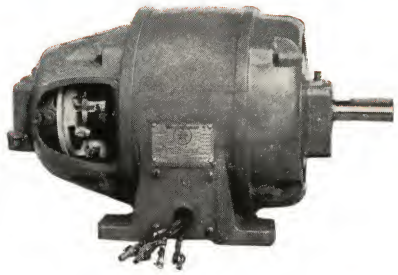


CLASS 12-020

Westinghouse

# SINGLE-PHASE A.-C. REPULSION—INDUCTION MOTORS

## TYPE OF MOTOR



### TYPES FR, CR AND CU SINGLE PHASE REPULSION-START INDUCTION A-C. MOTORS*

WHAT THEY ARE—These motors are constant-speed heavy duty motors for industrial or domestic applications. They start heavy loads easily and require low starting currents.

SIZES—¾ to 7½ hp.

VOLTAGES—110/220 dual voltage (leads brought out for both voltages).

ADAPTABILITY—Available for standard horizontal frame, bracket, flange, and vertical mounting.

## APPLICATION

Blowers
Centrifugal Pumps
Coffee Grinders
Compressors
Concrete Mixers
Conveyors
Door Openers
Fans
Gasoline Pumps
Home Water Systems
Machine Tools
Reciprocating Pumps
Refrigerators
Saws

Stokers, etc. and practically any constant speed application where single phase A-C. power is available

## TYPICAL SPECIFICATIONS

REPULSION START AC
SINGLE PHASE INDUCTION MOTORS

Indicate Option

| | |
|---|---|
| APPLICATION AND RATING | (rating) Horsepower (application) |
| | Motor shall be of the repulsion induction type |
| VOLTAGE | {110 / 220 / 440} volts single phase A.C. |
| CYCLES | {25 / 60} cycle |
| INSULATION | NEMA Class A insulation |
| SPEED | {1160 / 1750 / 3450} rpm |
| BEARINGS | {Sleeve / Ball} bearing |

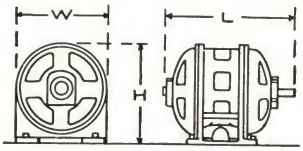
40° C. continuous temperature rise

Similar or equal to the Westinghouse type CR or CU motor and to conform in all respects to the requirements of the National Electrical Manufacturers Association.

## DATA, SINGLE-PHASE, REPULSION-START INDUCTION MOTORS, TYPES FR, CR AND CU.

REPULSION-START INDUCTION MOTORS TYPES FR, CR AND CU†

| Horsepower | Approx. Full Load Rpm. | Frame | Motor Type | Approx. Ship. Wt. Motor Only | Approx. F.L. Amps. 110 Volts |
|---|---|---|---|---|---|
| ⅓ | 1725 | B-165 | FR | 44 | 6.2 |
| | 1140 | B-185 | FR | 66 | 6.7 |
| ½ | 1725 | 185 | FR | 58 | 8.4 |
| | 1140 | D-185 | FR | 66 | ..... |
| | 870 | W-224 | CR | 132 | 14.6 |
| ¾ | 1725 | B-185 | FR | 61 | 12.4 |
| | 1160 | W-204 | CR | 90 | 12.8 |
| | 870 | W-225 | CR | 185 | 21.0 |
| 1 | 1750 | W-204 | CR | 90 | 15.0 |
| | 1160 | W-224 | CR | 132 | 18.0 |
| 1½ | 3450 | F-204 | CR | 121 | 16.4 |
| | 1750 | W-224 | CR | 132 | 19.8 |
| | 1160 | F-225 | CR | 182 | 28.2 |
| 2 | 3450 | W-224 | CR | 132 | 24 |
| | 1750 | W-225 | CR | 154 | 26.2 |
| | 1160 | W-254 | CU | 190 | 22.8 |
| 3 | 3450 | F-224 | CR | 150 | 33 |
| | 1750 | F-225 | CR | 182 | 39.2 |
| | 1160 | WD-254 | CU | 190 | 32 |
| 5 | 3450 | F-225 | CR | 182 | 52 |
| | 1770 | WD-254 | CU | 190 | 50 |
| | 1160 | WH-284 | CU | 263 | 54 |
| 7½ | 1770 | WH-284 | CU | 263 | 72 |




DIMENSIONS IN INCHES, TYPES FR, CR AND CU MOTORS

| Frame No. | H | W | L | Weight |
|---|---|---|---|---|
| 145 | 6 23/32 | 6 1/2 | 11 1/8 | 38 |
| 185 | 8 1/8 | 8 3/8 | 14 1/4 | 53 |
| B-145 | 6 23/32 | 6 1/2 | 11 5/8 | 38 |
| B-165 | 7 13/32 | 7 3/4 | 12 21/32 | 40 |
| B-185 | 8 1/8 | 8 3/8 | 14 3/4 | 56 |
| D-145 | 6 23/32 | 6 1/2 | 12 1/8 | 35 |
| D-165 | 7 13/32 | 7 3/4 | 13 5/32 | 42 |
| D-185 | 8 1/8 | 8 3/8 | 15 1/4 | 60 |
| W-204 | 9 7/8 | 10 | 17 | 90 |
| W-224 | 11 | 11 | 19 1/2 | 132 |
| W-225 | 11 | 11 | 20 1/4 | 185 |
| F-204 | 9 7/8 | 10 | 18 1/2 | 121 |
| F-224 | 11 | 11 | 21 | 150 |
| F-225 | 11 | 11 | 21 3/4 | 182 |
| W-254 | 12 1/2 | 12 1/2 | 24 1/4 | 190 |
| WD-254 | 12 1/2 | 12 1/2 | 25 1/4 | 190 |
| WH-284 | 12 1/2 | 12 1/2 | 26 1/4 | 263 |

*Capacitor motors can be used in place of repulsion start single phase motors in the same sizes.

# CONTROL FOR SINGLE PHASE MOTORS

## CONTROL REQUIRED


SENTINEL BREAKER


SAFETY SWITCH

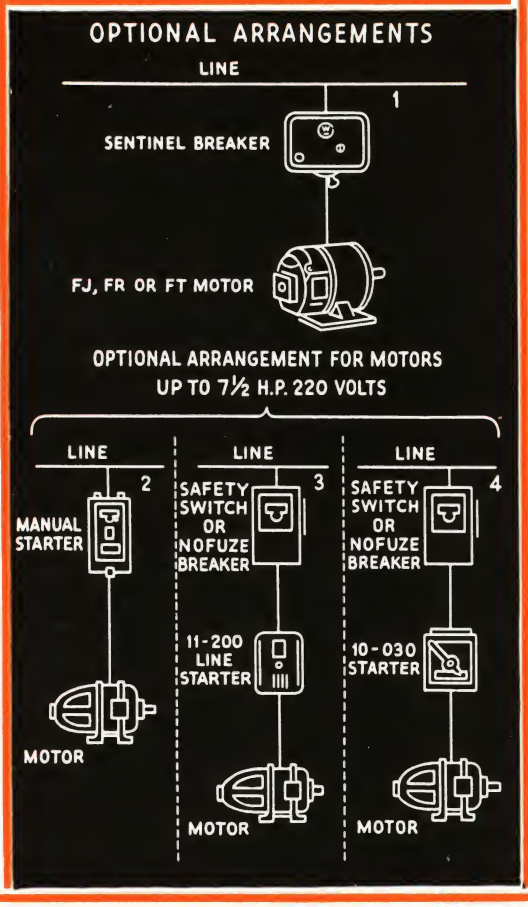

MANUAL TYPE WK STARTER


NOFUZE BREAKER


MANUAL REDUCED VOLTAGE STARTER


MAGNETIC LINESTARTER

## HOOK-UP




## TYPICAL SPECIFICATIONS

### SPECIFICATION A

Control for Single Phase..... (Fan, Pump, etc.)

Motors shall consist of a manual across-the-line starting switch providing thermal overload protection. Starter to be Westinghouse Sentinel Breaker Class 10-023 or approved equal.

### SPECIFICATION B

Control for Single Phase..... (Fan, Pump, etc.)

Motors shall consist of a manual across-the-line starting switch providing thermal overload protection. Starter to be Westinghouse Type WK or approved equal.

### SPECIFICATION C

Control for Single Phase..... (Fan, Pump, etc.)

Motors shall consist of an enclosed manual primary rheostat arranged to provide reduced voltages starting and low voltage protection and suitable for wall mounting. Starter to be Westinghouse Class 10-030 or approved equal.

### SPECIFICATION D

Control for Single Phase..... (Fan, Pump, etc.)

Motors shall consist of an enclosed two-pole magnetic across-the-line starter providing thermal overload and low voltage protection and to be push button operated. Starter to be Westinghouse Deion Class 11-200 or approved equal.

# CONTROL DATA

### Manual Control

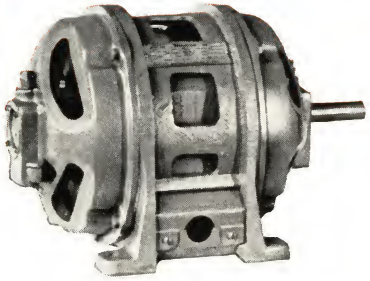
| Maximum HP | | Type | Width Inches | Height Inches | Depth Inches | Weight Lbs. |
|---|---|---|---|---|---|---|
| 110 Volts | 220 Volts | | | | | |
| 1 | 1 | "H"—S. P. Sentinel Breaker | 3 7/16 | 3 7/16 | 2 1/16 | 1 |
| 1 | 1 | "H"—D. P. Sentinel Breaker | 3 7/16 | 3 7/16 | 2 11/16 | 1 |
| 1 | 1½ | WK-16 Motor Watchman | 5¼ | 9 5/8 | 4 3/8 | 6 |
| 1½ | 3 | WK-18 Motor Watchman | 5¼ | 9 5/8 | 4 3/8 | 6 |
| 1 | 1 | 10-030 Resistance Starter | 12 | 14¼ | 11 5/16 | 25 |
| 2 | 2 | 10-030 Resistance Starter | 12 | 14¼ | 11 5/16 | 25 |
| 3 | 3 | 10-030 Resistance Starter | 12 | 14¼ | 11 5/16 | 25 |
| 5 | 5 | 10-030 Resistance Starter | 12 | 14¼ | 11 5/16 | 30 |
| 7½ | 7½ | 10-030 Resistance Starter | 12 | 14¼ | 11 5/16 | 35 |

### Magnetic Control

| | | | | | | |
|---|---|---|---|---|---|---|
| 1½ | 3 | 11-200-S1 Linestarter | 6 5/8 | 8 7/8 | 4 3/4 | 9 |
| 3 | 7½ | 11-200-S2 Linestarter | 12 | 17¼ | 6 1/8 | 35 |
| 7½ | 15 | 11-200-S3 Linestarter | 14 5/8 | 20 | 7 7/8 | 65 |
| 10 | 25 | 11-200-S4 Linestarter | 14 5/8 | 24½ | 9 1/8 | 100 |

# POLYPHASE SQUIRREL-CAGE A.-C. MOTORS

## TYPE OF MOTOR



### TYPE CS SQUIRREL-CAGE MOTOR

WHAT THEY ARE—Most widely used squirrel-cage induction motor for constant speed industrial applications.

SIZES—1 to 200 hp. As a rule applications fall between 1 and 50 hp.

STANDARD VOLTAGES—110, 220, 440, 550, 2200. (Standard 220-volt motors operate satisfactorily on network voltages either 199 or 208 volts).

STANDARD FREQUENCIES—25, 50, 60 cycles. Available in general purpose Class I Linestart, and Class II Linestart designs. Use CS Motors for constant speed, heavy duty industrial drives. Splash-proof, fan-cooled, explosion-resisting and standard enclosures are available.

## APPLICATION

Centrifugal Pumps
Compressors
Concrete Mixers
Conveyors
Elevators
Fans and Blowers
Line Shafting
Reciprocating Pumps
Stokers, and
all constant
speed drives.

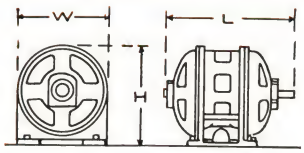
## TYPICAL SPECIFICATIONS

POLYPHASE SQUIRREL CAGE INDUCTION MOTOR

Indicate Option

| | |
|---|---|
| APPLICATION AND RATING | (rating) Horsepower (application)<br>Motor shall be of the squirrel cage type |
| CLASS | General Purpose—Normal Starting Torque, Normal Starting Current<br>Class I—Linestart, Normal Starting Torque, Low Starting Current<br>Class II—Linestart, High Starting Torque, Low Starting Current |
| VOLTAGE | 208, 220, 440, 550 volts |
| PHASE | 2, 3 phase |
| FREQUENCY AND SPEED | 25 cycles—1450, 725, 480 rpm<br>60 cycles—3500, 1750, 1150, 870, 575 rpm |
| INSULATION | NEMA Class A insulation |
| BEARINGS | Sleeve, Ball bearings |
| ENCLOSURE | Open—40° C. continuous temperature rise<br>Splash proof or drip proof—50° C. continuous temperature rise<br>Fancooled totally enclosed—55° C. continuous temperature rise |
| NOISE | Normal, Quiet operating |

Similar or equal to the Westinghouse CS motor and to conform to NEMA requirements.




### DIMENSIONS TYPE CS SQUIRREL-CAGE A-C. MOTORS

| Frame No. | H | W | L | Weight |
|---|---|---|---|---|
| W-204 | 9⅞ | 10 | 15 | 105 |
| W-224 | 11 | 11 | 16¾ | 145 |
| W-225 | 11 | 11 | 17½ | 165 |
| W-254 | 12½ | 12½ | 20 | 185 |
| W-284 | 14 | 14 | 22⅝ | 256 |
| W-324 | 16 | 16 | 25¾ | 345 |
| W-326 | 16 | 16 | 27¼ | 385 |
| W-364-S | 17⅞ | 18 | 26⅛ | 418 |
| W-364 | 17⅛ | 18 | 28½ | 418 |
| W-365-S | 17⅛ | 18 | 27⅛ | 536 |
| W-365 | 17⅛ | 18 | 29½ | 536 |
| W-404-S | 19 15/16 | 20 | 29⅛ | 643 |
| W-404 | 19 15/16 | 20 | 31¾ | 643 |
| WR-405-S | 19 15/16 | 20 | 30⅝ | 733 |
| W-405 | 19 15/16 | 20 | 33¼ | 723 |
| W-444-S | 21 15/16 | 22 | 33⅝ | 993 |
| W-444 | 21 15/16 | 22 | 36½ | 941 |
| W-445-S | 21 15/16 | 22 | 35⅝ | 1042 |
| W-445 | 21 15/16 | 22 | 38½ | 1042 |
| W-504-S | 25⅛ | 25 | 37 1/16 | 1400 |
| W-504 | 25⅛ | 25 | 40 11/16 | 1400 |
| W-505-S | 25⅛ | 25 | 39 1/16 | 1534 |
| W-505 | 25⅛ | 25 | 43 7/16 | 1534 |

"S" suffix on frame denotes short length, small diameter shaft for coupled service.

### TYPE CS SQUIRREL-CAGE GENERAL PURPOSE MOTORS* OR LINESTART CLASS 1 MOTORS

| Hp. | Approx. Full Load Rpm. 220 V. 3 Phase | Approx. Full Load Amps. 220 V. 3 Phase | Frame No. | Hp. | Approx. Full Load Rpm. 220 V. 3 Phase | Approx. Full Load Amps. 220 V. 3 Phase | Frame No. |
|---|---|---|---|---|---|---|---|
| ½ | 870 | 2.2 | W-204 | 20 | 3450 | 50.7 | W-326 |
| ¾ | 1160 | 2.7 | W-204 | | 1745 | 49.2 | W-364 |
| | 860 | 2.9 | W-224 | | 1160 | 49.3 | W-404 |
| 1 | 1720 | 3.2 | W-204 | | 880 | 51.8 | W-405 |
| | 1160 | 3.5 | W-204 | 25 | 3450 | 64.5 | W-364-S |
| | 870 | 3.8 | W-225 | | 1740 | 59.3 | W-365 |
| 1½ | 3500 | 4.1 | W-204 | | 1165 | 62.2 | W-405 |
| | 1730 | 4.3 | W-224 | | 885 | 64.8 | W-444 |
| | 1145 | 4.5 | W-224 | 30 | 3500 | 72.0 | W-365-S |
| | 870 | 6.0 | W-254 | | 1730 | 70.1 | W-405 |
| 2 | 3490 | 5.6 | W-224 | | 1170 | 74.1 | W-444 |
| | 1720 | 5.7 | W-225 | | 880 | 74.0 | W-445 |
| | 1145 | 5.9 | W-225 | 40 | 3500† | 100.0 | WR-404-S |
| | 870 | 7.3 | W-254 | | 1765 | 94.0 | W-444 |
| 3 | 3450 | 8.3 | W-224 | | 1170 | 97.0 | W-445 |
| | 1710 | 8.0 | W-225 | | 855 | 100.2 | W-504 |
| | 1145 | 8.9 | W-254 | 50 | 3500† | 122.0 | WR-405-S |
| | 875 | 9.5 | W-284 | | 1755 | 114.0 | W-445-S |
| 5 | 3460 | 12.4 | W-225 | | 1150 | 118.2 | W-504 |
| | 1740 | 12.8 | W-254 | | 875 | 122.6 | W-505 |
| | 1145 | 14.0 | W-284 | 60 | 3500† | ..... | W-444-S |
| | 875 | 14.6 | W-324 | | 1750 | 139-2 | W-504-S |
| 7½ | 3480 | 19.8 | W-254 | | 1160 | 143.4 | W-504 |
| | 1745 | 19.0 | W-284 | | 870 | 149.0 | WL-607 |
| | 1165 | 20.2 | W-324 | 75 | 3500† | ..... | W-445-S |
| | 870 | 21.0 | W-326 | | 1750 | 174.0 | W-505-S |
| 10 | 3500 | 25.3 | W-284 | | 1160 | 171.0 | WL-607 |
| | 1745 | 24.9 | W-324 | | 870 | 179.0 | 752-C |
| | 1165 | 26.0 | W-326 | 100 | 3500† | ..... | W-504-S |
| | 880 | 28.4 | W-365 | | 1750 | 224.0 | WL-607-S |
| 15 | 3450 | 37.9 | W-324 | | 1160 | 232.0 | 752-S |
| | 1759 | 36.0 | W-326 | | 870 | 242.0 | 754-C |
| | 1160 | 37.6 | W-365 | | | | |
| | 880 | 40.5 | W-404 | | | | |

†These ratings are built only in Linestart Class I type.
*General Purpose Motors built in frames W-405 and smaller (30 hp. and smaller) are the same as Linestart Class I motors. These motors have normal starting torque and low starting current characteristics.

# CONTROL FOR POLYPHASE SQUIRREL-CAGE A. C. MOTORS

## CONTROL REQUIRED


WK STARTER


SAFETY SWITCH

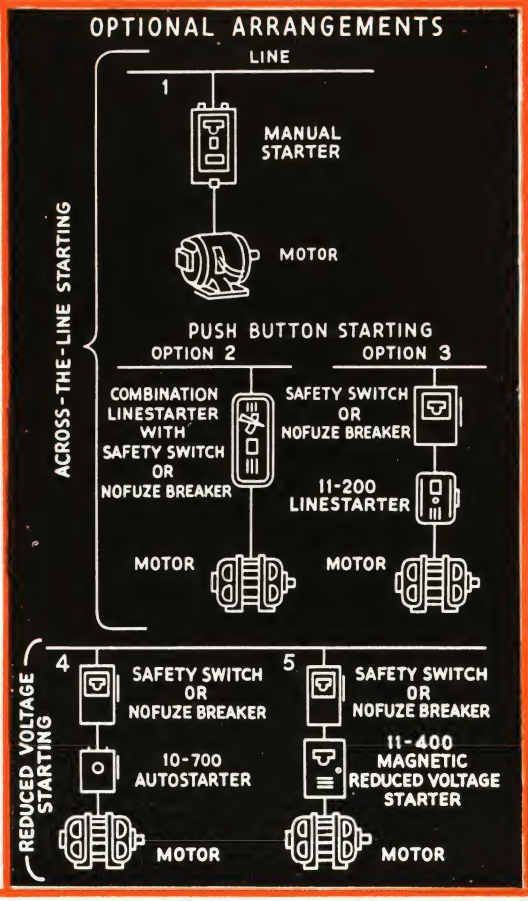

NOFUZE BREAKER


COMBINATION LINESTARTER


DE-ION LINESTARTER


AUTOSTARTER

## HOOK-UP




## TYPICAL SPECIFICATIONS

Control for Squirrel Cage.....
(Fan, Pump, etc.)
Motors shall consist of an enclosed:

SPECIFICATION E
manual three pole across-the-line starter and shall provide thermal overload protection to the motor. Control to be Westinghouse Type WK-16 or equal.

SPECIFICATION F
manual autotransformer type reduced voltage starter shall provide low voltage and thermal overload protection to the motor. Control to be Westinghouse Class 10-700 or approved equal.

SPECIFICATION G
magnetic resistance type reduced voltage starter, arranged to provide time limit acceleration, thermal overload protection and low voltage protection. To be pushbutton operated. Cabinet to be of the wall mounting ventilated type. Control to be Westinghouse Class 11-400 or approved equal.

SPECIFICATION H
magnetic across-the-line starter. To be push-button operated and arranged to provide thermal overload and low voltage protection. Control to be Westinghouse Class 11-200 or approved equal.

SPECIFICATION I
combination across-the-line type consisting of a 3 pole Nofuze circuit breaker assembled and wired in a common enclosure with a 3 pole magnetic across-the-line starter, arranged to provide thermal overload and low voltage protection. Control to be Westinghouse Class 11-206 or approved equal.

### ACROSS-THE-LINE STARTERS

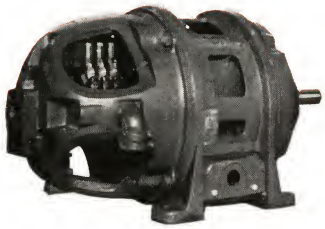
| Max. Hp.—3 Phase | | Manual Starters | | | | | Magnetic Starters | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Motor Watchman | | | | | De-ion Linestarters | | | | | Combination De-ion Linestarter and "AB" Breaker | | | | |
| 220 V. | 440-500V. | Type | Width | Hgt. | Depth | Wt. | Type | Width | Height | Depth | Wt. | Type | Width | Height | Depth | Wt. |
| 2 | 2 | WK-18 | 5¼ | 9⅝ | 4⅜ | 7 | 11-200-S1 | 6⅝ | 8⅞ | 4¾ | 9 | 11-206-S1 | 8⅝ | 20⅝ | 6⅞ | 30 |
| 5 | 7½ | WK-16 | 5¼ | 9⅝ | 4⅜ | 9 | 11-200-S1 | 6⅝ | 8⅞ | 4¾ | 9 | 11-206-S1 | 8⅝ | 20⅝ | 6⅞ | 30 |
| 15 | 25 | ..... | ..... | ..... | ..... | .... | 11-200-S2 | 12 | 17¼ | 6⅛ | 12 | 11-206-S2 | 12¾ | 27½ | 7⅛ | 72 |
| 30 | 50 | ..... | ..... | ..... | ..... | .... | 11-200-S3 | 14⅝ | 20 | 7⅞ | 51 | 11-206-S3 | 15 | 31⅜ | 7⅛ | 100 |
| 50 | 100 | ..... | ..... | ..... | ..... | .... | 11-200-S4 | 14⅝ | 24½ | 9⅛ | 110 | 11-206-S4 | 16 | 43 | 10 | 250 |

### REDUCED VOLTAGE STARTERS

| Manual Starters | | | | | | Magnetic Starters | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Manual Auto Starters—Class 10-700 | | | | | | Resistance Type Magnetic Starters—Class 11-400 | | | | | | |
| Type A—Max. Hp. | | Width | Height | Depth | Weight | Max. Hp. | | Type | Width | Height | Depth | Weight |
| 220 V. | 440-550 V. | | | | | 220 V. | 440 V. | | | | | |
| 5-10 | 5-10 | 17⅜ | 19½ | 13⅞ | 150 | 5 | 7½ | 11-400-S1 | 18½ | 29 | 17⅜ | 140 |
| 15-30 | 15-30 | 19 | 21½ | 16⅝ | 150 | 15 | 25 | 11-400-S2 | 18½ | 29 | 17⅜ | 175 |
| 40-50 | 40-50 | 22⅜ | 23¾ | 19⅛ | 200 | 30 | 50 | 11-400-S3 | 22½ | 33 | 17⅝ | 225 |
| .... | 60-100 | 25½ | 25½ | 21¼ | 350 | 50 | 100 | 11-400-S4 | 22½ | 33 | 21⅝ | 300 |
| 60-100 | 125-200 | 27½ | 28¾ | 21¾ | 400 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |

# POLYPHASE WOUND ROTOR MOTORS

## TYPE OF MOTOR



### TYPE CW WOUND-ROTOR MOTORS

WHAT THEY ARE—Type CW Motors are similar to CS Motors except that they have wound rotors and slip rings instead of squirrel-cage rotors. (Sometimes they are called slip ring motors.) This permits speed variation and a heavier starting torque with lower starting current.

SIZES—1 to 200 hp. Usual applications are from 1 to 50 hp.

STANDARD VOLTAGES—Same as for CS Motor.

STANDARD FREQUENCIES—25, 50, 60 cycles. Use CW Motors for driving loads that are especially heavy to start, and where speed variation is required.

## APPLICATION

Centrifugal
Pumps
Compressors
Conveyors
Fans and
Blowers
Line Shafting
Reciprocating
Pumps
Stokers, etc.

In general, same applications as for Type CS. Type CW Motors should be used instead of CS where (1) speed variation is required (2) driven machine requires heavy starting torque with exceptionally low starting current, such as reciprocating pumps or compressors and (3) Power companies' requirements call for wound-rotor motors because of low starting current inrush.

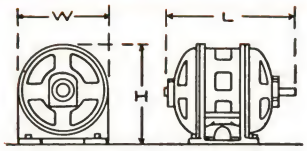
## TYPICAL SPECIFICATIONS

POLYPHASE WOUND ROTOR
INDUCTION MOTORS

Indicate Option

| | |
|---|---|
| APPLICATION AND RATING | (rating) Horsepower (application) Motor shall be of the Wound Rotor Induction type |
| VOLTAGE | 208, 220, 440, 550 volts |
| PHASE | 2, 3 phase |
| FREQUENCY AND SPEED | 25 cycles—1450, 725, 500 rpm<br>60 cycles—3500, 1750, 1150, 870, 575 rpm |
| BEARINGS | Sleeve bearings<br>Ball |
| ENCLOSURE | Open—40° C. continuous temperature rise<br>Splash proof—50° C. continuous temperature rise |
| NOISE | Normal operating<br>Quiet |
| INSULATION | NEMA Class A |

Similar or equal to the Westinghouse type CW motor and to conform to the NEMA Standards.




### DIMENSIONS, TYPE CW WOUND ROTOR MOTORS

| Frame No. | H | W | L | Weight |
|---|---|---|---|---|
| W-204 | 9⅞ | 10 | 17 | 105 |
| W-224 | 11 | 11 | 19½ | 145 |
| W-225 | 11 | 11 | 20¼ | 165 |
| W-254 | 12½ | 12½ | 24¼ | 185 |
| W-284 | 14 | 14 | 26½ | 256 |
| W-324 | 16 | 16 | 29 15/16 | 340 |
| W-326 | 16 | 16 | 31 7/16 | 384 |
| W-364 | 17⅞ | 18 | 34⅞ | 418 |
| W-365 | 17⅞ | 18 | 35⅞ | 536 |
| WR-404 | 19 15/16 | 20 | 38⅛ | 643 |
| W-404 | 19 15/16 | 20 | 38⅛ | 643 |
| WR-405 | 19 15/16 | 20 | 39⅝ | 703 |
| W-405 | 19 15/16 | 20 | 39⅝ | 733 |
| WR-444 | 21 15/16 | 22 | 43½ | 950 |
| W-444 | 21 15/16 | 22 | 43½ | 941 |
| WR-445 | 21 15/16 | 22 | 45½ | 1060 |
| W-445-S | 21 15/16 | 22 | 42⅝ | 1042 |
| W-445 | 21 15/16 | 22 | 45½ | 1042 |
| W-504-S | 25⅛ | 25 | 45⅝ | 1400 |
| W-504 | 25⅛ | 25 | 49¼ | 1400 |
| W-505-S | 25⅛ | 25 | 47⅝ | 1539 |
| W-505 | 25⅛ | 25 | 52 | |

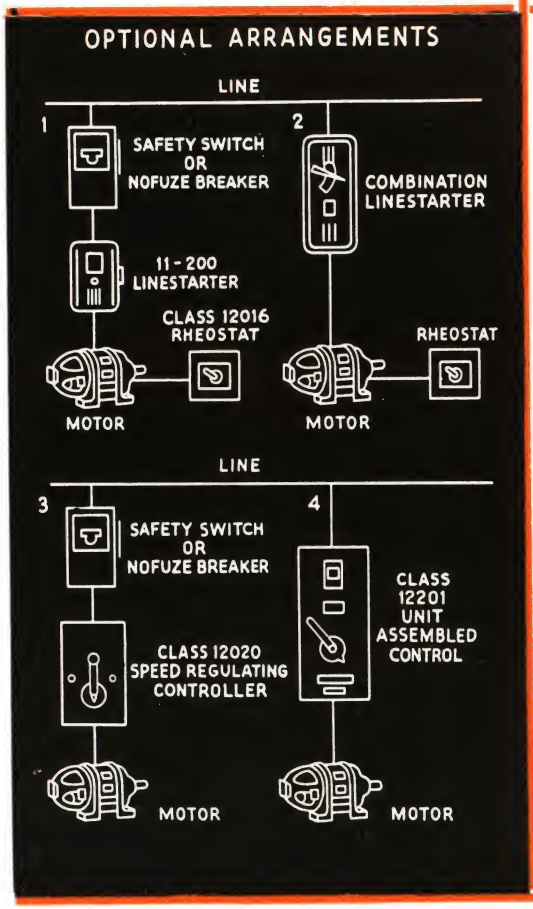
"S" suffix on frame denotes short length, small diameter shaft for coupled service.

### RATINGS AND CAPACITIES, TYPE CW MOTORS

| Hp. | Full Load Rpm. 220 V. 3 Phase | Approx. Full Load Primary Amps. per Terminal 220 V. 3 Phase | Frame No. | Hp. | Full Load Rpm. 220 V. 3 Phase | Approx. Full Load Primary Amps. per Terminal 220 V. 3 Phase | Frame No. |
|---|---|---|---|---|---|---|---|
| ½ | 1110 | 2.2 | W-204 | 20 | 1740 | 50.6 | W-364 |
| | 825 | 2.6 | W-204 | | 1160 | 52.5 | WR-404 |
| ¾ | 1070 | 3.0 | W-204 | | 870 | 54.4 | WR-405 |
| | 825 | 3.6 | W-224 | | 695 | 59.8 | W-445 |
| 1 | 1650 | 4.2 | W-204 | | 575 | 65.0 | W-504 |
| | 1100 | 4.5 | W-204 | 25 | 1740 | 62.9 | W-365 |
| | 825 | 5.0 | W-225 | | 1170 | 67.4 | WR-405 |
| | ..... | ..... | W-254 | | 860 | 66.6 | WR-444 |
| 1½ | 1650 | 5.5 | W-224 | | 695 | 74.8 | W-504 |
| | 1100 | 5.6 | W-224 | | 575 | 76.8 | W-505 |
| | 860 | 6.0 | W-254 | 30 | 1720 | 74.2 | W-405 |
| | ..... | ..... | W-254 | | 1155 | 78.6 | W-444 |
| 2 | 1650 | 7.0 | W-225 | | 870 | 80.6 | WR-445 |
| | 1100 | 7.2 | W-225 | | 695 | 91.6 | W-505 |
| | 845 | 8.3 | W-254 | | 570 | 90.6 | 750-C |
| | ..... | ..... | W-324 | 40 | 1765 | 96.0 | W-444 |
| 3 | 1650 | 10.3 | W-225 | | 1160 | 103.8 | WR-445 |
| | 1110 | 10.3 | W-254 | | 860 | 112.4 | W-504 |
| | 850 | 11.7 | W-284 | | 690 | 117.0 | WL-607 |
| | 685 | 12.6 | W-326 | | 580 | 120.5 | 752-C |
| | 565 | 11.8 | W-365 | 50 | 1760 | 118.4 | W-445-S |
| 5 | 1695 | 14.3 | W-254 | | 1145 | 132.0 | W-504 |
| | 1125 | 15.8 | W-284 | | 860 | 148.0 | W-505 |
| | 864 | 16.8 | W-324 | | 690 | 187.0 | 752-C |
| | 695 | 20.3 | W-365 | | 580 | 158.0 | 754-C |
| | 575 | 18.2 | W-404 | 60 | 1755 | 139.5 | W-504-S |
| 7½ | 1704 | 20.3 | W-284 | | 1160 | 146.0 | W-505 |
| | 1140 | 34.5 | W-324 | | 870 | 152.2 | WL-607 |
| | 870 | 23.4 | W-326 | | 700 | 161.5 | 754-C |
| | 700 | 25.6 | WR-404 | | 575 | 173.0 | 774-C |
| | 565 | 30.0 | W-405 | 75 | 1755 | 180.0 | W-504-S |
| 10 | 1745 | 26.6 | W-324 | | 1165 | 186.0 | WL-607 |
| | 1147 | 28.5 | W-326 | | 870 | 186.6 | 752-C |
| | 850 | 29.6 | W-365 | | 695 | 197.0 | 754-C |
| | 695 | 32.1 | WR-405 | | 575 | 208.0 | 774-C |
| | 560 | 35.0 | W-444 | 100 | 1755 | 229.0 | WL-607-S |
| 15 | 1740 | 38.1 | W-326 | | 1175 | 238.0 | 752-S |
| | 1145 | 41.4 | W-365 | | 870 | 249.0 | 754-C |
| | 860 | 44.0 | WR-404 | | 695 | 254.0 | 854-C |
| | 675 | 47.0 | W-444 | | 585 | 264.0 | 856-C |
| | 577 | 49.7 | W-445 | | | | |

# CONTROL FOR POLYPHASE WOUND ROTOR MOTORS

## HOOK-UP




## TYPICAL SPECIFICATIONS

### SPECIFICATION J

Control for Wound Rotor.....Motors shall consist of
(Fan, Pump, etc.)
an enclosed 3 pole across-the-line magnetic primary starter with thermal overload and low voltage protection and a separately enclosed speed regulating secondary rheostat. Primary and secondary control shall be so interlocked as to provide complete control from the rheostat handle. Control to be Westinghouse Class 11-200 and Class 12-016 or approved equal.

### SPECIFICATION K

(The same as Specification J with the exception that the primary starter and secondary rheostat are to be in the same cabinet. Control to be Westinghouse Class 12-020 or approved equal.)

### SPECIFICATION L

Control for Wound Rotor.....Motors shall consist of
(Fan, Pump, etc.)
a 3 pole breaker assembled and wired in a common enclosure with a 3 pole magnetic primary starter arranged to provide thermal overload and low voltage protection, and a separately enclosed speed regulating secondary rheostat. Primary and secondary control shall be interlocked to provide complete control from the rheostat handle. Breaker handle shall be trip-free and indicate open, closed, and "tripped" positions. Control shall be Westinghouse Class 11-206 and Class 12-016 or approved equal.

### SPECIFICATION M

Same as Specification L except that breaker, starter and secondary rheostat are all enclosed in a ventilated steel cabinet for floor mounting and with provision for locking the breaker in open or closed position. Door is to be interlocked with the breaker locking device to prevent opening when the breaker is in locked position.

Control shall be Westinghouse Class 12-201 or approved equal.

# CONTROL DATA

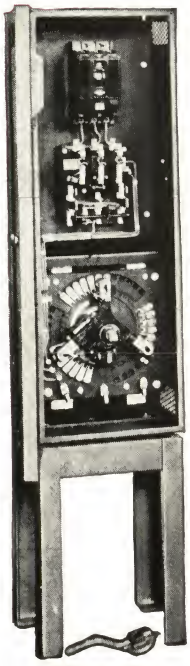
Magnetic Primary Control—Ratings, Illustrations and Dimensions for Class 11-200 De-ion Line Starters and Class 11-206 Combination Linestarters are given on Page 29

### Class 12-016—Speed Regulating Secondary Rheostats

| Hp. | Dimensions in Inches | | | Weight |
|---|---|---|---|---|
| | Width | Height | Depth | |
| 1- 3 | 16 1/2 | 20 | 14 1/2 | 45 |
| 5- 7 1/2 | 16 1/2 | 17 3/8 | 17 5/8 | 70 |
| 10-25 | 14 1/2 | 23 1/2 | 20 1/4 | 90 |

### Class 12-020—Combination Magnetic Primary and Manual Secondary Rheostat

| Hp. 220-440 V. | Dimensions in Inches | | | Weight |
|---|---|---|---|---|
| | Width | Height | Depth | |
| 5 | 14 1/2 | 30 1/8 | 20 | 90 |
| 7 1/2 | 14 1/2 | 30 1/8 | 20 | 100 |
| 10 | 14 1/2 | 30 1/8 | 20 | 100 |
| 15 | 16 1/2 | 34 1/8 | 20 | 130 |
| 20 | 16 1/2 | 34 1/8 | 20 | 130 |
| 25 | 16 1/2 | 34 1/8 | 20 | 130 |



CLASS 12-201
OPEN VIEW

### Class 12-201—Combination Nofuze Disconnect Breaker, Magnetic Primary and Manual Secondary Rheostat

| Hp. 220-440 V. | Dimensions in Inches | | | Weight |
|---|---|---|---|---|
| | Width | Height | Depth | |
| 5 | 14 3/8 | 42 3/4 | 18 | 150 |
| 7 1/2 | 19 1/4 | 54 | 17 3/8 | 165 |
| 10 | 19 1/4 | 54 | 17 3/8 | 165 |
| 15 | 19 1/4 | 54 | 17 3/8 | 195 |
| 20 | 19 1/4 | 54 | 20 | 195 |
| 25 | 19 1/4 | 54 | 20 | 195 |



CLASS 12-020

Westinghouse

# DIRECT-CURRENT MOTORS

## TYPE OF MOTOR



TYPE SK D-C. GENERAL PURPOSE MOTORS

WHAT THEY ARE—These are considered the most popular general purpose direct-current motors on the market. Their popularity is due to their splendid operating characteristics and excellence of design together with quality of materials used.

SIZES—From 1 to 200 hp. As a rule general purpose applications fall between 1 and 50 hp.

WHERE TO USE—Use SK motors where direct-current power is available. Use shunt wound SK motors where constant speed loads and fine speed adjustment over a wide range is required. Use compound SK motors for driving varying speed loads (that is speed drops with increased load) that are especially heavy to start. Series wound motors are also used where varying speeds and loads are encountered, but they must always be directly coupled to the load that never becomes less than 25% at the normal operating condition because increased speed will become dangerous at lighter loads.

ADAPTABILITY—Readily adaptable for drip-proof, splash-proof, semi-enclosed, self-ventilated or fan-cooled, force-ventilated and pipe-ventilated enclosures.

## APPLICATION

Blowers
Compressors
Conveyors
Elevators
Fans
Ice Machines
Laundry Equipment
Pumps
Refrigerating Equipment
and any application where d-c. power is available.

## TYPICAL SPECIFICATIONS

DC GENERAL PURPOSE MOTOR

Indicate Option

| | |
|---|---|
| APPLICATION AND RATING | (rating) Horsepower (application) Motor shall be of the industrial direct current type |
| WINDING | {Compound / Shunt / Series} wound |
| VOLTAGE | .....volts direct-current |
| INSULATION | NEMA Class A |
| SPEED | {575 / 690 / 850 / 1150 / 1750} r.p.m. at full load |
| BEARING | {Sleeve / Ball} bearing |
| ENCLOSURE | {Open / Drip-proof / Splash proof / Semi-enclosed / Totally enclosed fan-cooled} |
| NOISE | {Normal / Quiet} operating |

Similar or equal to the Westinghouse type SK motor and to conform to NEMA requirements.

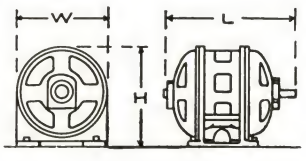
### TYPE SK, DIRECT-CURRENT MOTORS, SHUNT WOUND, CONSTANT SPEED

| Hp. | Volts | Full Load, r.p.m. | Max. Speed* | Frame No. | Net Wt. | Full load, amps. |
|---|---|---|---|---|---|---|
| ¾ | 115 | 1150 | 2300 | W-204 | 85 | 6.6 |
| | | 850 | 1700 | W-224 | 120 | 6.6 |
| | 230 | 1150 | 2300 | W-204 | 85 | 3.3 |
| | | 850 | 1700 | W-224 | 120 | 3.3 |
| 1 | 115 | 1750 | 2190 | W-204 | 85 | 8.4 |
| | | 1150 | 2300 | W-204 | 85 | 8.5 |
| | | 850 | 1700 | W-225 | 140 | 8.6 |
| | 230 | 1750 | 2190 | W-204 | 85 | 4.2 |
| | | 1150 | 2300 | W-204 | 85 | 4.2 |
| | | 850 | 1700 | W-225 | 140 | 4.3 |
| | | | 2190 | W-204 | | 1.76 |
| | | | 2300 | W-204 | | 1.78 |
| | | | 1700 | W-225 | | 1.80 |
| 1½ | 115 | 1750 | 2190 | W-224 | 120 | 12.3 |
| | | 1150 | 2300 | W-224 | 120 | 12.6 |
| | | 850 | 1700 | 254 | 195 | 12.6 |
| | | 575 | 1150 | 284 | 260 | 12.6 |
| | 230 | 1750 | 2190 | W-224 | 120 | 6.2 |
| | | 1150 | 2300 | W-224 | 195 | 6.3 |
| | | 850 | 1700 | 254 | 260 | 6.4 |
| | | 575 | 1150 | 284 | | 6.5 |
| 2 | 115 | 1750 | 2190 | W-225 | 140 | 16.0 |
| | | 1150 | 2300 | F-225 | 165 | 16.2 |
| | | 850 | 1700 | 254 | 195 | 16.0 |
| | | 575 | 1150 | 284 | 260 | 16.0 |
| | 230 | 1750 | 2190 | W-225 | 140 | 8 |
| | | 1150 | 2300 | F-225 | 165 | 8 |
| | | 850 | 1700 | 254 | 195 | 8 |
| | | 575 | 1150 | 284 | 260 | 8 |
| 3 | 115 | 1750 | 2190 | F-225 | 165 | 23 |
| | | 1150 | 2300 | 254 | 195 | 26 |
| | | 850 | 1700 | 284 | 260 | 24 |
| | | 575 | 1150 | 43 | 445 | 25 |
| | 230 | 1750 | 2190 | F-225 | 165 | 11.8 |
| | | 1150 | 2300 | 254 | 195 | 12.6 |
| | | 850 | 1700 | 284 | 260 | 12.6 |
| | | 575 | 1150 | 43 | 445 | 12.6 |
| 5 | 115 | 1750 | 2190 | 254 | 195 | 40 |
| | | 1150 | 2300 | 284 | 260 | 40 |
| | | 850 | 1700 | 43 | 445 | 36.6 |
| | | 575 | 1150 | 63-A | 540 | 38 |
| | 230 | 1750 | 2190 | 254 | 196 | 20 |
| | | 1150 | 2300 | 284 | 260 | 20 |
| | | 850 | 1700 | 43 | 445 | 19.1 |
| | | 575 | 1150 | 63-A | 540 | 19 |
| 7½ | 115 | 1750 | 2190 | 284 | 260 | 56.3 |
| | | 1150 | 1725 | 43 | 445 | 56.4 |
| | | 850 | 1700 | 63 | 530 | 56 |
| | | 575 | 1150 | 83 | 745 | 56.4 |
| | 230 | 1750 | 2190 | 284 | 260 | 29 |
| | | 1150 | 1725 | 43 | 445 | 28.2 |
| | | 850 | 1700 | 63 | 530 | 29 |
| | | 575 | 1150 | 83 | 745 | 29 |
| 10 | 115 | 1750 | 2190 | 43 | 445 | 75.9 |
| | | 1150 | 1725 | 63 | 530 | 75.4 |
| | | 850 | 1700 | 83 | 745 | 75 |
| | | 575 | 1150 | 93 | 840 | 75.5 |
| | 230 | 1750 | 2190 | 43 | 445 | 37.5 |
| | | 1150 | 1725 | 63 | 530 | 37.5 |
| | | 850 | 1700 | 83 | 745 | 38 |
| | | 575 | 1150 | 93 | 840 | 38 |
| 15 | 115 | 1750 | 2190 | 63 | 540 | 112 |
| | | 1150 | 1725 | 83 | 745 | 113 |
| | | 850 | 1700 | 93 | 840 | 112 |
| | | 575 | 1150 | 113 | 1100 | 113 |
| | 230 | 1750 | 2190 | 63 | 540 | 55.6 |
| | | 1150 | 1725 | 83 | 745 | 55.3 |
| | | 850 | 1700 | 93 | 840 | 56 |
| | | 575 | 1150 | 113 | 1100 | 56 |
| 20 | 115 | 1750 | 2190 | 83 | 745 | 160 |
| | | 1150 | 1725 | 93 | 840 | 148 |
| | | 850 | 1700 | 103 | 1000 | 150 |
| | | 575 | 1150 | 123 | 1300 | 150 |
| | 230 | 1750 | 2190 | 83 | 745 | 75 |
| | | 1150 | 1725 | 93 | 840 | 74 |
| | | 850 | 1700 | 103 | 1000 | 73.5 |
| | | 575 | 1150 | 123 | 1300 | 74.5 |
| 25 | 115 | 1750 | 2190 | 93 | 840 | 181 |
| | | 1150 | 1725 | 103 | 1000 | 182 |
| | | 850 | 1700 | 113 | 1100 | 185 |
| | | 575 | 1150 | 133 | 1600 | 184 |
| | 230 | 1750 | 2190 | 83 | 745 | 91.5 |
| | | 1150 | 1725 | 103 | 1000 | 91.7 |
| | | 850 | 1700 | 113 | 1100 | 92 |
| | | 575 | 1150 | 133 | 1600 | 92 |

*By field control.

### DIMENSIONS IN INCHES, TYPE SK, D-C. MOTORS

| Frame No. | H. | W. | L. | Shpg. Wt. | Frame No. | H. | W. | L. | Shpg. Wt. |
|---|---|---|---|---|---|---|---|---|---|
| W204 | 9⅞ | 10 | 17 | 95 | 63 | 18 11/16 | 19 | 34 15/16 | 625 |
| W224 | 11 | 11 | 19½ | 145 | 83 | 22 11/16 | 23 | 36½ | 820 |
| F225 | 11 | 11 | 21¾ | 185 | 93 | 22 15/16 | 23¾ | 38 | 918 |
| W225 | 11 | 11 | 20¼ | 165 | 103 | 25⅞ | 26½ | 39 3/8 | 1090 |
| 254 | 12⅜ | 12½ | 24¼ | 215 | 113 | 25⅞ | 26½ | 40 5/8 | 1185 |
| 284 | 14 | 14 | 26½ | 285 | 123-L | 28 3/16 | 28¾ | 44 1/16 | 1445 |
| 43 | 17 15/16 | 18⅛ | 32 5/16 | 490 | 123 | 28 5/16 | 28¾ | 42 7/16 | 1420 |
| 63-A | 18 11/16 | 19 | 34 15/16 | 630 | 133 | 30½ | 29 | 45 5/16 | 1825 |



Westinghouse

# CONTROL FOR DIRECT CURRENT MOTORS

## CONTROL REQUIRED



7010 Rheostat



Safety Switch



8512 Timestarter



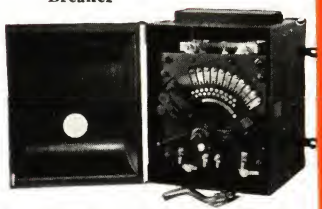
Sentinel Breaker



Nofuze Breaker

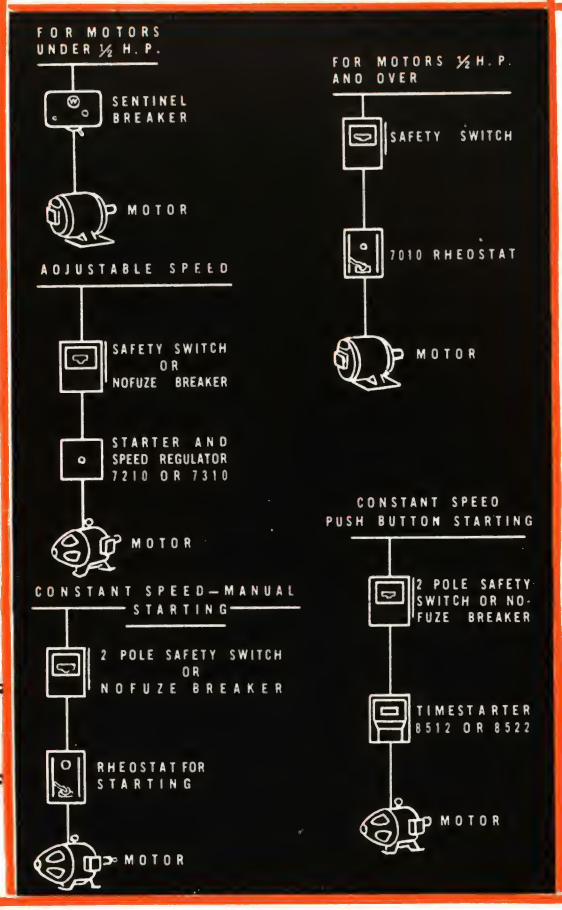


8522 Timestarter



7210, 7310 Starter and Speed Regulator

## HOOK-UP




## TYPICAL SPECIFICATION

### SPECIFICATION M

Control for Constant Speed DC.....
(Fan, Pump, etc.)

Motors shall consist of an enclosed manually operated rheostatic controller for starting duty only and to include a self-contained NEMA class 114 resistor. A low voltage device is to be provided to latch the Rheostat operating Handle in the Run position, on normal voltage. Control to be Westinghouse Class 7010 or approved equal.

### SPECIFICATION N

Control for Constant Speed DC.....
(Fan, Pump, etc.)

Motors shall consist of an enclosed magnetic controller and resistors for starting duty only. The controller is to be push-button operated and is to provide thermal overload and low voltage protection and definite time limit acceleration. Control to be Westinghouse Class 8512B, 8513B, 8522B or approved equal.

### SPECIFICATION O

Control for Variable Speed DC.....
(Fan, Pump, etc.)

Motors shall consist of an enclosed manually operated rheostatic controller and resistors arranged to provide 25% speed increase by field control from a common operating mechanism. The controller is to be provided with a low voltage release device which will return the rheostat handle to the "off" position in case of voltage failure. Control to be Westinghouse Class 7210 or approved equal.

**Manual Control**

**Face Plate Starters and Speed Regulators**

| Hp. | | Starters Class 7010 | | | | Sp. Regulators, Field Cont. Class 7210 | | | | Sp. Regulators, Armature Cont. Class 7301 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Dimensions in Inches | | | Weight | Dimensions in Inches | | | Weight | Dimensions in Inches | | | Weight |
| 115 V. | 230 V. | Width | Height | Depth | | Width | Height | Depth | | Width | Height | Depth | |
| ¼ to ½ | ¼ to ½ | 4¾ | 4¾ | 3¾ | 5 | 16½ | 20 | 14¼ | 50 | 16½ | 20 | 14¼ | 60 |
| ¾ to 2 | ¾ to 2 | 7½ | 9 | 8 | 15 | 16½ | 20 | 14¼ | 50 | 16½ | 20 | 14¼ | 60 |
| ..... | 3 | 7½ | 9 | 8 | 18 | 16½ | 20 | 14¼ | 50 | 16½ | 17⅜ | 17⅝ | 80 |
| 3 | 5 to 7½ | 12 | 14¼ | 11⅜ | 35 | 16½ | 20 | 14¼ | 50 | 16½ | 17⅜ | 17⅝ | 80 |
| 5-10 | 10 | 16½ | 20 | 14¼ | 50 | 16½ | 20 | 14¼ | 50 | 16½ | 17⅜ | 17⅝ | 120 |
| ..... | 15-20 | 16½ | 20 | 14¼ | 50 | 16½ | 20 | 14¼ | 50 | 18⅝ | 23½ | 20¼ | 130 |
| ..... | 25 | 16½ | 20 | 14¼ | 50 | 16½ | 20 | 14¼ | 50 | 18⅝ | 23½ | 29 | 150 |
| 15-25 | 30-50 | 20½ | 24 | 14¼ | 80 | 20½ | 24 | 17¾ | 90 | 18⅝ | 23½ | 29 | 250 |

**Magnetic Control**

**D-C. Magnetic Timestarters**

| Class | 115 V. | Horsepower | | Dimensions in Inches | | | Weight |
|---|---|---|---|---|---|---|---|
| | | 230 V. | 550 V. | Width | Height | Depth | |
| 8512-B2 | 1 to 5 | 1 to 10 | ..... | 9 | 12¼ | 11½ | 20 |
| 8513-B | 1 to 7½ | 1 to 7½ | 1 to 7½ | 9 15/16 | 9 | 12 3/16 | 60 |
| 8513-B | 10 | 10 to 20 | 10 to 20 | 12 7/16 | 23 | 14⅛ | 60 |
| 8522-B | 15-20 | 25 to 40 | 25 to 40 | 17¼ | 28⅛ | 14½ | 185 |
| 8522-B | ..... | ..... | 50 to 75 | 17¼ | 32⅛ | 14½ | 300 |
| 8522-B | 25-40 | 50 to 75 | ..... | 19¼ | 32⅛ | 18½ | 300 |
| 8522-B | ..... | ..... | 100 to 150 | 19¼ | 32⅛ | 22½ | 400 |
| 8522-B | 50 to 75 | 100 to 150 | ..... | 27 | 66 | 18¾ | 850 |

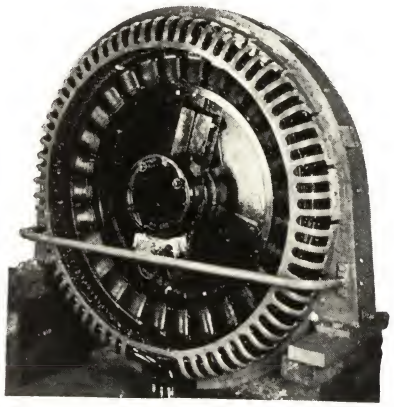


WESTINGHOUSE ELECTRIC

Westinghouse

# SYNCHRONOUS MOTORS





## APPLICATION

Synchronous motors afford a very economical means of improving power factor and efficiencies thereby reducing power costs. Type G general purpose synchronous motors, built in sizes as low as 20 horsepower, make these economies possible in even the smaller size plant or building and are supplied in ratings of 20 hp. and above in all commercial voltages and frequencies; 514 to 1800 r.p.m., 2 and 3 phase, 100% and 80% power factor. Type HR 100 to 450 r.p.m., Low Speed Engine Type and Coupled Synchronous Motors for direct drive are admirably adapted for operating constant speed compressors and pumps and low speed fans. Synchronous motors are recommended for all types of constant speed machinery such as fans, blowers, compressors, pumps, etc.

## FEATURES

POWER FACTOR CORRECTION—Synchronous motors make an excellent means of correcting and controlling power factor. They can be furnished for any desired power factor—usually 100% or 80% leading at normal load.

## HOW TO SELECT

First determine the amount of Power Factor correction that is desired. Then select the constant speed motor application which will permit the use of a synchronous motor large enough to give the desired amount of power factor correction.

## DIMENSIONS

Available when quotation is made for the special motor to give the desired PF. correction for the particular application.

## TYPICAL SPECIFICATION

| | Indicate Option |
|---|---|
| | (rating) Horsepower (application) motor shall be of the Synchronous type |
| POWER FACTOR | {80% / 100%} power factor |
| VOLTAGE | .....volts (all commercial voltages available) |
| PHASE | {2 / 3} phase |
| FREQUENCY | 25, 50, 60 cycles |
| TORQUE Specify Each | Starting Torque—.....% full load torque<br>Pull-in Torque—.....% full load torque<br>Pull-out Torque—.....% full load torque |

| | Indicate Option |
|---|---|
| BEARINGS | {Sleeve / Ball} bearings |
| ENCLOSURE | {Open / Drip-proof covers / Splash-proof covers / Totally enclosed self ventilated / Totally enclosed forced ventilated / Enclosed collectors} |
| EXCITATION | {Direct Connected / Belted / Motor Generator set} Exciter |
| INSULATION | {NEMA Class A / Special moisture resisting insulation.} |

## WHERE TO BUY

See your nearest Westinghouse District office for detailed information. Addresses of district offices given on the back cover.



WESTINGHOUSE ELECTRIC

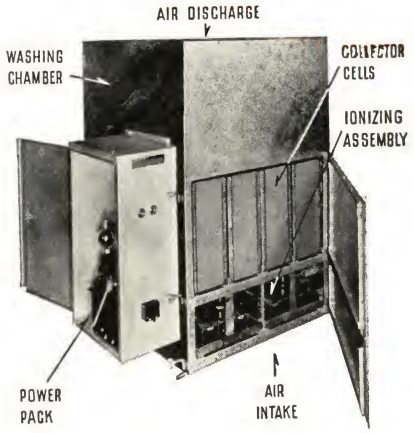
Westinghouse

# PRECIPITRON



*Left:* Field Bldg., Chicago. First 5 floors, 16 Units 272,000 C.F.M. capacity.

*Right:* 300 C.F.M. Industrial Unit.




## APPLICATION

The Precipitron is a simple but highly efficient dust precipitator which, with a pressure drop not exceeding 1/10 inch of water, will remove more than 95% of all solid matter from air or gases regardless of the size of the particles. It is particularly adaptable for use with heating, ventilating, and air conditioning systems.

Mechanical filters will not remove particles smaller than .0025 inch in diameter without a prohibitive pressure drop. However, tests show that more than 80% of the dust particles in a normal atmosphere are smaller than .0025 inches in diameter. From the standpoint of damage the smaller particles of dust are as harmful as the larger. The same applies to smoke, pollen, bacteria and germs.

## FEATURES

SIMPLE, COMPACT DESIGN. The PRECIPITRON is composed of three main parts, the power pack, the ionizing chamber, and the collector cells.

FLEXIBILITY—Standard size units can be assembled together to build up cleaners of various capacities. Installations have been made ranging from 300 C.F.M. to 272,000 C.F.M.

SAFETY—No exposed live parts, no appreciable generation of toxic or objectionable gases.

EFFICIENCY—If the rate of flow is not in excess of 375 lineal feet per minute practically all solid matter is removed.

ADAPTABILITY—Can be installed as part of air conditioning, heating or ventilating systems with little additional duct work.

## HOW TO SELECT

Standard Units may be selected from the Table and assembled to form a complete cleaner of the required capacity. If your cleaning problem is one of removing ordinary atmospheric impurities, standard units are suitable. If your problem is a special one consult your nearest Westinghouse representative.

## TYPICAL SPECIFICATIONS

The contractor shall furnish and install an air cleaner of the electrostatic type capable of cleaning C.F.M. The velocity of air at any point in the cleaner shall not exceed 375 F.P.M. and the pressure drop through the cleaner shall not exceed 1/10 inch of water gauge. The efficiency shall not be less than 90% (Bureau of Standards Blackness Test) on normal atmospheric impurities.

The cleaner shall consist of standard collector cells, ionizing units, and Power Packs assembled and wired in line with the manufacturers' recommendations.

The contractor shall be responsible for all necessary duct, supporting, supporting frame, housing, drains, water supply connections for cleaning purposes, interlocks and wiring to conform with underwriters' specifications and the manufacturers' recommendations.

The cleaner shall be similar or equal to the Precipitron as manufactured by Westinghouse E. & M. Co.

## DIMENSIONS

| Name of Part | Capacity | Depth | Width | Height | Wgt. |
|---|---|---|---|---|---|
| Collector Cell (Cor-ten) | 375-C.F.M. | 19″ | 8⅛″ | 17¾″ | 65 |
| Collector Cell (Aluminum) | 375-C.F.M. | 19⅛″ | 8¼″ | 18″ | 41 |
| Ionizing Unit..... | 2-Cell | 6 5/16″ | 16¼″ | 17¾″ | 21 |
| Ionizing Unit..... | 3-Cell | 6 5/16″ | 23¾″ | 17¾″ | 24 |
| Collector Cell (Cor-ten)... | 550-C.F.M. | 19″ | 8⅛″ | 25⅞″ | 87 |
| Collector Cell (Aluminum) | 550-C.F.M. | 19⅛″ | 8¼″ | 25⅞″ | 55 |
| Ionizing Unit..... | 2-Cell | 6 5/16″ | 16¼″ | 25⅞″ | 28 |
| Ionizing Unit..... | 3-Cell | 6 5/16″ | 23¾″ | 25⅞″ | 32 |
| Collector Cell (Cor-ten)... | 750-C.F.M. | 19″ | 8⅛″ | 35⅞″ | 130 |
| Collector Cell (Aluminum) | 750-C.F.M. | 19⅛″ | 8¼″ | 25¾″ | 75 |
| Ionizing Unit..... | 2-Cell | 6 5/16″ | 16¼″ | 35 5/16″ | 34½ |
| Ionizing Unit..... | 3-Cell | 6 5/16″ | 23¾″ | 35 5/16″ | 40 |
| Power Pack 85 watts..... | 5-cell Cap. | 14″ | 12⅞″ | 26⅜″ | 76 |
| Power Pack 480 watts..... | 40-cell Cap. | 15″ | 22″ | 45″ | 325 |
| Room Unit (self-contained) | 300-C.F.M. | 14″ | 36″ | 34″ | 220 |

## WHERE TO BUY

Room Units Only—Consult Atmospheric Electric Filter Corp., Woolworth Building, New York City.

Industrial Applications for Processing only—Consult Pangborn Corporation, Hagerstown, Md.

For all air cleaning application consult your nearest Westinghouse representative. See list on back cover.

For additional information request copies of Leaflet F-8398, Instruction Book IB-5797 and I. B.-2706.



WESTINGHOUSE ELECTRIC

Westinghouse

# MOTOR BRANCH CIRCUIT PROTECTION

## TABLE FOR SELECTING SWITCH, CIRCUIT BREAKER, WIRE AND FUSE SIZES FOR MOTOR BRANCH CIRCUITS ADAPTED FROM 1935 N. E. CODE SEC. 808

| Full load current rating of motor | Minimum allowable size of copper wire American gauge or Cir. Mil. | | Fusible switch or ABI Breaker size for disconnect Columns 5, 7 and 9 — Maximum Rating of Branch Circuit Breaker Amperes Based on 20 Seconds Accelerating Time† | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Squirrel-cage and synchronous (full-voltage, reactor and resistor starting). Single phase | | | Squirrel-cage and synchronous (auto-transformer starting). High-reactance squirrel-cage*** | | | Wound Rotor A-C. and D-C. | | |
| 1 | 2 | 3 | 4 | 5 | | 6 | 7 | | 8 | 9 | |
| | | Non-fusible switch size for disconnect | Max. allowable rating of branch circuit fuses | Fusible Switch | Circuit Breaker | Max. allowable rating of branch circuit fuses | Fusible Switch | Circuit Breaker | Max. allowable rating of branch circuit fuses | Fusible Switch | Circuit Breaker |
| Amp. | Rubber | Amp. | Amp. | Amp. | Amp. | Amp. | Amp. | Amp. | Amp. | Amp. | Amp. |
| 1** | 14 | 30 | 15 | 30 | 15 | 15 | 30 | 15 | 15 | 30 | 15 |
| 2** | 14 | 30 | 15 | 30 | 15 | 15 | 30 | 15 | 15 | 30 | 15 |
| 3** | 14 | 30 | 15 | 30 | 15 | 15 | 30 | 15 | 15 | 30 | 15 |
| 4** | 14 | 30 | 15 | 30 | 15 | 15 | 30 | 15 | 15 | 30 | 15 |
| 5** | 14 | 30 | 15 | 30 | 15 | 15 | 30 | 15 | 15 | 30 | 15 |
| 6** | 14 | 30 | 20 | 30 | 15 | 15 | 30 | 15 | 15 | 30 | 15 |
| 7 | 14 | 30 | 25 | 30 | 15 | 20 | 30 | 15 | 15 | 30 | 15 |
| 8 | 14 | 30 | 25 | 30 | 20 | 20 | 30 | 20 | 15 | 30 | 15 |
| 9 | 14 | 30 | 30 | 30 | 20 | 25 | 30 | 20 | 15 | 30 | 15 |
| 10 | 14 | 30 | 30 | 30 | 25 | 25 | 30 | 20 | 15 | 30 | 20 |
| 11 | 14 | 30 | 35 | 60 | 25 | 30 | 30 | 25 | 20 | 30 | 20 |
| 12 | 14 | 30 | 40 | 60 | 25 | 30 | 30 | 25 | 20 | 30 | 20 |
| 13 | 12 | 30 | 40 | 60 | 35 | 35 | 60 | 35 | 20 | 30 | 25 |
| 14 | 12 | 30 | 45 | 60 | 35 | 35 | 60 | 35 | 25 | 30 | 25 |
| 15 | 12 | 30 | 45 | 60 | 35 | 40 | 60 | 35 | 25 | 30 | 25 |
| 16 | 12 | 30 | 50 | 60 | 35 | 40 | 60 | 35 | 25 | 30 | 25 |
| 17 | 10 | 30 | 60 | 60 | 50 | 45 | 60 | 35 | 30 | 30 | 35 |
| 18 | 10 | 30 | 60 | 60 | 50 | 45 | 60 | 35 | 30 | 30 | 35 |
| 19 | 10 | 30 | 60 | 60 | 50 | 50 | 60 | 35 | 30 | 30 | 35 |
| 20 | 10 | 30 | 60 | 60 | 50 | 50 | 60 | 35 | 30 | 30 | 35 |
| 22 | 8 | 30 | 70 | 100 | 50 | 60 | 60 | 50 | 35 | 60 | 35 |
| 24 | 8 | 30 | 80 | 100 | 50 | 60 | 60 | 50 | 40 | 60 | 50 |
| 26 | 8 | 60 | 80 | 100 | 50 | 70 | 100 | 50 | 40 | 60 | 50 |
| 28 | 8 | 60 | 90 | 100 | 50‡ | 70 | 100 | 50 | 45 | 60 | 50 |
| 30 | 6 | 60 | 90 | 100 | 50‡ | 70 | 100 | 50 | 45 | 60 | 50 |
| 32 | 6 | 60 | 100 | 100 | 70 | 70 | 100 | 50 | 50 | 60 | 50 |
| 34 | 6 | 60 | 110 | 200 | 70 | 70 | 100 | 70 | 60 | 60 | 70 |
| 36 | 6 | 60 | 110 | 200 | 70 | 80 | 100 | 70 | 60 | 60 | 70 |
| 38 | 6 | 60 | 125 | 200 | 70 | 80 | 100 | 70 | 60 | 60 | 70 |
| 40 | 6 | 60 | 125 | 200 | 70 | 80 | 100 | 70 | 60 | 60 | 70 |
| 42 | 5 | 60 | 125 | 200 | 70 | 90 | 100 | 70 | 70 | 100 | 70 |
| 44 | 5 | 60 | 125 | 200 | 70 | 90 | 100 | 70 | 70 | 100 | 70 |
| 46 | 4 | 60 | 150 | 200 | 70 | 100 | 100 | 70 | 70 | 100 | 70 |
| 48 | 4 | 60 | 150 | 200 | 90 | 100 | 100 | 90 | 80 | 100 | 90 |
| 50 | 4 | 60 | 150 | 200 | 90 | 100 | 100 | 90 | 80 | 100 | 90 |
| 52 | 4 | 100 | 175 | 200 | 90 | 110 | 200 | 90 | 80 | 100 | 90 |
| 54 | 4 | 100 | 175 | 200 | 90 | 110 | 200 | 90 | 90 | 100 | 90 |
| 56 | 4 | 100 | 175 | 200 | 90 | 120 | 200 | 90 | 90 | 100 | 90 |
| 58 | 3 | 100 | 175 | 200 | 90 | 120 | 200 | 90 | 90 | 100 | 90 |
| 60 | 3 | 100 | 200 | 200 | 90 | 120 | 200 | 90 | 90 | 100 | 90 |
| 62 | 3 | 100 | 200 | 200 | 100 | 125 | 200 | 100 | 100 | 100 | 100 |
| 64 | 3 | 100 | 200 | 200 | 100 | 150 | 200 | 100 | 100 | 100 | 100 |
| 66 | 2 | 100 | 200 | 200 | 100 | 150 | 200 | 100 | 100 | 100 | 100 |
| 68 | 2 | 100 | 225 | 400 | 125 | 150 | 200 | 125 | 110 | 200 | 125 |
| 70 | 2 | 100 | 225 | 400 | 125 | 150 | 200 | 125 | 110 | 200 | 125 |
| 72 | 2 | 100 | 225 | 400 | 125 | 150 | 200 | 125 | 110 | 200 | 125 |
| 74 | 1 | 100 | 225 | 400 | 125 | 150 | 200 | 125 | 125 | 200 | 125 |
| 76 | 1 | 100 | 250 | 400 | 125 | 175 | 200 | 125 | 125 | 200 | 125 |
| 78 | 1 | 100 | 250 | 400 | 125 | 175 | 200 | 125 | 125 | 200 | 125 |
| 80 | 1 | 100 | 250 | 400 | 125 | 175 | 200 | 125 | 125 | 200 | 125 |
| 82 | 0 | 200 | 250 | 400 | 125 | 175 | 200 | 125 | 125 | 200 | 125 |
| 84 | 0 | 200 | 250 | 400 | 150 | 175 | 200 | 150 | 150 | 200 | 150 |
| 86 | 0 | 200 | 300 | 400 | 150 | 175 | 200 | 150 | 150 | 200 | 150 |

**For the grouping of small motors under the protection of a single set of fuses, see Sec. 808 N. E. Code.

***High reactance squirrel-cage motors are those designed to limit the starting current by means of deep-slot secondaries or double-wound secondaries and are generally started on full voltage.

†Applications having unusually long starting period or frequent starting refer to works for proper size breaker. High ambients affect rating of breakers (ambients over 75°F. use a breaker rated one percent higher for each 5°F. For ambients under 75°F. you may use a breaker rated one percent lower for each 5°F. change. This rule applies over a range of 40°F. either way).

‡Does not allow more than 8 seconds starting time.

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## MOTOR BRANCH CIRCUIT PROTECTION (Continued)

### TABLE FOR SELECTING SWITCH, CIRCUIT BREAKER, WIRE AND FUSE SIZES FOR MOTOR BRANCH CIRCUITS ADAPTED FROM 1935 N. E. CODE SEC. 808

| Full load current rating of motor | Minimum allowable size of copper wire American gauge or Cir. Mil. | | Fusible switch or ABI Breaker size for disconnect Columns 5, 7 and 9 Maximum Rating of Branch Circuit Breaker Amperes Based on 20 Seconds Accelerating Time† | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Squirrel-cage and synchronous (full-voltage, reactor and resistor starting). Single phase | | | Squirrel-cage and synchronous (auto-transformer starting). High-reactance squirrel-cage*** | | | Wound Rotor A-C. and D-C. | | |
| 1 | 2 | 3 | 4 | 5 | | 6 | 7 | | 8 | 9 | |
| | | Non-fusible switch size for disconnect | Max. allowable rating of branch circuit fuses | Fusible Switch | Circuit Breaker | Max. allowable rating of branch circuit fuses | Fusible Switch | Circuit Breaker | Max. allowable rating of branch circuit fuses | Fusible Switch | Circuit Breaker |
| Amp. | Rubber | Amp. | Amp. | Amp. | Amp. | Amp. | Amp. | Amp. | Amp. | Amp. | Amp. |
| 88 | 0 | 200 | 300 | 400 | 150 | 200 | 200 | 150 | 150 | 200 | 150 |
| 90 | 0 | 200 | 300 | 400 | 150 | 200 | 200 | 150 | 150 | 200 | 150 |
| 92 | 0 | 200 | 300 | 400 | 150 | 200 | 200 | 150 | 150 | 200 | 150 |
| 94 | 0 | 200 | 300 | 400 | 150 | 200 | 200 | 150 | 150 | 200 | 150 |
| 96 | 0 | 200 | 300 | 400 | 150 | 200 | 200 | 150 | 150 | 200 | 150 |
| 98 | 0 | 200 | 300 | 400 | 150 | 200 | 200 | 150 | 150 | 200 | 150 |
| 100 | 0 | 200 | 300 | 400 | 150 | 200 | 200 | 150 | 150 | 200 | 150 |
| 105 | 00 | 200 | 350 | 400 | 175 | 225 | 400 | 175 | 175 | 200 | 175 |
| 110 | 00 | 200 | 350 | 400 | 175 | 225 | 400 | 175 | 175 | 200 | 175 |
| 115 | 00 | 200 | 350 | 400 | 175 | 250 | 400 | 175 | 175 | 200 | 175 |
| 120 | 00 | 200 | 400 | 400 | 200 | 250 | 400 | 200 | 200 | 200 | 200 |
| 125 | 000 | 200 | 400 | 400 | 200 | 250 | 400 | 200 | 200 | 200 | 200 |
| 130 | 000 | 200 | 400 | 400 | 200 | 300 | 400 | 200 | 200 | 200 | 200 |
| 135 | 000 | 200 | 450 | 600 | 200 | 300 | 400 | 200 | 225 | 400 | 200 |
| 140 | 000 | 200 | 450 | 600 | 225 | 300 | 400 | 225 | 225 | 400 | 225 |
| 145 | 200,000 | 200 | 450 | 600 | 225 | 300 | 400 | 225 | 225 | 400 | 225 |
| 150 | 200,000 | 200 | 450 | 600 | 225 | 300 | 400 | 225 | 225 | 400 | 225 |
| 155 | 200,000 | 200 | 500 | 600 | 275 | 350 | 400 | 275 | 250 | 400 | 275 |
| 160 | 200,000 | 200 | 500 | 600 | 275 | 350 | 400 | 275 | 250 | 400 | 275 |
| 165 | 0000 | 400 | 500 | 600 | 275 | 350 | 400 | 275 | 250 | 400 | 275 |
| 170 | 0000 | 400 | 500 | 600 | 275 | 350 | 400 | 275 | 300 | 400 | 275 |
| 175 | 0000 | 400 | 600 | 600 | 275 | 350 | 400 | 275 | 300 | 400 | 275 |
| 180 | 0000 | 400 | 600 | 600 | 275 | 400 | 400 | 275 | 300 | 400 | 275 |
| 185 | 250,000 | 400 | 600 | 600 | 300 | 400 | 400 | 300 | 300 | 400 | 300 |
| 190 | 250,000 | 400 | 600 | 600 | 300 | 400 | 400 | 300 | 300 | 400 | 300 |
| 195 | 250,000 | 400 | 600 | 600 | 300 | 400 | 400 | 300 | 300 | 400 | 300 |
| 200 | 250,000 | 400 | 600 | 600 | 300 | 400 | 400 | 300 | 300 | 400 | 300 |
| 210 | 300,000 | 400 | | | | 450 | 600 | 325 | 350 | 400 | 325 |
| 220 | 300,000 | 400 | | | | 450 | 600 | 325 | 350 | 400 | 325 |
| 230 | 350,000 | 400 | | | | 500 | 600 | 400 | 350 | 400 | 400 |
| 240 | 350,000 | 400 | | | | 500 | 600 | 400 | 400 | 400 | 400 |
| 250 | 400,000 | 400 | | | | 500 | 600 | 400 | 400 | 400 | 400 |
| 260 | 400,000 | 400 | | | | 600 | 600 | 400 | 400 | 400 | 400 |
| 270 | 500,000 | 400 | | | | 600 | 600 | 450 | 450 | 600 | 450 |
| 280 | 500,000 | 400 | | | | 600 | 600 | 450 | 450 | 600 | 450 |
| 290 | 500,000 | 400 | | | | 600 | 600 | 450 | 450 | 600 | 450 |
| 300 | 500,000 | 400 | | | | 600 | 600 | 450 | 450 | 600 | 450 |
| 320 | 500,000 | 400 | | | | | | | 500 | 600 | 500 |

*For the grouping of small motors under the protection of a single set of fuses see Sec. 808 N. E. Code.

***High reactance squirrel-cage motors are those designed to limit the starting current by means of deep-slot secondaries or double-wound secondaries and are generally started on full voltage.

†Applications having unusually long starting period or frequent starting refer to works for proper size breaker. High ambients affect rating of breakers (ambients over 75° F. use a breaker rated one % higher for each 5° F. For ambients under 75° F. you may use a breaker rating one % lower for each 5° change. This rule applies over a range of 40° F. either way.)

‡Does not allow more than 8 seconds starting time.

### TABLE FOR SELECTING TYPE AB "DE-ION" BREAKERS FOR CONDUCTOR PROTECTION

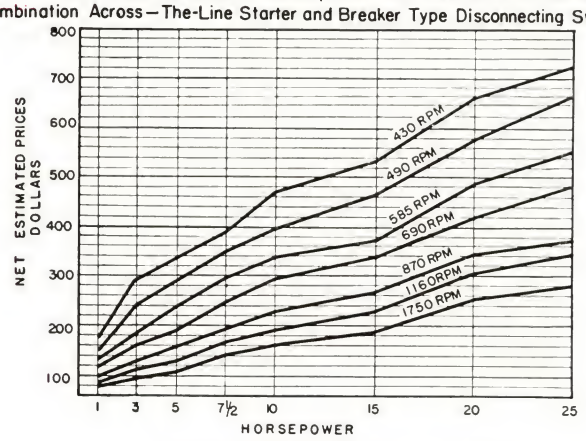
| Gauge No. | Area in Circular Mils | Breaker Size Rubber Insulation Amperes | Gauge No. | Area in Circular Mils | Breaker Size Rubber Insulation Amperes |
|---|---|---|---|---|---|
| 14 | 4,107 | 15 | 000 | 167,800 | 175 |
| 12 | 6,530 | 20 | | 200,000 | 200 |
| 10 | 10,380 | 25 | 0000 | 211,600 | 225 |
| 8 | 16,510 | 35 | | 250,000 | 250 |
| 6 | 26,250 | 50 | | 300,000 | 275 |
| 5 | 33,100 | 50 | | 350,000 | 300 |
| 4 | 41,740 | 70 | | 400,000 | 325 |
| 3 | 52,630 | 70 | | 500,000 | 400 |
| 2 | 66,370 | 90 | | 600,000 | 450 |
| 1 | 83,690 | 100 | | 700,000 | 500 |
| 0 | 105,500 | 125 | | 750,000 | 500 |
| 00 | 133,100 | 150 | | 800,000 | 550 |
| | | | | 900,000 | 600 |

Westinghouse

# ESTIMATING PRICES

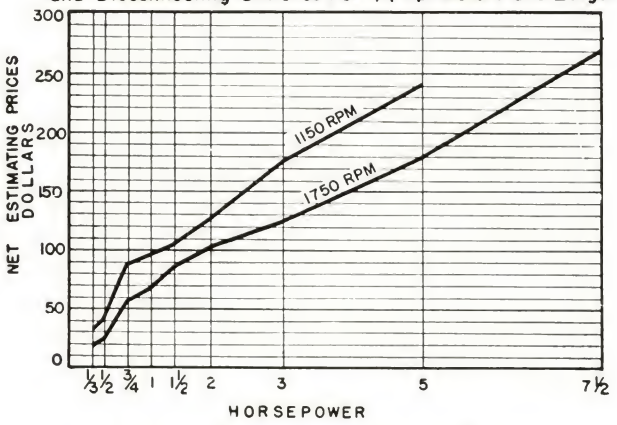
The following curves and tables are for use in estimating costs of apparatus only. The prices are net to users and are subject to change without notice.

Type "CS" a-c. Squirrel Cage, General Purpose, Constant Speed, 40°C, 60 Cycles, 2 and 3 Phase, 220-440 Volt Motor Including Combination Across-The-Line Starter and Breaker Type Disconnecting Switch.



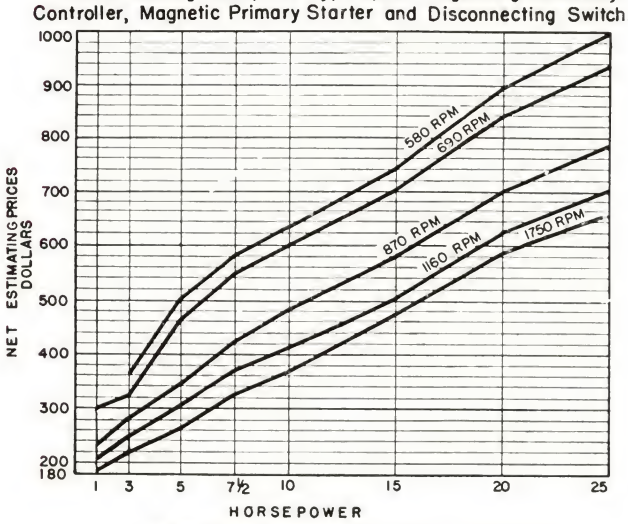

IF THE DESIRED RATING FALLS BETWEEN THOSE LISTED USE THE NEXT HIGHER LISTED RATING

Repulsion-Start, Single-Phase, Constant Speed, 40°C, 110-220 Volt Induction Motor. Including Sentinal Breakers For ½-Hp. Motors and Under — Resistance Type Starters and Disconnecting Switches For ¾-Hp. Motors and Larger.



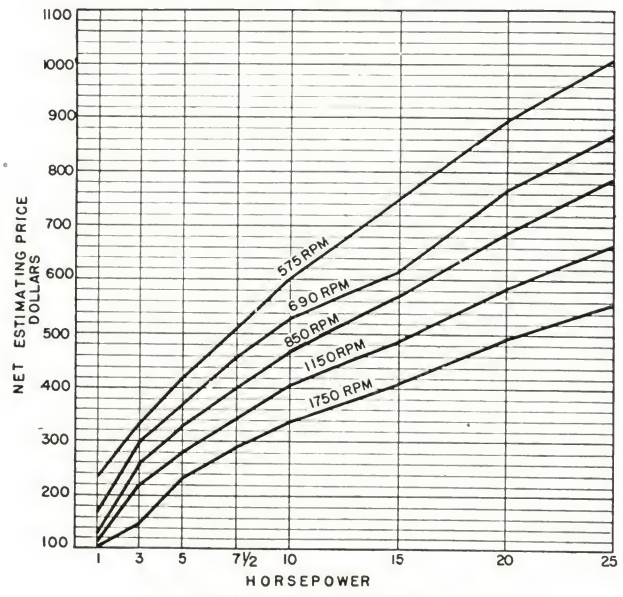

IF THE DESIRED RATING FALLS BETWEEN THOSE LISTED USE THE NEXT HIGHER LISTED RATING

Type "CW" a-c. Wound Rotor, General Purpose, Open, Constant and Varying Speed, 2 and 3 Phase, 60 Cycles, 220-440 Volts 40°C Motor, Including Faceplate Type Speed Regulating Secondary Controller, Magnetic Primary Starter and Disconnecting Switch.



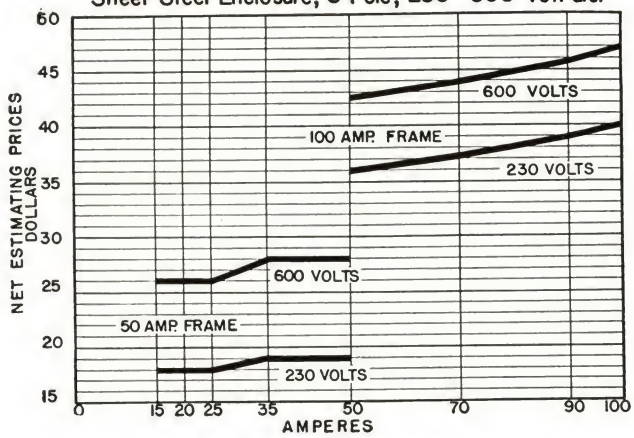

IF THE DESIRED RATING FALLS BETWEEN THOSE LISTED USE THE NEXT HIGHER LISTED RATING

Type "SK" d-c. Shunt Wound, Constant Speed, Open, Horizontal, Sleeve Bearing 40°C 115-230 Volt Motor Including Manual Starting Rheostat Only, And Disconnecting Switch.

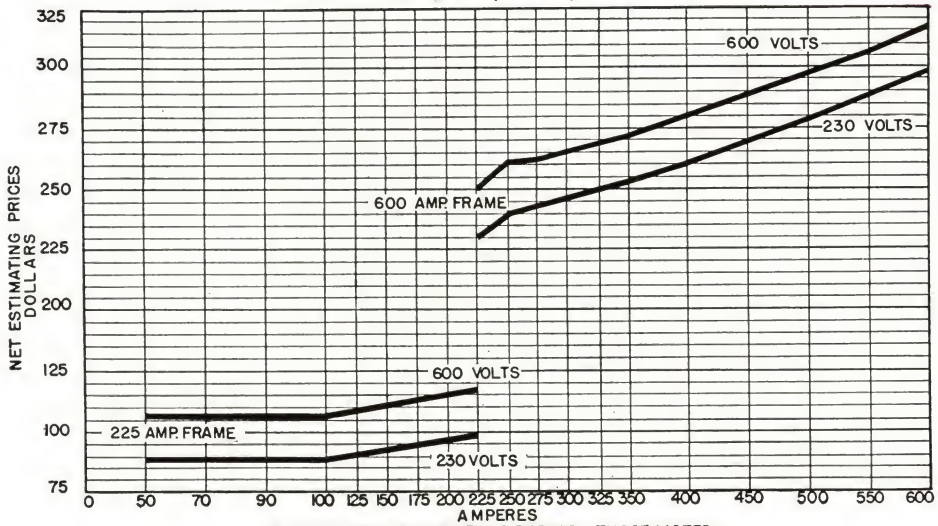



IF THE DESIRED RATING FALLS BETWEEN THOSE LISTED USE THE NEXT HIGHER LISTED RATING

## Type "ABI" Circuit Breakers, Dust Resisting Sheet Steel Enclosure, 3 Pole, 230 - 600 Volt a.c.

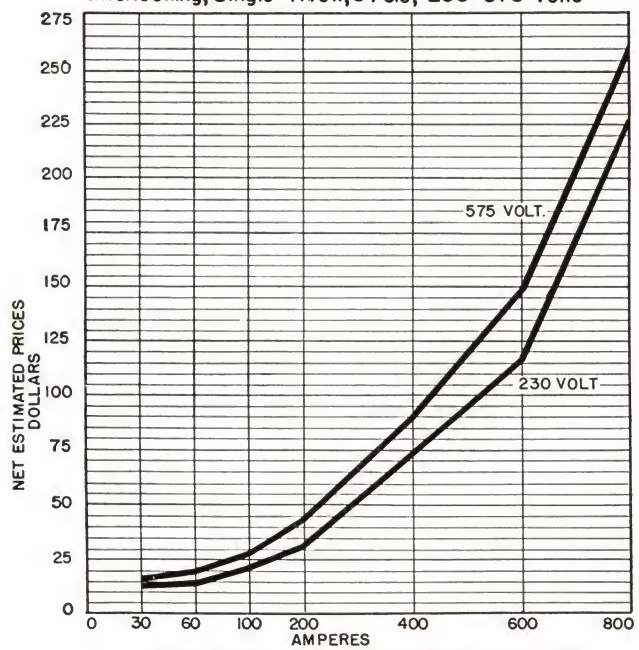



## Type "ABI" Circuit Breaker, Dust Resisting Sheet Steel Enclosure, 3 Pole, 230-600 Volt a.c.




IF THE DESIRED RATING FALLS BETWEEN THOSE LISTED
USE THE NEXT HIGHER LISTED RATING

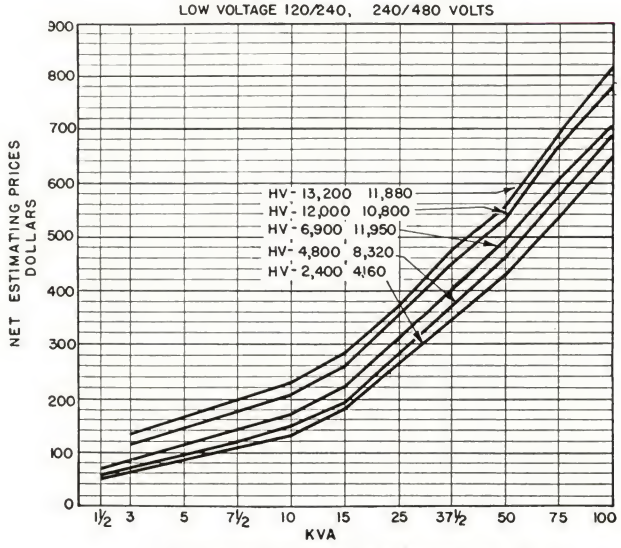
## Type "A" Safety Switches, Fusible, Quick-Make and Quick-Break, Interlocking, Single-Throw, 3 Pole, 230-575 Volts




IF THE DESIRED RATING FALLS BETWEEN THOSE LISTED
USE THE NEXT HIGHER LISTED RATING

## Conventional Distribution Transformers

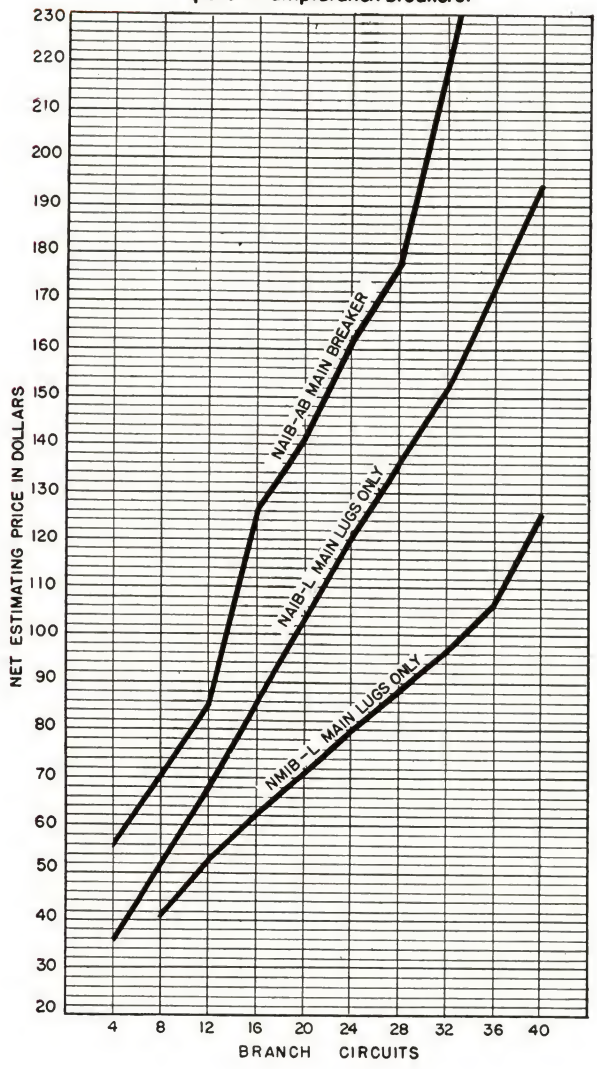
SINGLE PHASE 60 CYCLES
LOW VOLTAGE 120/240, 240/480 VOLTS



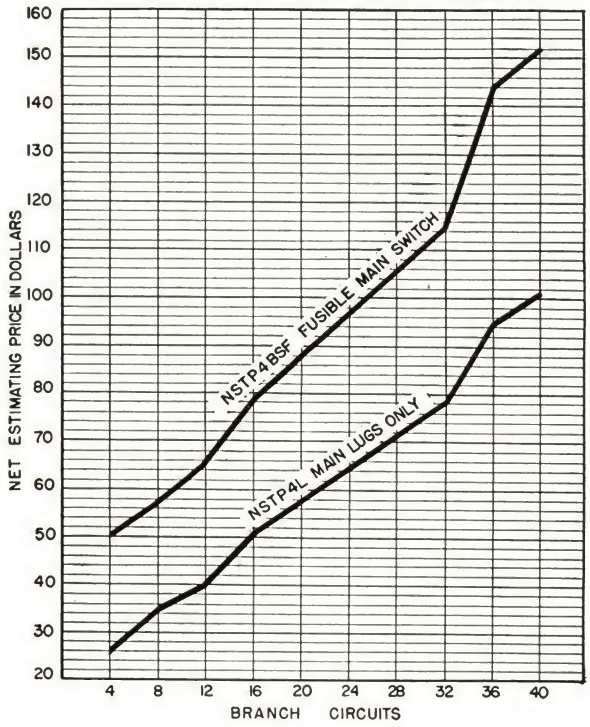

IF THE DESIRED RATING FALLS BETWEEN THOSE LISTED
USE THE NEXT HIGHER LISTED RATING.

Westinghouse

NOFUZE Lighting Distribution Panelboards
Three-phase four-wire mains with single pole 15 amp. branch breakers.




Fuse Type Lighting Distribution Panelboards, Three-phase 4-wire mains with 15 amp. single pole plug fused tumbler switches in branches.




## NOFUZE CONVERTIBLE DISTRIBUTION PANELBOARD

**Net Estimating Prices Only**

| Main Capacity | 225 Amp. | 400 Amp. | 600 Amp. | 800 Amp. | 1000 Amp. |
|---|---|---|---|---|---|
| Base Price | $26.00 | $49.00 | $ 70.00 | $113.00 | $140.00 |

**Add for Each 250 Volt A-C. or 125 Volt D-C. Branch Breaker**

| Breaker Frame Size | 50 Amp. | 100 Amp. | 225 Amp. | 400 Amp. | 600 Amp. |
|---|---|---|---|---|---|
| Price — 2 Pole Breaker | $15.00 | $31.00 | $ 82.00 | $225.00 | $260.00 |
| Price — 3 Pole Breaker | 20.00 | 41.00 | 105.00 | 263.00 | 308.00 |

**Add for Each 600 Volt A-C. or 250 Volt D-C. Branch Breaker**

| | | | | | |
|---|---|---|---|---|---|
| Price — 2 Pole Breaker | $22.00 | $36.00 | $ 94.00 | $240.00 | $270.00 |
| Price — 3 Pole Breaker | 30.00 | 49.00 | 124.00 | 290.00 | 320.00 |

NOTE: If main breakers are desired figure as an additional branch of the same capacity.

Westinghouse

# WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY

## BUSINESS ADDRESSES

①Headquarters, Pittsburgh, Pa.

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*ALLENTOWN, PA., 522 Maple St.
①*APPLETON, WISC., 1708 N. Drew St., P. O. Box 206
†APPLETON, WISC., 1029 So. Outagamie St.
#†*ATLANTA, GA., 426 Marietta St., N. W.
xATTICA, N. Y.
*BAKERSFIELD, CALIF., 2224 San Emedio St.
*BALTIMORE, MD., 118 E. Lombard St.
†BALTIMORE, MD., 501 East Preston Road
§BALTIMORE, MD., 40 S. Calvert St.
①*BEAUMONT, TEXAS, 2293 Broadway Ave., P. O. Box 2367
*BINGHAMTON, N. Y., Suite 704, Marine Midland Bldg., 86 Court St.
*BIRMINGHAM, ALA., 2030 Second Ave.
*BLUEFIELD, W. VA., 208 Bluefield Avenue
§BOISE, IDAHO, P. O. Box 1597
*BOSTON, MASS., 10 High St.
†#BOSTON, MASS., 12 Farnsworth St.
*†BRIDGEPORT, CONN., Bruce Ave. & Seymour St.
*BUFFALO, N. Y., 814 Ellicott Square
†#BUFFALO, N. Y., 1132 Seneca St.
*BURLINGTON, IOWA, 1708 River St.
*BURLINGTON, VER., 208 Park Ave.
*BUTTE, MONTANA, 129 West Park St.
#BUTTE, MONTANA, 742 Bryant Ave.
*CANTON, OHIO, Market & Tuscarawas Sts.
①*CEDAR RAPIDS, IOWA, 507 Longwood Drive, N. E., P. O. Box 148
*†#CHARLOTTE, N. C., 210 East Sixth St.
①*CHARLESTON, W. VA., 107 Oakmont St., P. O. Box 865
*CHATTANOOGA, TENN., 536 Market St.
*CHICAGO, ILL., 20 N. Wacker Drive
†#CHICAGO, ILL., 2211 W. Pershing Road
xCHICOPEE FALLS, MASSACHUSETTS
†#CINCINNATI, OHIO, 207 West Third St.
x#CLEVELAND, OHIO, 1216 West Fifty-Eighth St.
§COLUMBIA, S. C., 912 Lady St.
*COLUMBUS, OHIO, Gay & Third Sts.
*DALLAS, TEXAS, 209 Browder St.
#DALLAS, TEXAS, 1712 Carter St.
*DAVENPORT, IOWA, 206 E. Second St.
*DAYTON, OHIO, 30 North Main St.
*DENVER, COLORADO, 910 Fifteenth St.
#DENVER, COLORADO, 1700 Sixteenth St.
†DENVER, COLORADO, 988 Cherokee St.
①§DENVER, COLORADO, Gas & Elec. Bldg.
xDERRY, PA.
*DES MOINES, IOWA, 523 Sixth Ave.
*†#DETROIT, MICH., 5757 Trumbull Ave.
*DULUTH, MINN., 10 East Superior St.
①x#EAST PITTSBURGH, PA.
*EL PASO, TEXAS, 303 N. Oregon St.
#EL PASO, TEXAS, 450 Canal St.
§EL PASO, TEX., c/o Zork Hdwe. Co., 309 N. El Paso St.
#*EMERYVILLE, CALIF., 5815 Peladeau St.
†EMERYVILLE, CALIF., 1466 Powell St.
xEMERYVILLE, CALIF., 6161 Green St.
*ERIE, PA., 1003 State St.
*EVANSVILLE, IND., 201 N. W. First St.
*†FAIRMONT, W. VA., 602 Cleveland Ave.
①§FARGO, N. D., 520—3rd Ave. N.
*FORT WAYNE, IND., 1010 Packard Ave.
*FORT WORTH, TEXAS, 501 Jones St.
①*FRESNO, CALIF., 872 Peralta Way, P. O. Box 632
*GARY, IND., 701 Washington St.
*GRAND RAPIDS, MICH., 507 Monroe Ave. N. W.
*GREENSBORO, N. C., 108 S. Park Drive, P. O. Box 1828.
*GREENVILLE, S. C., West Earle St.
*HAMMOND, IND., 235 167th St.
*HARTFORD, CONN., Main & Pearl Sts.
*HONOLULU, T. H., Hawaiian Elec. Co. Agt.
*HOUSTON, TEXAS, 1314 Texas Ave.
#HOUSTON, TEXAS, 2313 Commerce Ave.
†HOUSTON, TEXAS, 2315 Commerce Ave.
①§HOUSTON, TEXAS, 611-15 Petroleum Bldg.
*†#HUNTINGTON, W. VA., 1029 Seventh Ave.
*INDIANAPOLIS, IND., 137 S. Penna. Ave.
†INDIANAPOLIS, IND., 551 West Merrill St.
*ISHPEMING, MICH., 433 High St.
*JACKSON, MICH., 212 West Michigan Ave.
*†JOHNSTOWN, PA., 47 Messenger St.
*JOPLIN, MO., 420 School St.
*KANSAS CITY, MO., 101 W. Eleventh St.
†KANSAS CITY, MO., 2124 Wyandotte St.
*KNOXVILLE, TENN., Gay & Clinch St.
xLIMA, OHIO
*LITTLE ROCK, ARK., 1115 West 24th St.
§LITTLE ROCK, ARK., c/o Fones Bros. Hdwe. 2nd & Rock Sts.
*†#LOS ANGELES, CALIF., 420 So. San Pedro St.
*LOUISVILLE, KY., 332 West Broadway
*MADISON, WISC., 508 Edgewood Ave.
xMANSFIELD, OHIO, 200 East Fifth St.
*MARSHALL, TEXAS, 504 Nathan St.
*MEMPHIS, TENN., 130 Madison Ave.
*MIAMI, FLA., 1036 N. Miami Ave.
*MILWAUKEE, WISC., 546 North Broadway
†MILWAUKEE, WISC., 1669 N. Water St.
*†#MINNEAPOLIS, MINN., 2303 Kennedy St., N. E.
*MONROE, LA., 1301 N. Fourth St.
*NASHVILLE, TENN., 219 N. Second Ave.
*NEWARK, N. J., 1180 Raymond Blvd.
†#NEWARK, N. J., Haynes Ave. & Lincoln Highway
xNEWARK, N. J., Plane & Orange St.
*NEW HAVEN, CONN., 42 Church St.
†*NEW ORLEANS, LA., 333 St. Charles St.
#NEW ORLEANS, LA., 527 Poydras St.
*NEW YORK, N. Y., 150 Broadway
†NEW YORK, N. Y., 460 West Thirty-Fourth St.
*NIAGARA FALLS, N. Y., 205 Falls St.
*NORFOLK, VA., 254 Tazewell St.
*OKLAHOMA CITY, OKLA., 10 E. California St.
#OKLAHOMA CITY, OKLA., Third & Alie Sts.
*OMAHA, NEB., 409 South Seventeenth St.
§OMAHA, NEB., 117 N. 13th St.
*PEORIA, ILL., 104 E. State St.
*†#PHILADELPHIA, PA., 3001 Walnut St.
*PHOENIX, ARIZONA, 11 West Jefferson St.
xPITTSBURGH, PA., Nuttall Works, 200 McCandless Ave.
z*PITTSBURGH, PA., 306 4th Ave., Box 1017
#†PITTSBURGH, PA., 543 N. Lang Ave.
*PORTLAND, MAINE, 142 High St.
*PORTLAND, OREGON, 309 S. W. Sixth Ave.
†PORTLAND, OREGON, 2138 N. Interstate Ave.
#PORTLAND, OREGON, 720 N. Thompson St.
*†PROVIDENCE, R. I., 16 Elbow St.
*RALEIGH, N. C., 803 North Person St.
①§RALEIGH, N. C., P. O. Box 443
§READING, PA., 619 Spruce St.
*RICHMOND, VA., Fifth & Byrd
*§ROANOKE, VA., 726 First St., S. E.
*†ROCHESTER, N. Y., 410 Atlantic Ave.
*ROCKFORD, ILL., 130 South Second St.
*SACRAMENTO, CALIF., 1805 20th St.
*SALT LAKE CITY, UTAH, 10 West First South St.
†#SALT LAKE CITY, UTAH, 346 A Pierpont Ave.
①§SALT LAKE CITY, UTAH, McCormick Bldg.
*SAN ANTONIO, TEXAS, 115 W. Travis St.
*SAN FRANCISCO, CALIF., 1 Montgomery St.
*SEATTLE, WASH., 603 Stewart St.
†#SEATTLE, WASH., 3451 East Marginal Way
xSHARON, PA., 469 Sharpsville Ave.
*SIOUX CITY, IOWA, 2311 George St.
*SOUTH BEND, IND., 216 East Wayne St.
§SOUTH BEND, IND., 107 E. Jefferson St.
xSOUTH PHILA. WKS., Essington, Pa.
°SOUTH PHILA. WKS., P. O. Box 7348, Philadelphia, Pa.
*SPOKANE, WASH., So. 158 Monroe St.
*SPRINGFIELD, ILL., 601 E. Adams St., Box 37
*†SPRINGFIELD, MASS., 395 Liberty St.
xSPRINGFIELD, MASS., 653 Page Boulevard
*ST. LOUIS, MO., 411 North Seventh St.
†#ST. LOUIS, MO., 717 South Twelfth St.
xST. LOUIS, MO. 5850 Bingham Ave.
*SYRACUSE, N. Y., 420 N. Geddes St.
*TACOMA, WASH., 1023 "A" St.
*TAMPA, FLA., 417 Ellamae Ave., Box 230
*TOLEDO, OHIO, 245 Summit St.
*TULSA, OKLA., 303 East Brady St.
①*#†UTICA, N. Y., 113 N. Genesee St.
*WASHINGTON, D. C., 1434 New York Ave., N. W.
*WATERLOO, IOWA, 328 Jefferson St., P. O. Box 598
*WICHITA, KAN., 233 So. St. Francis Ave.
*†WILKES-BARRE, PA., 267 N. Pennsylvania Ave.
*†WORCESTER, MASS., 32 Southbridge St.
*YORK, PA., 143 So. George St.
*YOUNGSTOWN, OHIO, 25 E. Boardman St.

Where address and P. O. box are both given, send mail to P. O. box, telegrams to address indicated.

## ①WESTINGHOUSE ELECTRIC SUPPLY COMPANY

Fully equipped sales offices and warehouses are maintained at all addresses

①ALBANY, N. Y., 454 No. Pearl St.
ALLENTOWN, PA., 522 Maple St.
ATLANTA, GA., 96 Poplar St., N. W.
AUGUSTA, MAINE, 90 Water St.
BALTIMORE, MD., 40 South Calvert St.
BANGOR, MAINE, 175 Broad St.
BINGHAMTON, N. Y., 87 Chenango St.
BOSTON, MASS., 76 Pearl St.
BURLINGTON, VT., 208 Flynn Ave.
BUTTE, MONTANA, 50 East Broadway
CHARLOTTE, N. C., 210 East Sixth St.
CHICAGO, ILL., 113 North May St.
CLEVELAND, OHIO, 3950 Prospect Ave.
COLUMBIA, S. C., 915 Lady St.
DALLAS, TEXAS, 409 Browder St.
DES MOINES, IOWA, 218 W. Second St.
DETROIT, MICH., 547 Harper Ave.
DULUTH, MINN., 308 W. Michigan St.
EVANSVILLE, IND., 201 N. W. First St.
FLINT, MICH., 1314 N. Saginaw St.
FORT WORTH, TEXAS, 501 Jones St.
GRAND RAPIDS, MICH., 507 Monroe Ave., N. W.
GREENVILLE, S. C., 200 River St.
HOUSTON, TEXAS, 1903 Ruiz St.
①INDIANAPOLIS, IND., 137 S. Pennsylvania St.
JACKSONVILLE, FLA., 37 South Hogan St.
LOS ANGELES, CALIF., 905 East Second St.
MADISON, WISC., 1022 E. Washington Ave.
MIAMI, FLA., 1036 North Miami Ave.
MEMPHIS, TENN., 366 Madison Ave.
MILWAUKEE, WISC., 546 N. Broadway
MINNEAPOLIS, MINN., 215 South Fourth St.
NEWARK, N. J., 49 Liberty St.
NEW HAVEN, CONN, 240 Cedar St.
zNEW YORK, N. Y., 150 Varick St.
NORFOLK, VA., 254 Tazewell St.
OAKLAND, CALIF., Tenth & Alice Sts.
OKLAHOMA CITY, OKLA., 10 E. California St.
OMAHA, NEB., 117 North Thirteenth St.
PEORIA, ILL., 104 East State St.
PHILADELPHIA, PA., 1101 Race St.
PHOENIX, ARIZONA, 315 West Jackson St.
PORTLAND, OREGON, 134 N. W. Eighth Ave.
PROVIDENCE, R. I., 66 Ship St.
RALEIGH, N. C., 322 S. Harrington St.
READING, PA., 619 Spruce St.
RICHMOND, VA., 301 South Fifth St.
ROANOKE, VA., 726 First St., S. E.
ROCHESTER, N. Y., 240 St. Paul St.
ST. LOUIS, MO., 1011 Spruce St.
ST. PAUL, MINN., 145 East Fifth St.
①SACRAMENTO, CALIF., 20th and R Sts.
SALT LAKE CITY, UTAH, 235 West South Temple St.
SAN ANTONIO, TEXAS, 1201 E. Houston St.
SAN FRANCISCO, CALIF., 260 Fifth St.
SEATTLE, WASH., 558 First Ave., South
SIOUX CITY, IOWA, 1005 Dace St.
SPOKANE, WASH., 152 So. Monroe St.
SPRINGFIELD, MASS., 46 Hampden St.
SYRACUSE, N. Y., 961 W. Genesee St.
TAMPA, FLA., 417 Ellamae St.
TOLEDO, OHIO, 812 Lafayette St.
TRENTON, N. J., 245 N. Broad St.
TULSA, OKLA., 303 East Brady St.
UTICA, N. Y., 113 N. Genesee St.
WASHINGTON, D. C., 1216 "K" St., N. W.
WATERLOO, IOWA, 328 Jefferson St.
①WICHITA, KANSAS, 233 So. St. Francis Ave.
WILMINGTON, DEL., 216 E. Second St.
WORCESTER, MASS., 24 Southbridge St.
YORK, PA., 143 S. George St.

* Sales Office † Service Shop x Works # Warehouse ° First Class Mail Only § Merchandising Products Only z Headquarters ‡ Apparatus Products Only ① Changed or added since previous issue.





## ① WESTINGHOUSE AGENT JOBBERS

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BIRMINGHAM, ALA., Moore-Handley Hdwe. Co.
BLUEFIELD, W. VA., Superior-Sterling Co.
BUFFALO, N. Y., McCarthy Bros. & Ford
CANTON, OHIO, The Moock Electric Supply Co.
‡CHATTANOOGA, TENN., Mills & Lupton Supply Co.
CHICAGO, ILL., Hyland Electrical Supply Co.
CINCINNATI, OHIO, The Johnson Electric Supply Co.
§COLUMBUS, OHIO, The Hughes Peters Electric Corporation
COLUMBUS, OHIO, Pixley Electric Supply Co.
‡DENVER, COL., The Mine & Smelter Supply Co.
EL PASO, TEX., Zork Hardware Co.
ERIE, PA., Star Electrical Co.
HUNTINGTON, W. VA., Banks-Miller Supply Co.
KANSAS CITY, MO., Columbian Elec'l Co.
KANSAS CITY, MO., Continental Elec. Co.
LOUISVILLE, KY., Tafel Electric Co.
MONROE, LA., Monroe Hardware Co.
‡NASHVILLE, TENN., Tafel Electric Co.
NEW ORLEANS, LA., Electrical Supply Co.
NEW YORK, N. Y., Times Appliance Co., Inc.
PITTSBURGH, PA., Iron City Electric Co.
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SCRANTON, PA., Penn Elect'l Engineering Co.
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## WESTINGHOUSE ELECTRIC & MFG. CO., LAMP DIVISION

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*BALTIMORE, MD., 118 E. Lombard St.
xBELLEVILLE, N. J., 720 Washington Ave.
zxBLOOMFIELD, N. J., Clearfield Ave.
*BOSTON, MASS., 10 High St.
#BOSTON, MASS., 12 Farnsworth St.
*BUFFALO, N. Y., 295 Main St.
*CHICAGO, ILL., 20 North Wacker Drive
#CHICAGO, ILL., 2211 W. Pershing Road
*CINCINNATI, OHIO, Third & Elm Sts.
*CLEVELAND, OHIO, 1216 W. 58th St.
*COLUMBUS, OHIO, Gay & Third St.
*DALLAS, TEXAS, 209 Browder St.
*DAVENPORT, IOWA, 206 East Second St.
*DENVER, COLO., 910 Fifteenth St.
*DES MOINES, IOWA, 218 West Second St.
#*DETROIT, MICH., 5757 Trumbull Ave.
*EMERYVILLE, CALIF., 1446 Powell St.
*HOUSTON, TEXAS, 1314 Texas Ave.
①*HUNTINGTON, W. VA., 1029 Seventh Ave.
*INDIANAPOLIS, IND., 137 So. Penna. Ave.
*JACKSON, MICH., Consumers Power Bldg.
*KANSAS CITY, MO., 101 W. Eleventh St.
#*LOS ANGELES, CALIF., 420 S. San Pedro St.
*LOUISVILLE, KY., 332 West Broadway
*MEMPHIS, TENN., 130 Madison St.
*MILWAUKEE, WISC., 546 North Broadway
*MINNEAPOLIS, MINN., 2303 Kennedy St., N. E.
*NEW ORLEANS, LA., 333 St. Charles St.
yNEW YORK, N. Y., 150 Broadway
*OKLAHOMA CITY, OKLA., 10 E. California St.
*OMAHA, NEB., 409 So. Seventeenth St.
*PHILADELPHIA, PA., 3001 Walnut St.
*PITTSBURGH, PA., 306 4th Ave., Box 1017
#PITTSBURGH, PA., Try St. Terminal Bldg.
*ROCHESTER, N. Y., 240 St. Paul St.
*SALT LAKE CITY, UTAH, 10 West First South St.
*SAN FRANCISCO, CALIF., 1 Montgomery St.
#SAN FRANCISCO, CALIF., 60 Federal St.
*SEATTLE, WASH., 603 Stewart St.
#SEATTLE, WASH., 3451 East Marginal Way
*ST. LOUIS, MO., 411 No. Seventh St.
#ST. LOUIS, MO., 717 So. 12th Street
*SYRACUSE, N. Y., 109 So. Warren Street
*TOLEDO, OHIO, 245 Summit St.
xTRENTON, N. J., 400 Pennington Ave.
*WASHINGTON, D. C., 1434 N. Y. Ave., N. W.

## WESTINGHOUSE ELECTRIC ELEVATOR COMPANY

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BUFFALO, N. Y., 826 Ellicott Sq. Bldg.
zxCHICAGO, ILL., 1500 North Branch St.
CHICAGO, ILL., 222 No. Bank Drive
CINCINNATI, OHIO, Third & Elm Sts.
CLEVELAND, OHIO, 842 Rockefeller Bldg.
COLUMBUS, OHIO, Gay & Third St.
DALLAS, TEXAS, 209 Browder St.
DES MOINES, IOWA, 523 Sixth Ave.
DETROIT, MICH., 5757 Trumbull Ave.
DUBUQUE, IOWA, c/o Roshek Store
KANSAS CITY, MO., 101 W. Eleventh St.
LOS ANGELES, CALIF., 420 So. San Pedro St.
NEW YORK, N. Y., 30 Rockefeller Plaza
PHILADELPHIA, PA., 3001 Walnut St.
PITTSBURGH, PA., 435 Seventh Ave.
ST. LOUIS, MO., 411 North Seventh St.
SAN FRANCISCO, CALIF., 1 Montgomery St.
STEUBENVILLE, OHIO, 306 Natl. Exch. Bldg.
WASHINGTON, D. C., 1209 Eye St., N. W.

## WESTINGHOUSE ELECTRIC INTERNATIONAL COMPANY

zNEW YORK CITY, N. Y., 150 Broadway
*LONDON, W. C. 2, ENGLAND, 2 Norfolk St., Strand
*SYDNEY, AUSTRALIA, Box 2634-EE, G.P.O.
*RIO DE JANEIRO, BRAZIL, Caixa Postal 687
*SANTIAGO, CHILE, Casilla 1897
*SHANGHAI, CHINA, P. O. Box 959
*MILANO, ITALY, Piazza Crispi 3
①*WELLINGTON, NEW ZEALAND, 2 Taranaki St.
*LIMA, PERU, Edificio Wiese, Esquina Nunez y Filipinas
*MANILA, P. I., P. O. Box 998
*PANAMA, Republic of Panama, P.O. Box 112
*SAO PAULO, BRAZIL, Caixa Postal 636
*SAN JUAN, Puerto Rico, P. O. Box 1539
*CIA. WESTINGHOUSE INTERNACIONAL S. A., Avenida de Mayo 1035, Buenos Aires, Argentine
*CIA. WESTINGHOUSE ELEC. DE CUBA, Calle Jose de San Martin Nos. 16 y 18, Apartado 2289, Havana, Cuba
*WESTINGHOUSE ELEC. CO. OF INDIA, LTD. Feltham House, Graham Road, Ballard Estate, Bombay, India
*CIA. WESTINGHOUSE ELEC. INTERNACIONAL Edificio la Nacional Apartado 78-Bis. Mexico, D. F. Mexico
*MEXICO, (West Coast) Mr. John H. Knost, 1248 East Fifth St., Tucson, Arizona
*WESTINGHOUSE ELEC. CO. OF SOUTH AFRICA, LTD., P. O. Box 6067, Johannesburg, South Africa

## WESTINGHOUSE X-RAY COMPANY, INC.

*ATLANTA, GA., 565 W. Peachtree St., N. E.
*BALTIMORE, MD., 118 East Lombard St.
*BOSTON, MASS., 270 Commonwealth Ave.
*CHICAGO, ILL., 512 S. Peoria St.
*CLEVELAND, OHIO, 7016 Euclid Ave.
DALLAS, TEXAS, 207 Browder St.
*DETROIT, MICH., 5757 Trumbull Ave.
zxLONG ISLAND CITY., N. Y., 21-16 43rd Ave.
*LOS ANGELES, CALIF., 420 S. San Pedro St.
*MILWAUKEE, WISC., 534 North Broadway
*NEW ORLEANS, LA., 608 Commercial Place
*NEW YORK, N. Y., 173 E. Eighty-Seventh St.
*OMAHA, NEB., 117 N. Thirteenth St.
*PHILADELPHIA, PA., 3001 Walnut St.
①*PITTSBURGH, PA., 3702 Fifth Ave.
*ROCHESTER, N. Y., 41 Chestnut St.
*SAN FRANCISCO., CALIF., 870 Market St.

## BRYANT ELECTRIC COMPANY

*BOSTON, MASS., 10 High St.
zxBRIDGEPORT, CONN., Main Plant, 1421 State St.
xBRIDGEPORT, CONN., Plastics Division Plant, 1105 Railroad Ave.
*#CHICAGO, ILL., 844 West Adams St.
*NEW YORK, N. Y., 100 East Forty-Second St.
*#SAN FRANCISCO, CALIF., 325 Ninth St.

## CANADIAN WESTINGHOUSE COMPANY, LIMITED

*†#CALGARY, 320 Eighth Avenue West, Calgary, Alberta, Can.
#*EDMONTON, 10127, 104th St., Armstrong Block, Edmonton, Alberta, Can.
①#*FORT WILLIAM, 112 McVicar St., Fort William, Ontario, Can.
#*HALIFAX, 158 Granville St., Halifax, Nova Scotia, Can.
xz*HAMILTON, Hamilton, Ontario, Can.
*LONDON, 504 Huron & Erie Bldg., London, Ontario, Canada
*MONTREAL, 1135 Beaver Hall Hill, Montreal, Quebec, Can.
①§MONTREAL, 400 McGill St., Montreal, Quebec, Can.
①#†MONTREAL, 1844 William St., Montreal, Quebec, Can.
①#*OTTAWA, Ahearn & Soper Limited, P. O. Box 779, Ottawa, Ontario, Can.
*†#REGINA, 2408 Eleventh Ave., Regina, Saskatchewan, Can.
①*SASKATOON, 304 Avenue Road, Saskatchewan, Canada
†#*SWASTIKA, Swastika, Ontario, Canada
*†#TORONTO, 355 King St. West, Toronto, Ontario, Can.
*VANCOUVER, 1418 Marine Bldg., Vancouver, B. C., Can.
†#VANCOUVER, 1090 Homer St., Vancouver, B. C., Can.
#*†WINNIPEG, 158 Portage Ave. East, Winnipeg, Manitoba, Can.

①Changed or added since previous issue.
* Sales Office † Service Shop x Works # Warehouse z Headquarters y Executive Office §Merchandising Products Only ‡Apparatus Products Only

# WESTINGHOUSE

ELECTRIC AND MANUFACTURING COMPANY

EAST PITTSBURGH PENNSYLVANIA

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https://archive.org/details/buildingtechnologyheritagelibrary

ESTABLISHED 1873

# BOSTON LIGHTNING ROD COMPANY

INCORPORATED 1911

Manufacturers and Installers

755 Boylston Street, BOSTON, MASS.

TELEPHONE, Kenmore 4034

NEW YORK OFFICE: Grand Central Terminal Building. Telephone, Vanderbilt 3-8824

## APPROVED SOLID COPPER AND COPPER CABLE LIGHTNING CONDUCTORS
### For All Classes of Structures

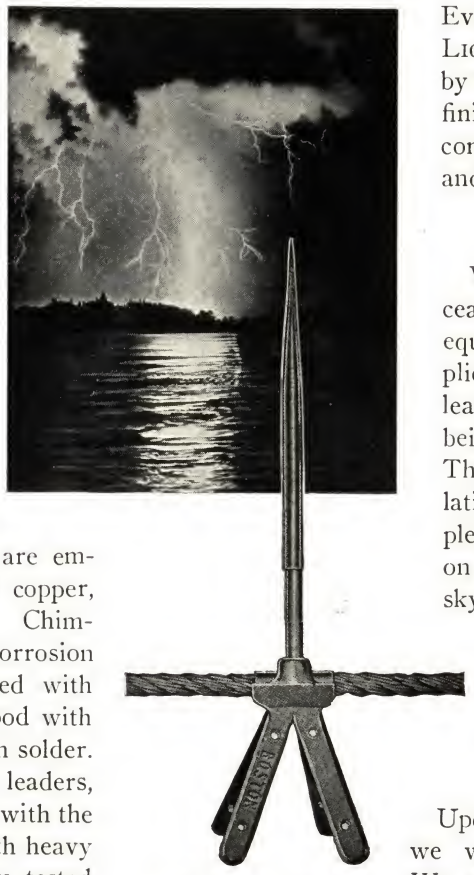
#### Description

The principle upon which the lightning conductor is based is universally accepted by engineers as being strictly scientific. Boston Conductors are made of pure copper, in two types: (1) solid, 3/8-in. diameter and (2) of 7-strand, 3/8-in. diameter cable. Both types are of ample weight, surface and conductivity to afford complete protection under all conditions.

Both types are listed by the Underwriters' Laboratories, Inc. and bear their master label of approval.

#### Connections and Installations

On the solid rod, threaded joints are employed throughout. All points are of copper, plated with either nickel or platinum. Chimney points are lead coated to prevent corrosion from gases. Conductors are attached with copper clips; they are fastened to wood with screws and to existing metal work with solder. Metal finials, ridges, skylights, gutters, leaders, etc., are inter-connected and grounded with the system. All ground leads terminate with heavy copper plates, sunk to an electrically tested level and embedded in charcoal; approved grounding rods; water service pipe or running water.




**The Improved Boston Air Terminal**

This improved air terminal with threaded joint permits a permanent low resistance substantial connection with the cable

Every installation made by the Boston Lightning Rod Company is applied by thoroughly trained mechanics. Each finished job is as inconspicuous as is consistent with complete dependability and is fully guaranteed.

#### Concealed Installations

We manufacture and install a concealed equipment, which type of equipment is erected prior to the application of the roof covering, with leads from the eaves to the ground being carried between the studs. The only part of a concealed installation which is visible, upon completion, are the low points erected on chimneys and gables. In modern skyscrapers we utilize the steel frame for grounding. This method of installation makes absolute protection available at a remarkably low cost.

#### Service

Upon receipt of complete information we will submit plans and estimates. We are equipped to make installations in any part of the United States.

## REFERENCES

**Architects and Contractors**

John Russell Pope, New York, N. Y.
James Gamble Rogers, New York, N. Y.
McKim, Meade & White, New York, N. Y.
Dwight James Baum, New York, N. Y.
George P. Butler, Jr., New York, N. Y.
Delano & Aldrich, New York, N. Y.
George A. Fuller Co., New York, N. Y.
Marc Eidlitz & Son Co., New York, N. Y.
Cram & Ferguson, Boston, Mass.
Maginnis & Walsh, Boston, Mass.
Mott B. Schmidt, Inc., New York, N. Y.
Hegeman Harris Co., New York, N. Y.
Charles A. Carpenter, Rochester, N. Y.
Jones & Conquest, Richmond, Va.
Derby, Barnes & Champney, Boston, Mass.
Coolidge, Shepley, Bullfinch & Abbott, Boston, Mass.
Charles Z. Klauder, Philadelphia, Pa.
Zantzinger, Borie & Medary, Philadelphia, Pa.
Allen, Collens & Willis, Boston, Mass.
William B. Colleary, Boston, Mass.
Donald Desgranges, Boston, Mass.
J. Henry Miller, Baltimore, Md.
Perry, Shaw & Hepburn, Boston, Mass.
Smith & Walker, Boston, Mass.

147J

**Private Estates**

G. W. Perkins, Riverdale, N. Y.
Ernest B. Dane, Brookline, Mass.
W. S. Barstow, Great Neck, L. I.
Ogden Reid, Purchase, N. Y.
W. A. Fairburn, Morristown, N. J.
Miss Anne Morgan, Mt. Kisco, N. Y.
John J. Woolsey, Petersham, Mass.
Edmund Hayes, Buffalo, N. Y.
R. F. Haffenreffer, Fall River, Mass.
James E. Whitin, North Uxbridge, Mass.
Dr. Eliot Hubbard, Cohasset, Mass.
Robert P. Bass, Peterboro, New Hampshire
Eugene Endicott, Norwood, Mass.
F. H. Metcalf, Holyoke, Mass.
Paul B. Belin, Scranton, Pa.
George E. Hardy, Fishers Island, N. Y.
James Ingliss, Ann Arbor, Mich.
Edmund C. Burke, Cleveland, Ohio
J. J. Emery, Montgomery, Ohio
Cartter Lupton, Chattanooga, Tenn.
R. T. Crane, Jr., Chicago, Ill.
Russell Grinnell, Providence, R. I.
R. Livingston Beekman, Newport, R. I.
Irving W. Bonbright, Fishers Island, N. Y.

**Churches and Institutions**

Riverside Church, New York, N. Y.
First Congregational Church, New York, N. Y.
St. Bartholomew's Church, New York, N. Y.
All Souls Church, Washington, D. C.
Emmanuel Baptist Church, Washington, D. C.
Old South Church, Boston, Mass.
Trinity Church, Boston, Mass.
Blessed Sacrament Church, Roxbury, Mass.
Sacred Heart Church, Jersey City, N. J.
Hennepin Ave. M. E. Church, Minneapolis
First Congregational Church, Columbus, Ohio
Cathedral of Learning, Pittsburgh, Pa.
Heinz Memorial Chapel, Pittsburgh, Pa.
Harvard University, Cambridge, Mass.
Boston College, Newton, Mass.
Yale University, New Haven, Conn.
Fordham College, New York, N. Y.
University of Vermont, Burlington, Vt.
Princeton University, Princeton, N. J.
Trinity College, Hartford, Conn.
Penna. State College, State College, Pa.
Perry Memorial, Put-in-Bay, Ohio
Independence Hall, Philadelphia, Pa.
Colgate-Rochester Divinity School, Rochester, N. Y.

ESTABLISHED 1870

# THE BURKETT LIGHTNING ROD CO.

INCORPORATED 1911

## Designers—Engineers—Manufacturers—Installers
## Lightning Protective Equipment for All Types of Structures

TELEPHONE
Main 1923

FREMONT, OHIO

### "Burkett System" Lightning Protection

A *modern, scientific, all-copper, invisible (inconspicuous) system* for protecting structures of all kinds against the hazards of lightning.

### Where Installed

Burkett System provides adequate protection against lightning for estate, public buildings, hospitals, schools, mausoleums, clubhouses, structural steel office buildings, trees, etc., as well as for brick, tile or concrete boiler room chimneys and industrial structures of all kinds. We specialize in the protection of modern residences and churches.

### Endorsements

BURKETT SYSTEM Lightning Protective Equipment conforms to code requirements of Bureau of Standards, Washington, D. C., and National Fire Protection Association, Boston, Mass. Materials conform to factory inspection service and manner of installation to field inspection service of Underwriters' Laboratories, Chicago, Ill.

### Materials and Application

High grade materials are used throughout and *installed by our own workmen,* who are specially trained and thoroughly competent to make proper application of the BURKETT equipment to any type of structure in a neat, permanent manner, *anywhere in the United States.*

### Service

We suggest the sending of blue prints of all elevations, and roof detail showing locations of soil pipes, metal ventilators, chimneys, and downspouts, when asking for estimated cost of protection. This will save time and assure you of accurate figure. If possible when submitting blue prints, forward one which shows plot plan or grade elevation, and indicate points of entry for water service, gas service and electric service.

Should you desire personal interview with one of our representatives feel free to make such request. *Write or telephone.*



**The George Washington Masonic National Memorial, Alexandria, Va.**

CORBETT, HARRISON & MACMURRAY, Architects
OSGOOD & OSGOOD, Consulting Architects

This great memorial to George Washington, 333 ft. high, built entirely of masonry with a granite exterior, at an approximate cost of $4,000,000, is adequately protected with special BURKETT equipment, in which one hundred forty points were used, inconspicuously located on Apex, all prominent projections and Stylebate

### To Architects, Specification Writers and Engineers

You can write specifications for *boiler room chimney and other lightning protection* from copy below, or we will furnish complete written specification upon request. Lead covered equipment furnished for all types of smokestacks and chimneys. Platinum tip points furnished if desired.

### Suggested Lead Covered Chimney Specification

(1) The general contractor shall supply on the chimney a system of Lightning Protective Equipment manufactured and installed by THE BURKETT LIGHTNING ROD CO., Fremont, Ohio.

(2) Installation of materials is to be in accord with Code of National Fire Protection Association and shall be placed by manufacturer's installers who operate direct from the factory.

(3) Mason contractor will be held responsible for proper placing of cable anchors and other equipment required to be built into masonry at time of chimney construction, and shall receive instructions from the manufacturer of lightning protective equipment for placing such anchors and equipment.

(4) Complete layout of the lightning protective system must be furnished by manufacturer of the equipment, before starting installation of materials.

(5) Master Label Plate of Approval of Underwriters' Laboratories, Inc., shall be furnished the owner upon completion of installation of the lightning protective equipment.

### Suggested General Specification

(1) The general contractor shall, on the entire building, supply a system of Lightning Protective Equipment manufactured and installed by THE BURKETT LIGHTNING ROD CO., Fremont, Ohio.

(2) (Same as 2 above).

(3) The entire installation of materials to be made in an inconspicuous manner so as not to mar the architectural beauty of the structure.

(4) (Same as 4 above).

(5) (Same as 5 above).

## A FEW OF THE THOUSANDS OF STRUCTURES PROTECTED WITH BURKETT EQUIPMENT

### Monumental, Public and Industrial Structures

Terminal Tower, Cleveland, Ohio
Indiana World War Memorial, Indianapolis, Ind.
U. S. Veteran's Hospital, Mt. Alto, Washington, D. C.
Federal Reformatory Camp, Petersburg, Va.
U. S. Powder Magazines, Proving Grounds, Camp Perry, Ohio
Washington Monument, Baltimore, Md.
Governor's Mansion, Baltimore, Md.
Bendix Beacon Tower, South Bend, Ind.
Calvary Cemetery Mausoleum, Toledo, Ohio
Licking County Tuberculosis Hospital, Newark, Ohio
Ohio Sesqui-Centennial Building, State Fair Grounds, Columbus, Ohio
Municipal Filtration and Water Softening Plant, Fremont, Ohio

### Churches and Schools

Cathedral of Our Lady Queen of the Most Holy Rosary, Toledo, Ohio
St. Cecelia Catholic Church, Detroit, Mich.
St. Stephen's Catholic Church, Cleveland, Ohio
Plymouth Church, Shaker Heights, Cleveland, Ohio
Swazey Chapel, Dennison University, Granville, Ohio
Holy Rosary Church, Pittsburgh, Pa.
Epiphany Church, Washington, D. C.
The Cathedral, Baltimore, Md.
St. Peter's Protestant Episcopal Church, Albany, N. Y.
John Carroll University Buildings, Cleveland, Ohio
St. Mary's College and Academy Buildings, Monroe, Mich.
University High and Elementary School, Ann Arbor, Mich.
University of the City of Toledo Tower, Toledo, Ohio
DeVilbiss High School, Toledo, Ohio
Georgetown University, Washington, D. C.
The Notre Dame, Baltimore, Md.
St. Mary's Industrial School, Baltimore, Md.
Beaumont Memorial Tower, Michigan Agricultural College, Lansing, Mich.
Villa St. Felix, Plymouth, Mich.
Lockmoor School, Detroit, Mich.
Fred E. Maples School, Dearborn, Mich.
J. R. Lowell Junior High School, Flint, Mich.
Wm. McKinley School and Power House Building, Flint, Mich.
Washington Junior High School, Pontiac, Mich.

### Residence, Estate and Ranch Buildings—Michigan and Ohio

O. P. and M. J. Van Sweringen, Shaker Heights, Cleveland
L. C. Hanna, Jr., Kirtland Hills
R. R. Deupree, Cincinnati
L. B. Harrison, Cincinnati
Randall McFarlan, New Richmond
Pleasant E. Bennett, Dayton
Karl B. Hoke, Toledo
H. D. Bennett, Toledo
G. R. Bennett, Toledo
Russell Firestone, Akron
L. D. Buhl Estate, Detroit
A. H. Buhl Estate, Detroit
Jas. E. Vernor, Jr., (Lodge) Detroit
Dalton J. V. Snyder, Detroit
P. W. Seiler, Farmington
Frederick B. Darden, Rochester
Wm. Everhard, Wadsworth, Ohio
W. A Caine, Wadsworth, Ohio
Geo. C. Kalbfleisch, Tiffin, Ohio
T. R. Scheffer, Dover, Ohio
D. LaMar Christy, Fremont, Ohio

### Miscellaneous

Fayette B. Dow, Washington, D. C.
Percy L. Crosby, McLean, Va.
Dodge-Sloane Estate, Upperville, Va.
Jeff. Patterson, Peterson's Point, Md.
Fletcher Harper Estate, The Plains, Va.
Rev. Paul D. Bowden, Warrenton, Va.
Dr. H. L. Foss, Danville, Pa.
Dr. O. F. Behrend, Erie, Pa.
R. W. Parkins, McKeesport, Pa.
Crawford Long, Jackson, Tenn.
C. A. Cabell, Charleston, W. Va.
Geo. W. Hewlett, Cheyenne, Wyo.
Hugh McK. Landon, Indianapolis, Ind.

### Chimneys

U. S. Proving Grounds (Camp Perry), La Carne, Ohio
Cleveland Electric Illuminating Co. (9 chimneys), Cleveland, Ohio
State of Ohio (Cleveland and Massillon Hospitals), Columbus, Ohio
American Fork & Hoe Co. (Conneaut and Geneva Plants), Cleveland, Ohio
Ohio Power Company (3 chimneys), Fremont, Ohio
City of Buffalo (5 chimneys), Buffalo, N. Y.
City of Detroit (9 chimneys), Detroit, Mich.
City of Flint (4 chimneys), Flint, Mich.
City of Dearborn (4 chimneys), Dearborn, Mich.
City of Toledo (5 chimneys), Toledo, Ohio
City of Fremont (7 chimneys), Fremont, Ohio
Christian High School, Grand Rapids, Mich.
Angell School, Muskegon, Mich.
Junior High School, Escanaba, Mich.
Vatter Floral Co., Marinette, Wis.
St. Josephs Orphanage, Richmond, Va.

ESTABLISHED 1862

# HAROLD K. JONES COMPANY

## Lightning Conductor Systems and Art Metal Work

TELEPHONE
JOhn 4-1668

159 Maiden Lane, NEW YORK, N. Y.

### Products

Registered manufacturers and installers of approved LIGHTNING CONDUCTOR SYSTEMS.

WEATHER VANES, SILHOUETTE VANES, ART METAL WORK and ANDIRONS.

### Lightning Protection

Modern lightning protective systems are recognized as a necessary safeguard for exposed buildings of the country estate, tall and isolated structures, valuable trees, etc., and are endorsed by insurance authorities when properly installed.

### Installation Methods

Copper cable or tape is the best form of conductor, with solid copper air terminals, cast bronze fittings and fasteners. Conductors are applied to tile and slate roofs by specially fitted copper clamp fasteners, avoiding the use of nails and screws. Exterior metal work is bonded and made a part of the conductor system. Grounds are made in a permanent manner by the copper plate-charcoal method, supplemented by driven copper ground rods at the proper distance from building and sufficient depth to insure good electrical contact with large capacity.

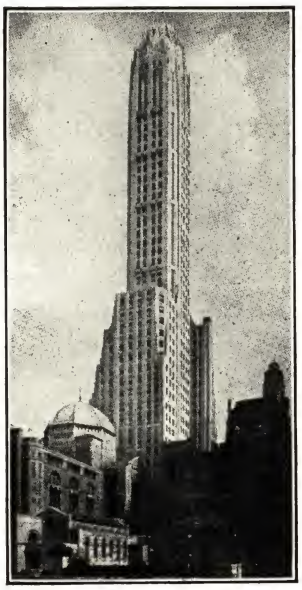
Conductors are carefully harmonized with roof surfaces, making concealment practically complete without impairing efficiency, this being a special feature of our work.

### New Buildings

Concealed systems may be installed during construction.

### Approved Material

All material and installation methods subject to inspection service of the Underwriters' Laboratories, Inc.



**General Electric Building, New York, N. Y., 1000 Ft. High**
Protected by JONES equipment

### Inspections and Estimates

We will gladly co-operate with architects and builders in offering suggestions for lightning protection. Estimates furnished from plans or by inspection of property. Inspections and reports on old installations.

### Selected References

#### Architects

| | |
|---|---|
| John Russell Pope | Warren & Wetmore |
| Geo. B. Post & Sons | Clifford C. Wendehack |
| James Gamble Rogers | York & Sawyer |
| Starrett & Van Vleck | Cherry & Matz |
| Trowbridge & Livingston | W. Stanwood Phillips |
| | Cross & Cross |
| D. Everett Waid | Mayers, Murray & Philip |
| Walker & Gillette | Edward Necarsulmer |
| F. B. & A. Ware | Polhemus & Coffin |

#### Miscellaneous

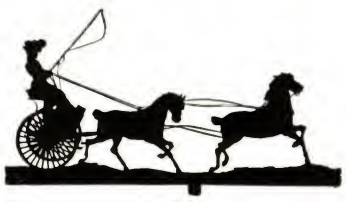
Marymount College, Tarrytown, N. Y.
Greenwood Cemetery Towers, Brooklyn, N. Y.
Howe Caverns Lodge, Howe Caverns, N. Y.
Macdonough Memorial Monument, Plattsburg, N. Y.
Pierre Du Pont High School, Wilmington, Del.
Amity Hall Inn, Duncannon, Pa.
Dr. Philip G. Cole, Tarrytown, N. Y.
Robert H. Mainzer, Bethlehem, Conn.
Wm. Ziegler, Noroton, Conn.
Garret A. Hobart, Haledon, N. J.
American Museum Natural History, New York, N. Y.
St. Agnes R.C. Church, East 43rd Street, New York, N. Y.
Mrs. E. S. Ayers, Mason's Island, Mystic, Conn.
Gail Borden, New Rochelle, N. Y., Ridgefield, Conn.
Wm. H. Conyngham, Hillside Farm, Wilkes-Barre, Pa.
Arthur Brisbane, Allaire, N. J.
Guy Cary, Brookville, L. I., N. Y.
August Belmont, Mendham, N. J.
Verner Z. Reed, Jr., Newport, R. I., Pinehurst, N. C.
Marshall P. Slade, Mt. Kisco, N. Y.
Mrs. Morgan Hamilton, Sterlington, N. Y.
H. McK. Twombly Estate, Madison, N. J.
Col. Henry L. Stimson, Huntington, L. I., N. Y.
Sherman M. Fairchild, Lloyds Neck, L. I., N. Y.
Junius S. Morgan, Locust Valley, L. I., N. Y.
George U. Harris, Tuxedo Park, N. Y.
Robert D. Kohn, Architect, Ossining, N. Y.

## WEATHER VANES AND ART METAL WORK

Manufacturers of a complete line of artistic weather vanes in various designs, which furnish the finishing touches for the buildings of country estates. Bronze, copper, brass, with weatherproof bronze ball bearings.

Ornamental metal work. Special designs executed from sketches.

*These designs copyright 1929—By Harold K. Jones*



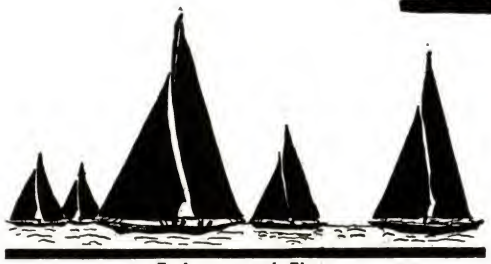
No. 1004—Tandem



No. 1026—Plowing



No. 534—Duck Andirons



Endeavor and Fleet



Wild Geese

# WEST DODD LIGHTNING CONDUCTOR CORPORATION

GOSHEN, INDIANA

BRANCH OFFICES
ALBANY, N. Y., Home Savings Bank Building—Telephone 3-5851 NEW YORK, N. Y., 70 East 45th Street—Telephone—Murray Hill 2-8897
DISTRIBUTORS AND ENGINEERS IN ALL PRINCIPAL CITIES

## The Manufacturer

WEST DODD LIGHTNING CONDUCTOR CORPORATION represents a consolidation of twelve of the leading manufacturers in the business, including pioneers in the field, viz.:

*Dodd and Struthers*
*W. C. Shinn Manufacturing Co.*
*St. Louis Lightning Rod Co.*
*Reyburn-Hunter-Foy Co.*
*Cole Brothers Lightning Rod Co.*
*Hawkeye Lightning Rod Co.*
*Barnett Lightning Rod Co.*
*Des Moines Lightning Rod Co.*
*Electra Manufacturing Co.*
*Cripe Lightning Rod Co.*
*Goshen Lightning Rod Co.*
*Miller Lightning Rod Co.*

Manufacturing and sales headquarters are at Goshen, Ind. We have the largest and most complete plant in the United States specializing entirely in the manufacture and fabrication of lightning rod equipment. Engineers in charge are experts with years of experience in lightning protection.

## Uses

Residences, trees, country estate buildings, farm property, schools, churches, hospitals, power plant stacks and public buildings.

## Insurance

West Dodd Systems are approved in every respect by the Underwriters' Laboratories, Inc. Master Labels of such approval are furnished assuring such *insurance premium reductions* as are allowed by insurance companies for *approved lightning protection.*



**The First-Central Tower, Akron, Ohio**

Typical of modern office buildings having a Certified West Dodd System of Lightning Protection installed around parapet walls and connected with the structural steelwork as a safeguard for the future

## Systems

**Concealed**—(See cut opposite page.) Conductor completely concealed within walls of building, air terminals only showing. Installation must be started before lathing and plastering.

**Semi-concealed**—Over seventy-five per cent of all installations are made using this method. Air terminals and supports are of such size as not to be conspicuous. Connecting conductor is run at base of ridge shingle, ridge roll or tile. Down conductors can be rendered inconspicuous by running beneath roof overhang, back of verge board and either through or behind gutter leads.

For certain conditions and types of architecture, air terminals and conductor may be colored to match roof or any part of structure. Such coloring is obtained by the use of lead coating, tin plating, chromium plating or oxidizing.

## Equipment

**Air Terminals**—Solid copper or bronze, minimum height 10 in. Diameter varies according to design.

**Conductor**—Pure soft drawn standard copper cable ½ in. in diameter or braided flat 1 in. wide by $\frac{3}{32}$ in. thick, manufactured in continuous lengths to insure uninterrupted electrical flow.

**Ground Terminals**—Copperweld electrodes or copper plates according to grounding conditions.

## Power Plant Chimneys

Special equipment for brick, concrete or tile chimneys conforms to requirements of Factory Insurance Companies and Underwriters' Laboratories, Inc. Details and illustrations upon request.

## Service to Architects

As a service to architects and contractors, our main or branch offices will furnish, without obligation or cost, specifications for any building. Plans should be submitted with request. We will also send upon request our fully illustrated catalogue.

## SPECIFICATIONS FOR LIGHTNING PROTECTION FOR NEW BUILDINGS

*Note: The following should be included under a separate heading in the General Contract Specification for the building where lightning protection is a sub-contract of the General Contract. It may also be used as a basis for a separate contract between the owner and the West Dodd Lightning Conductor Corporation.*

## Work Included

The work included under this contract shall be the furnishing of all labor and materials for the complete protection from lightning damage of the following:

*Note: Here list and locate the various buildings or other structures or items to be protected.*

## Materials and Devices

All materials and devices shall be as manufactured by the West Dodd Lightning Conductor Corporation, Goshen, Indiana and all shall bear the DS identification mark and Underwriters' Laboratories Labels.

## Special Items

*Note: Here list any special items in the way of materials or application required.*

## System

The system of installation shall be that known as The Certified Dodd System. There shall be placed on the property protected an Underwriters' Laboratories brass Master Label and, in addition, there shall be filed with the *(architect) (owner)* a West Dodd Corporation Certificate of Compliance with all requirements and approval of the National Board of Fire Underwriters.

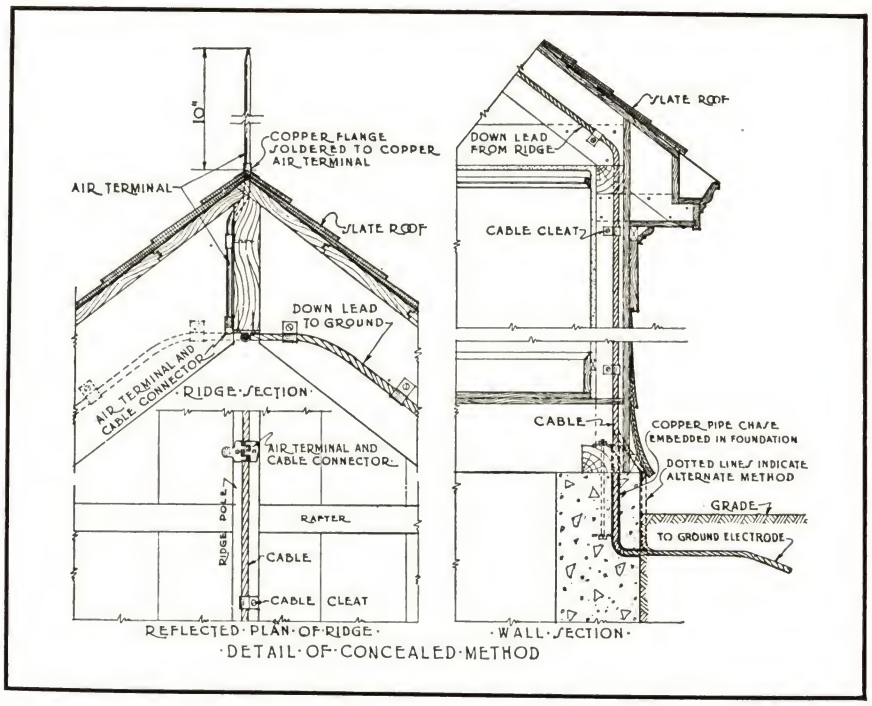
## Plans and Details

This contractor shall provide, in triplicate, for the architect's approval plans and details of the installation. Examination of the site and the working drawings and details of the building or structure must be made, and soil and other considerations affecting the design shall be fully taken into consideration.

## Installation

Installation shall be made by experienced workmen in strict accordance with West Dodd Corporation's standard specifications and the approved shop drawings.

## CONCEALED




## TYPICAL INSTALLATIONS

### Residences and Country Estate Buildings

H. H. Westinghouse, Goshen, N. Y.
Vincent Astor, Rhinebeck, N. Y.
Oliver Gould Jennings, Fairfield, Conn.
Albert Erskine Estate, South Bend, Ind.
W. C. Van Clief, Winter Haven, Fla.
Birthplace of Robert E. Lee, Stratford, Va.
Green Tree Stables (Mrs. Helen Hay Whitney, Owner), Holmdel, N. J.
Harvey Firestone, Akron, Ohio
M. S. Simpson, Turtle Point, Pa.
Edward S. Whitney, Manchester-by-Sea, Mass.
Hon. Henry Morgenthau, Jr., Secy. of Treasury, Hopewell Junction, N. Y.
William Randolph Hearst, Publisher, Sands Point, N. Y.
Gates W. McGarrah, Banker, Goshen, N. Y.
J. P. Grace, Grace Steamship Lines, Manhasset, N. Y.
Edward Severin Clark, Singer Sewing Machine Co., Cooperstown, N. Y.
Lowell Thomas, Radio, Pawling, N. Y.
Miss Laura Delano, Rhinebeck, N. Y.
Hon. Parker H. Corning, Member of Congress, Albany, N. Y.
Dr. H. N. MacCracken, President, Vassar College, West Cornwall, Conn.
Barclay Robinson, Lawyer, Hartford, Conn.
Mrs. Helen Morton, Rhinebeck, N. Y.
William T. Hunter, Schrader Valve Co., Henryville, Pa.
New York Telephone Company Buildings, Warwick, N. Y.
Fred Vanderbilt Estate, Hyde Park, N. Y.
Sheffield Farms, Colemans Station, N. Y.
Waldorf Stock Farms, North Chatham, N. Y.
Dr. C. V. Paterno, Real Estate, New York, Armonk, N. Y.
Clarence Dillon, Dillon Read Co., Far Hills, N. J.
Dr. E. G. Stillman, Cornwall-on-Hudson, N. Y.
Walter Hampden, Ridgefield, Conn.
Count P. G. A. Sparre, Roxbury, Conn.
A. T. Barnes, Great Barrington, Mass.
Titus S. Hose, Millerton, N. Y.
Albert H. Spahr, North Egremont, Mass.
Dr. Austin Flint, Millbrook, N. Y.
A. W. Millburn, Borden Milk Co., Newtown, Conn.
William K. Bristol, Jr., Bristol-Myers Co., Westfield, N. J.
Hubert K. Dalton, Rumson Road, Redbank, N. J.
Hon. George R. Lunn, Selkirk, N. Y.
George H. Jephson, Davis Baking Powder Co., Cazenovia, N. Y.
Donald Ogden Stewart, Upper Bay, N. Y.
D. C. Ball, Lake Placid, N. Y.
Charles Gilman, Gilman Paper Co., Gilman, Vt.
Russel Yates, Rochester, N. Y.
Edwin F. Metcalf, Auburn, N. Y.
James J. O'Neill, Banker, N. Y., Kent, Conn.
A. S. Cobb, Banker, N. Y., Greenwich, Conn.
Fordyce B. St. John, M.D., Greenwich, Conn.
Mrs. W. Bayard Cutting, Oakdale, N. Y.
W. K. Vanderbilt, Northport, N. Y.
John H. Schiff, Oyster Bay, N. Y.
W. Averill Harriman, Arden, N. Y.
E. Roland Harriman, Arden, N. Y.
Mrs. Emma H. Noyes, Dansville, N. Y.
Lanny Ross, Bangall, N. Y.
Mrs. Ida Bailey Allen, Radio, Port Jefferson, N. Y.

### Churches, Institutions and Public Buildings

Church of Messiah, Paterson, N. J.
Fordson High School, Detroit, Mich.
Illinois University, Urbana, Ill.
Vassar College, Poughkeepsie, N. Y.
Yale University, New Haven, Conn.
Xaverian Bros. Novitiate, Old Pt. Comfort, Va.
U. S. Government (78 Powder and Ammunition Magazines), Savanna, Ill.
First Presbyterian Church, Glens Falls, N. Y.
Illinois Bell Telephone Co., Warrenville, Ill.
U. S. Post Office, Rochester, N. Y.
New York Telephone Co., Warwick, N. Y.
U. S. Veterans' Facility Administration Building, Augusta, Ga.
Cleveland Airport, Cleveland, Ohio
Church of the Sacred Heart, West New Brighton, S. I.
Ann Lee Home, Albany, N. Y.
Barbizon Hotel, New York, N. Y.
Nelson Towers Building, New York, N. Y.
Albany Academy for Boys, Albany, N. Y.
Massachusetts State War Memorial, Mt. Greylock, Mass.

### Industrial Buildings

Industrial Cotton Mills, Rock Hill, S. C.
E. F. Swift, of Swift & Co., Chicago, Ill.
Dobler Brewery, Albany, N. Y.
Hiram Walker & Sons, Inc., Peoria, Ill.
MacIntosh Mills, Newman, Ga.

# THE ELECTRIC STORAGE BATTERY COMPANY

World's Largest Manufacturers of Storage Batteries for Every Purpose

Allegheny Avenue and Nineteenth Street, PHILADELPHIA, PA.

ATLANTA, GA., 210 Walker Street, S. W.
BOSTON, MASS., 100 Ashford Street
CHICAGO, ILL., 4613 So. Western Avenue
CINCINNATI, OHIO, 718-19 Temple Bar Building
CLEVELAND, OHIO, 6400 Hermann Avenue, N. W.
DENVER, COLO., 810 14th Street
DETROIT, MICH., 8051 W. Chicago Boulevard
KANSAS CITY, MO., 129 Belmont Boulevard
LOS ANGELES, CAL., 1043 So. Grand Avenue
MINNEAPOLIS, MINN., 671 Washington Avenue, No.
NEW ORLEANS, 428 Balter Building
NEW YORK, N. Y., 23-31 W. 43rd Street
PHILADELPHIA, PA., Allegheny Avenue and 19th Street
PITTSBURGH, PA., Union Trust Building
ROCHESTER, N. Y., 642 Plymouth Avenue, So.
ST. LOUIS, MO., 1058 So. Vandeventer Avenue
SAN FRANCISCO, CAL., 6150 Third Street
SEATTLE, WASH., 1919 Smith Tower Building
WASHINGTON, D. C., 1823-33 L Street, N. W.

IN CANADA, Exide Batteries of Canada, Ltd., 153 Dufferin Street, TORONTO, ONT.

## LIGHTS DO FAIL—DESPITE EFFORTS OF LIGHT AND POWER COMPANIES

Lighting failures do happen when least expected, despite every precaution of the electric light and power companies to prevent service interruptions. These companies are helpless to prevent damage done to power lines by electric, wind, snow or sleet storms, fires, floods, street accidents, or short circuits and blown fuses. Because sudden lighting failure may constitute hazards to life and property, emergency lighting protection is a vital necessity in many kinds of buildings.

**Exide**
**Keepalite**
**EMERGENCY LIGHTING BATTERY SYSTEMS**

### Where Emergency Lighting Is Needed

Emergency lighting protection should be provided wherever people gather (especially after dark) for either work, recreation, education, medical attention or business. Adequate lighting protection will, in an emergency, help to prevent panic or injury, damage to property, as well as interruption of business activities or industrial processes.

**Hospitals**—The same storm, fire or accident which puts out the lights may cause injuries requiring the immediate use of operating room or accident dispensary. A light failure during operations is extremely serious.

**Schools**—Assembly halls, gymnasiums or auditoriums, particularly those used at night, should have emergency protection, as well as all halls, corridors, stairways and fire towers leading from them.

**Theatres, Auditoriums** — Many building codes require emergency lights for the prevention of panic. These should have an independent light source such as a storage battery.

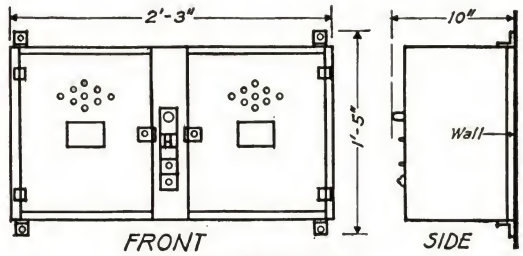
**Industrial Plants**—Many industries conduct dangerous or delicate processes, the control of which might be lost if power and lights fail. Ample emergency power and light should be available instantly so that production can be continued and losses minimized.

**Banks**—Emergency lighting permits the continuation of business during light failures, and is important in the prevention of thefts and hold-ups.

**Stores and Markets**—Emergency lighting protection enables the store to continue business, prevent theft or shoplifting, protect cashier or cash registers, eliminate the fire hazard of substitute lighting, especially candles or oil lamps.

**Engine Rooms**—Lighting troubles are apt to originate in the boiler, engine or transformer room. Lighting is necessary to find the trouble quickly to make repairs.

## LOW VOLTAGE SYSTEMS




Model B-20-12 Unit

**The Exide Keepalite Low Voltage Model**—This model utilizes a separate 10½ volt d.c. circuit and separate fixtures for emergency lighting. An Exide storage battery is used in the cabinet, shown above, together with all switches and battery charger. The battery is constantly charged at a low rate to maintain it in a fully charged condition. After emergency use of the Keepalite unit, the high rate charger is turned on manually.

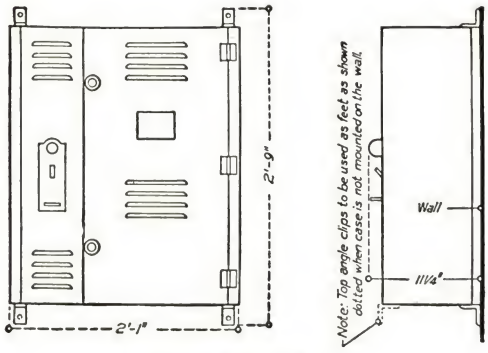
The cabinet should be located as near as possible to the center of the load. Wire size must limit voltage drop to between 0.8 to 1.0 volt. The cabinet can be mounted on the wall or on a shelf, in any location since there are no fumes nor spillage.

The current is carried from the cabinet to separate lighting fixtures. Special Holophane shades have been designed to spread the illumination, giving the most even light distribution over the largest possible floor area. Special 15, 30, 60 and 100-watt lamps have been designed for operation at 10½ volts for use with this model, giving nearly twice the illumination of the same wattage 115-volt lamps. Any combination of lamps can be used not to exceed a total of 240 watts.

The price of the model is $150, complete with battery, without lamps or fixtures.

**Exide Hospital Keepalite**—This equipment includes 12-volt Exide glass jar battery, completely automatic charging apparatus, and the switches necessary to provide automatic instantaneous emergency lighting protection for smaller hospitals. It provides emergency protection for 2 operating lights on a 200-watt capacity 12-volt circuit which is normally fed through a transformer. A 240-watt capacity circuit, which comes on only during power failures, will provide protection for general illumination in 8 rooms in the operating suite. Emergency lighting protection is automatically provided when normal electric service is interrupted. Battery is automatically kept charged and has a life of about 5 to 7 years. Cabinet does not require a separate room and can be located anywhere near the operating room. Circuits are permanently installed. High intensity bulbs are used, giving almost twice the illumination of regular lamps of same wattage. Unit is also adaptable to small stores, theatres and auditoriums where continuous lighting is needed for public safety or to safeguard property. In theatres, the 200-watt circuit may be used for exit sign lights, and the 240-watt circuit for general illumination in emergencies. This unit is also available with a 400-watt capacity circuit only, which comes on during power failures. Battery will carry the emergency lighting load for 1¾ hours.

The price of the unit complete—$265.00.




Model D-40-12 Unit

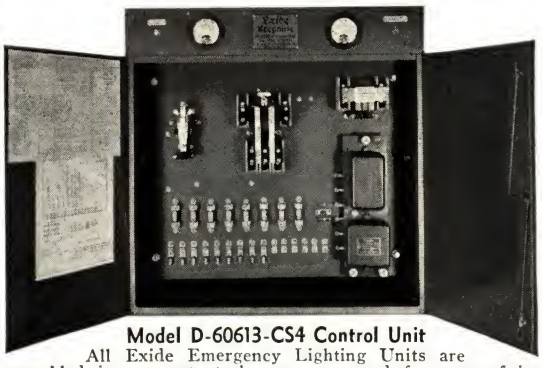
## 115-VOLT AND 115/230-VOLT SYSTEMS

These Exide Emergency Lighting Systems are completely automatic. When the normal power supply fails the emergency circuits are instantly connected to the storage battery by the automatic transfer switch. The battery supplies the electric current throughout the emergency period.

When the normal alternating current supply is restored, the switch transfers the emergency circuits from the battery back to the normal supply, and the battery is then *automatically* and rapidly recharged by means of a bulb charger. This high-rate charge continues until the battery is fully charged; when the charger is automatically cut off by a special Exide patented control.

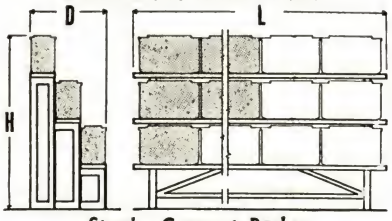
The battery is then maintained in a fully charged condition *at all times* by means of a "copper oxide" dry disc rectifier delivering a low rate continuous trickle charge to the battery. This rectifies the alternating current into direct current for maintaining the battery.

A part or all the normal alternating current lighting circuits can be arranged for use as emergency circuits. During a power failure the emergency lighting system will supply current to these circuits.



**Model D-60613-CS4 Control Unit**

All Exide Emergency Lighting Units are assembled in compact steel cases, arranged for ease of installation and easy access to all parts. Provision for conduit attachment at bottom of case




**Sturdy, Compact Racks**

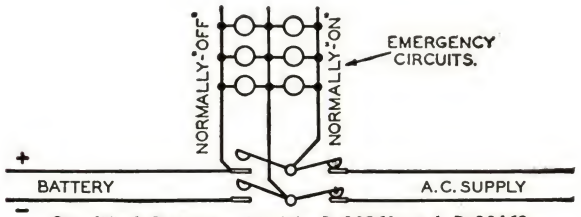
Constructed of wood rails and angle iron frames. Are available for all Exide Batteries

Control units are listed in the table.

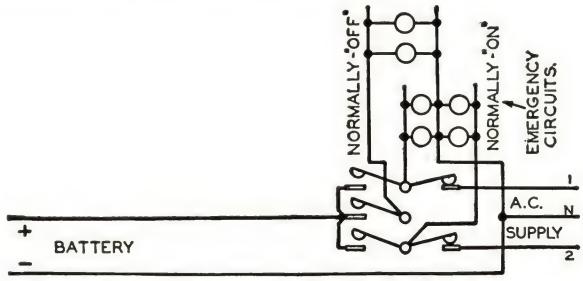
Models D-30260 and D-30460 have provision for a "normally on" and a "normally off" circuit (energized only during power failure). The maximum combined capacity of both circuits is 3450 watts (30 amperes). Model D-60613-CS4 can carry 6900 watts (60 amperes) "normally on" load, plus a 3450 watts (30 amperes) "normally off" load.

Both Exide Chloride and Exide Flat Plate Batteries in sealed glass jars are used with Exide Emergency Lighting Units. The Exide Chloride Battery differs from all other batteries on the market. It is undoubtedly the most rugged, durable and economical battery ever produced for emergency lighting and power service.

*No special battery room is required* for Exide Emergency Lighting Batteries. Exide Batteries are furnished in sealed glass jars from which spray cannot escape. The battery can be placed in any cool, well ventilated place.




**Simplified Diagram—Models D-30260 and D-30460**




**Simplified Diagram—Model D-60613-CS4**

### EXIDE EMERGENCY LIGHTING CONTROL UNITS FOR WALL MOUNTING

| Model | Max. capacity in lamp watts, 115-v. lamps | | Alternating current supply (60 cycles) | Bulb charger capacity, amps. | Over-all dimensions of unit | | | Net weight, lbs. |
|---|---|---|---|---|---|---|---|---|
| | A.C. | D.C. | | | H | W | D | |
| D-30260 | 3450 | 3450 | 2 wire 115 volts | 2 | 1′-7″ | 2′-10″ | 1′-1″ | 130 |
| D-30460 | 3450 | 3450 | 2 wire 115 volts | 4 | 1′-7″ | 2′-10″ | 1′-1″ | 165 |
| D-60613CS4 | 6900 | 10350 | 3 wire 115/230 volts | 6 | 2′-6″ | 2′-3″ | 1′-5″ | 300 |

### BATTERY CAPACITY RATING IN 115-VOLT LAMP WATTS. UNITS DESIGNED ONLY FOR USE WITH BATTERIES AS LISTED

| | | Model control units | | | Battery capacity in lamp watts for required number of hours of protection | | | | | | Battery 60 cells type | Over-all dimensions battery and rack | | | Net weight battery and rack, lbs. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | ½ | 1 | 1½* | 1½ | 2 | 3 | | L | D | H† | |
| For 1 phase, 2 wire circuits | Exide Chloride Batteries | x | .... | D-60613CS‡ | 3450 | 2460 | 2200 | 1935 | 1590 | 1200 | DMGO-5 | 8′-9″ | 2′-5″ | 4′-5″ | 1880 |
| | | x | x | | ..... | 3450 | 3300 | 2900 | 2380 | 1800 | DMGO-7‡ | 10′-10″ | 2′-5″ | 4′-5″ | 2460 |
| | | .... | x | | ..... | ..... | 3450 | 3450 | 3170 | 2400 | DMGO-9 | 12′-7″ | 2′-5″ | 4′-5″ | 2950 |
| | | .... | x | | ..... | ..... | ..... | ..... | 3450 | 3450 | EMGS-7 | 12′-9″ | 3′-0″ | 5′-3″ | 4770 |
| | Exide Flat Plate Batteries | x | .... | | 2280 | 1500 | 1200 | 1160 | 960 | 730 | KZHGR-7 | 4′-2″ | 1′-11″ | 3′-9″ | 680 |
| | | x | .... | | 2990 | 2140 | 1770 | 1680 | 1390 | 1060 | KXOR-5 | 6′-2″ | 2′-5″ | 4′-4″ | 1135 |
| | | x | x | | 3450 | 3250 | 2650 | 2525 | 2075 | 1590 | KXHS-7‡ | 8′-9″ | 2′-5″ | 4′-4″ | 1760 |
| | | | x | | ..... | 3450 | 3450 | 3350 | 2775 | 2120 | KXHS-9 | 12′-7″ | 2′-5″ | 4′-4″ | 2415 |
| | | | x | | ..... | ..... | ..... | 3450 | 3450 | 2640 | KXHS-11 | 12′-7″ | 2′-5″ | 4′-4″ | 2535 |
| | | | x | | ..... | ..... | ..... | ..... | ..... | 3170 | KXHS-13 | 12′-7″ | 2′-5″ | 4′-4″ | 2715 |
| For 1 phase, 3 wire circuits | Exide Chloride Batteries | D-30260 | x | | 5175 | 3690 | 3300 | 2900 | 2380 | 1800 | DMGO-7 | 10′-10″ | 2′-5″ | 4′-5″ | 2460 |
| | | | x | | 6900 | 4920 | 4400 | 3860 | 3170 | 2400 | DMGO-9 | 12′-7″ | 2′-5″ | 4′-5″ | 2950 |
| | | | x | | 9500 | 6900 | 6300 | 5500 | 4650 | 3600 | EMGS-7 | 12′-9″ | 3′-0″ | 5′-3″ | 4770 |
| | | | x | | 10350 | 9200 | 8400 | 7350 | 6200 | 4775 | EMGS-9 | 13′-11″ | 3′-0″ | 5′-3″ | 5730 |
| | Exide Flat Plate Batteries | D-30460 | x | | 6400 | 4325 | 3550 | 3350 | 2775 | 2120 | KXHS-9 | 12′-7″ | 2′-5″ | 4′-4″ | 2415 |
| | | | x | | 7925 | 5400 | 4425 | 4200 | 3475 | 2640 | KXHS-11 | 12′-7″ | 2′-5″ | 4′-4″ | 2535 |
| | | | x | | 9425 | 6475 | 5325 | 5050 | 4175 | 3170 | KXHS-13 | 12′-7″ | 2′-5″ | 4′-4″ | 2715 |
| | | | x | | 10350 | 7575 | 6200 | 5875 | 4875 | 3700 | KXHS-15 | 15′-0″ | 2′-5″ | 4′-4″ | 2985 |
| | | | x | | ..... | 8650 | 7075 | 6725 | 5575 | 4230 | KXHS-17 | 15′-0″ | 2′-5″ | 4′-4″ | 3100 |

*1½ hour rating to 100 final volts in accordance with state of Pennsylvania regulations. All other ratings given to 105 final volts.
†Allow at least 1′3″ additional space over battery for taking of hydrometer readings.
‡DMGO-7 and KXHS-7 can be used with either D-30260 or D-30460 control units. If quicker recharging of the battery after an emergency is desired, select Model D-30460 because of larger charger.

MEMORANDA

# LIGHTING
## - SECTION - 24

Section Number 1/5 Catalog Number

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Benjamin Electric Mfg. Co....24/13
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Corning Glass Works....24/1
Curtis Lighting, Inc....24/2
Day-Brite Lighting, Inc....24/15
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Lighting Glassware....24/3
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Herwig Co., Inc....24/21
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Miller Co....24/8
Phoenix Glass Co....24/9
Pittsburgh Reflector Co....24/20
Smyser-Royer Co....24/22
Westinghouse Electric & Mfg. Co....24/10


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**THIS INDEX INCLUDES ADDITIONAL INFORMATION WHICH IS FILED IN OTHER SECTIONS**

**Products described or illustrated in manufacturers' catalogs are indexed by section and catalog numbers. All names are listed alphabetically under each product heading.**


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Permaflector....24/20
**Pittsburgh Reflector Co.**....24/20

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MEMORANDA

ESTABLISHED 1868

# CORNING GLASS WORKS

ILLUMINATING AND OPTICAL DIVISION

MAIN OFFICE

CORNING, NEW YORK

BRANCH OFFICES

CHICAGO OFFICE
159 West Lake Street

NEW YORK OFFICE
718 Fifth Avenue

SAN FRANCISCO OFFICE
Merchandise Mart Building

Appreciating the fact that architects are desirous of having at their command a selection of materials and patterns which they can use to add the final touches of beauty and efficiency to lighting installations, CORNING GLASS WORKS offers for consideration the complete line of MACBETH lighting glassware for schools, churches, stores, homes, and other types of buildings.

MACBETH enclosing globes are available in two distinctly different glasses, both of which are physically homogeneous single-layer glasses, and, consequently, are as strong mechanically as it is possible to make glass. Since they are single-layer glasses they are not subject to the differential expansion strains and the consequent breakage when in service, inherent to the multi-layer (cased) enclosing globes. These glasses are sold under the MONAX and GALAX *Trade-Marks*.

MACBETH enclosing globes further possess the advantages of extremely low depreciation in illuminating efficiency while in service. One-piece in construction, they are as nearly dust-tight as is possible to make a lighting unit. Smooth surfaced initially, since they are especially resistant to weathering attack, they continue to be smooth surfaced and, accordingly, dust and dirt do not settle upon them to the extent that they do on less resistant glasses. In the latter, even a slight weathering film renders the glass surface such that atmospheric dust adheres strongly to the glass and quickly depreciates its illuminating efficiency.

In addition to enclosing globes the following pages illustrate several new pieces of illuminating glassware made from MACBETH IVORIAN. The basic ingredients of IVORIAN are largely those of MONAX, except for the addition of certain elements which produce an ivory tone. The delicacy of color suggesting real ivory rather than cream or yellow tones has stamped IVORIAN an outstanding glass of so-called ivory types. This glass is especially adaptable for residential illumination, lighting for specialty shops, hotel rooms and comparable types of installation where the introduction of modest color tone is desirable.

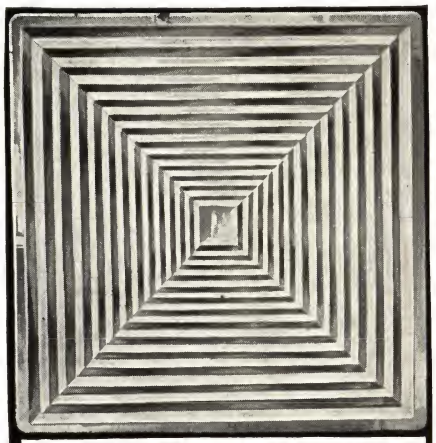
ALVAX is a homogeneous glass of light opacity which has found wide application when only a slight diffusion and relatively high transmission of light are desired. The rich silklike texture renders it attractive in appearance. It is particularly adaptable for the manufacture of heavy pressed ware. Illuminating plates, as shown on the following pages, have found especial favor when made from ALVAX glass.

Any lighting fixture consists only of three major parts —the diffusing or reflecting medium, the metal assembly, and the lamp with accessories. Properties of glass have made it the most important diffusing or reflecting medium. Glass can be highly transmitting, highly reflecting, or reflecting and transmitting in various degrees, with almost perfect diffusion or with a minimum of diffusion. Glass is permanent as time has proven. Good glass will not change in color nor will it warp or crack with ordinary usage. It is clean and sanitary. For these reasons glass has been and will continue to be the most important tool for good lighting.

An extremely high standard of selection for glass quality as well as for uniformity in weight is maintained by CORNING GLASS WORKS at all times. MACBETH illuminating glassware is free from such defects as streaks, cords, stones, blisters, checks or other imperfections which will impair the strength and appearance or detract from the general quality. The net result of such a high standard of selection is a uniform installation of attractive appearance and maximum efficiency.

The following pages illustrate only a few of the more recent additions to the MACBETH line of illuminating glassware manufactured by CORNING GLASS WORKS.

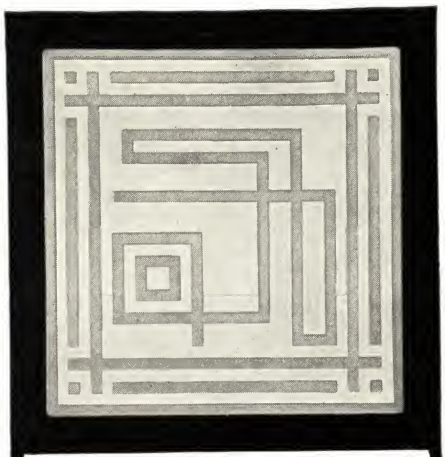
# MACBETH ALVAX AND MACBETH LUMITE ILLUMINATING PLATES



| Mould Number | Side Dimension | Thickness |
|---|---|---|
| 12109 | 6 1/2″ | 1/4″ |
| 12117 | 8″ | 1/4″ |
| 12120 | 12″ | 1/4″ |



| Mould Number | Side Dimension | Thickness |
|---|---|---|
| 12108 | 6 1/2″ | 1/4″ |



| Mould Number | Side Dimension | Thickness |
|---|---|---|
| 12349 | 12″ | ¼″ |

Illuminating plates are offered for flush face, recessed unit lighting in walls or ceiling, special luminaire designs, certain types of coves, show window lighting and other unusual effects. These are flat, square plates with moulded design and are available in MACBETH LUMITE (clear) glass and in MACBETH ALVAX, a natural diffusing glass of alabaster type. No. 12349 Illuminating Plate is manufactured only from MACBETH ALVAX light density diffusing glass, and is available only in one size. The character of the elaboration is adaptable for many unusual combinations of design.

# MACBETH MONAX CYLINDERS



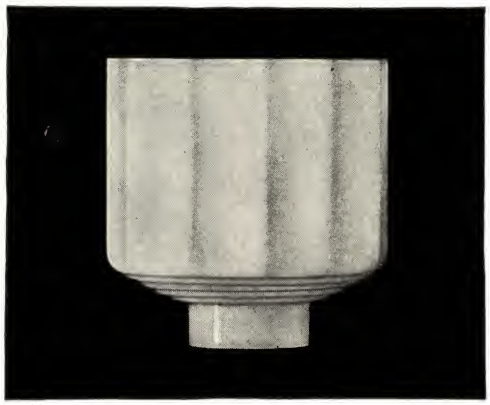
MONAX, white diffusing glass cylinders are obtainable in the following diameters. Only the maximum length is shown for each diameter. They may be cut to any shorter length desired, or they may be cut into vertical segments of any radius obtainable from the given diameters with due allowance for slight loss or variation caused by grinding the edges after cutting. To specify give the diameter and length for complete cylinders; degrees required and length for vertical segments.

| Outside Diameter | Maximum Length |
|---|---|
| 2″ | 21″ |
| 2½″ | 14″ |
| 3″ | 18″ |
| 3½″ | 14″ |
| 4″ | 19″ |
| 4½″ | 32″ |
| 5″ | 16″ |
| 6″ | 21″ |
| 7″ | 16″ |
| 8″ | 26″ |
| 10″ | 18″ |
| 12″ | 36″ |
| 13⅝″ | 28″ |



CORNING GLASS WORKS

# NEW LIGHTING EQUIPMENT FOR BEDROOM AND BATH



No. 12230 Upright Shade

## No. 12230 MACBETH IVORIAN UPRIGHT SHADE

An upright shade with Doric flutes. It may be used in complement with No. 12359 Shallow Bowl or No. 5393 Half Shade. This shade is manufactured from MACBETH IVORIAN, a natural colored diffusing glass of very light ivory tone.

| Mould No. | Diameter | Height | Outside diameter of bottom opening |
|---|---|---|---|
| 12230 | 3-3/16″ | 3-3/4″ | 1-5/8″ |

## No. 12359 MACBETH IVORIAN SHALLOW BOWL

This bowl is made from a mould having Doric flutes converging at the center of the bottom and is manufactured from MACBETH IVORIAN, a natural colored diffusing glass of very light ivory tone. Usually the bowl is supported by a center rod or stem fastened through a ½-in. diameter center hole drilled in the bottom.

| Mould No. | Diameter | Depth | Center hole diameter |
|---|---|---|---|
| 12359 | 10″ | 3″ | 1/2″ |



No. 12359 Shallow Bowl



No. 5393 Half Shade

## No. 5393 MACBETH IVORIAN HALF SHADE

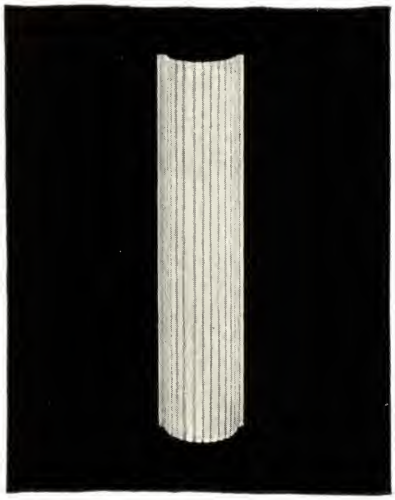
A fluted adaptation of the popular "half" or "eye" shade. No. 5393 is manufactured from MACBETH IVORIAN Glass and is suggested for use in the kitchen or bath when a slight color tone is preferable to plain white glass.

| Mould No. | Max. length | Height | Fitter |
|---|---|---|---|
| 5393 | 5-7/16″ | 3-9/32″ | 2-1/4″ |

## No. 12320 MACBETH MONAX LUMILINE CYLINDER

Designed especially for use with Lumiline Lamps. No. 12320 is manufactured from MACBETH MONAX white diffusing glass. Two standard lengths are available.

| Mould No. | Max. width | Depth | Length |
|---|---|---|---|
| 12320 | 2-23/32″ | 1-1/2″ | 12-7/8″ or 17-7/8″ |



No. 12320 Lumiline Cylinder

# "ROMANESQUE"
## (SEMI-INDIRECT)



### PLAIN GLOBES

| Mould No. | Description | Diameter | Depth | Fitter diameter | *Lamp position | Recommended wattage |
|---|---|---|---|---|---|---|
| 12009 | Galax | 10″ | 7 7/16″ | 4″ | 1 1/2″ | 100 |
| 12010 | Galax | 12″ | 8 3/4″ | 6″ | 1 1/2″ | 150 |
| 12011 | Galax | 14″ | 10″ | 6″ | 1 1/2″ | 200 |
| 12012 | Galax | 16″ | 11 3/8″ | 6″ | 2″ | 300 |
| 12014 | Galax | 18″ | 12 1/2″ | 6″ | 2″ | 500 |

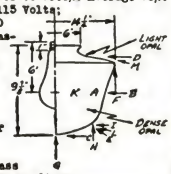
*Lamp Position—Represents the distance in inches of the lamp contact above the plane of the fitter screws.

**ELECTRICAL TESTING LABORATORIES**
NEW YORK, N. Y.

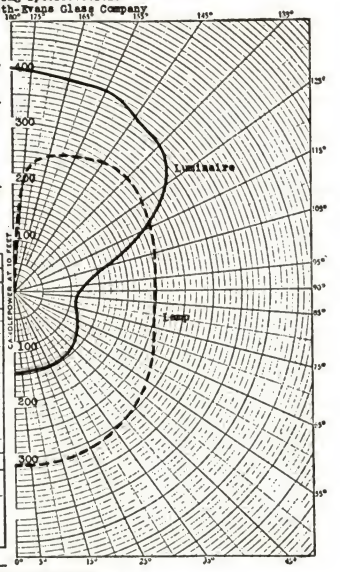
REPORT NO. 134591 ORDER NO. 57611-S PLATE NO. 27657

CANDLEPOWER DISTRIBUTION
NO. 12011 GALAX GLOBE*
Tested in Compliance with Illuminating Engineering Society
Standard Testing Specifications
Rendered to Macbeth-Evans Glass Company.

Globes - 40 Submitted; 25 Inspected and Weighed; 6 Tested.
Light output range 68 to 75.5%. Average 75%.
Lamp - 200 Watts; 115 Volts;
3400 Lumens; PS30
Inside Frosted Gas-Filled Bulb; C-9 Filament; Medium Base; General Service.
Surface covering globe opening, reflection factor 0.40.




White Diffusing Glass
Weight of test sample - 80 oz.




LUMINAIRE DISTRIBUTION DATA
MEAN VERTICAL

| MID-ZONE ANGLES | CANDLEPOWER AT 10 FEET | ZONAL LUMENS | MID-ZONE ANGLES | CANDLEPOWER AT 10 FEET | ZONAL LUMENS |
|---|---|---|---|---|---|
| 180° MAX. | 396 | | 90° MIN. | 112 | |
| 175° | 390 | 37 | 85° | 108 | 118 |
| 165° | 386 | 109 | 75° | 112 | 119 |
| 155° | 391 | 180 | 65° | 122 | 121 |
| 145° | 372 | 235 | 55° | 133 | 119 |
| 135° | 364 | 280 | 45° | 142 | 110 |
| 125° | 325 | 292 | 35° | 146 | 92 |
| 115° | 246 | 244 | 25° | 148 | 69 |
| 105° | 163 | 173 | 15° | 148 | 42 |
| 95° | 122 | 133 | 5° | 148 | 14 |
| | | | 0° MAX. | 148 | |

LIGHT FLUX VALUES

| ZONE | LUMENS: LAMP | LUMENS: LUMINAIRE | PER CENT TOTAL LUMENS BARE LAMP | PER CENT LIGHT OUTPUT |
|---|---|---|---|---|
| 0°-60° | 934 | 446 | 13 | |
| 0°-90° | 1742 | 804 | 23.5 | 73 |
| 90°-180° | 1656 | 1683 | 49.5 | |
| 0°-180° | 3398 | 2487 | 73 | |

LUMINAIRE BRIGHTNESS
CANDLEPOWER PER SQUARE INCH
THE ARROWS INDICATE THE LOCATION AND ANGLE OF VIEW

| LOCATIONS | A | B | C | D | E | F | G | H | I | J | K | L | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CP. PER SQ. IN. | 1.0 | 1.0 | 1.1 | 3.5 | 1.3 | 0.7 | 1.1 | 1.2 | 1.2 | | 1.1 | 1.2 | 1.7 |

E.T.L. Identification No. 53036
TESTED BY ... PLOTTED BY ... COMPUTED BY ... CHECKED BY ... ISSUED February 28th, 1935.

APPROVED BY
William F. Fox
ENGINEER IN CHARGE OF PHOTOMETRY
C. E. Howe
IN CHARGE OF TEST

The "ROMANESQUE" manufactured from MACBETH GALAX (semi-indirect) glass, was designed to utilize effectively the upward component of light reflected from the dense white reflecting lower portion of the globe. The upper section from the shoulder to the fitter opening of the globe is of light opacity and slightly diffusing in character.

At the left is shown a reproduction of Electrical Testing Laboratories' report on No. 12011 GALAX, tested in accordance with Illuminating Engineering Society standard specifications.

The results obtained from this test are representative for all sizes.

# CURTIS LIGHTING, INC.

## Designers, Engineers and Manufacturers of Superior Lighting Equipment

MAIN OFFICE AND PLANT

1125 West Jackson Boulevard, CHICAGO, ILL.

NEW YORK OFFICE, 230 Park Avenue

FACTORIES

CHICAGO PARIS TORONTO LONDON ANTWERP

RESIDENT ENGINEERS

ATLANTA, GA., Charles H. Burch, 431 Citizens & So. Nat'l Bank Bldg.—Walnut 5177
BALTIMORE, MD., Theo. H. Bailey, Jr., 612 Garrett Bldg.—Plaza 3513
BOSTON, MASS., H. L. Nicol, 433 Rice Bldg., 10 High St.—Liberty 2549
CHATTANOOGA, TENN., H. O. Bourkard, 801-802 Chattanooga Bank Bldg.—6-7922
CINCINNATI, OHIO, J. W. Morrison, 601-603 Keith Bldg.—Main 5070
CLEVELAND, OHIO, Howard D. Leppo, 1935 Euclid Ave.—Cherry 5223
DALLAS, TEX., F. H. Simmer, 103 Thomas Bldg.—7-2519
DENVER, COLO., G. S. Spangler, 403 Cooper Bldg., 1009 17th St.—Taylor 2863
DETROIT, MICH., Paul D. Cornelisen, 617 Hammond Bldg.—Cadillac 1434
HARTFORD, CONN., R. B. MacFarland, 183 Ann St.—5-1117
INDIANAPOLIS, IND., Henry J. Damm, 305 Merchants Bank Bldg.—Lincoln 0541
KANSAS CITY, MO., H. B. Ewert, 526 Law Bldg., 1207 Grand Ave.—Harrison 1118-1119
LOS ANGELES, CALIF., Frank J. Airey, Inc., Rm. 301, 1855 Industrial St.—Michigan 7981
MIAMI, FLA., Wm. J. Mulhall, 365 N. E. 55th St.—Edgewater 1558
MILWAUKEE, WIS., H. J. Martin, 743 No. 4th St.—Marquette 6550
MINNEAPOLIS, MINN., Alex A. Ohlson, 828 Plymouth Bldg., 6th St. and Hennepin Ave.—Geneva 2202
NEW ORLEANS, LA., Hutson Colcock, 822 Perdido St.—Raymond 3553
OMAHA, NEB., George C. Mittauer, 603 Electric Bldg.—Atlantic 6548
PHILADELPHIA, PA., Pyle & Sholl, 322 Witherspoon Bldg.—Pennypacker 1484
PITTSBURGH, PA., R. F. Clark, 810 Penn Ave.—Atlantic 8090
PORTLAND, ORE., R. M. Camnitz, 7305 N. Vincent Ave.—Atwater 6539
ROCHESTER, N. Y., C. B. Pate, 623 Commerce Bldg., 119 E. Main St.—Stone 2141
ST. LOUIS, MO., Geo. C. Law, 915 Olive St.—Main 3456
SAN FRANCISCO, CALIF., John D. Erikson, 153 Kearny St., Rm. 209—Exbrook 6068
SEATTLE, WASH., W. K. Turner, Terminal Sales Bldg.—Main 3860

## COMPLETE LIGHTING SERVICE

### Designing

An extensive staff composed of individually capable artists makes up the Curtis Luminaire Studio. Lighting elements of their design are used in many of the world's prominent buildings. The creative and material requirements suggested are made with a practical knowledge of the original problem and the desired artistic and efficient lighting result.

X-Ray

SHOW WINDOW LIGHTING
EYE COMFORT LUMINAIRES
LIGHT IN ARCHITECTURE
RECESSED AND COVE LIGHTING
PANEL AND SKYLIGHT LIGHTING
STORE AND OFFICE ILLUMINATION
SCHOOL AND PUBLIC BUILDINGS
INDUSTRIAL AND FLOOD LIGHTING

### Manufacturing

Forty years in the manufacturing of superior quality lighting equipment has placed Curtis Lighting in the outstanding position in the field. "X-Ray" Silver Mirror Reflectors are known the world over for their powerful lighting effectiveness . . . their scientific design makes possible every type of light control. Indirect lighting for "Eye Comfort" was discovered by Augustus D. Curtis in 1908.

### Engineering

*Early,* intelligent planning is necessary to the successful execution of lighting installations. Architects are urged to submit proposals during the first stages of building planning, that time, money and effort may be saved for architect and client. Complete decorative and dimensional details furnished with proposals augment speedy, comprehensive lighting recommendations. Every proposal considered by the Curtis Engineering Staff is accorded thorough engineering service and only the most advanced, practical recommendations are made.

### Representation

To better serve the architect and users of "X-Ray" and "Eye Comfort" lighting equipment, Curtis maintains permanent representatives in all principal cities. Each of these men is thoroughly familiar with the entire versatile line of Curtis products and today's advanced lighting standards. Each is an experienced Illuminating Engineer. Oftimes it is possible to engineer a complete job "on the spot" by consultation with a Curtis Representative. For convenience the representatives are listed above, alphabetically by cities. Find the one nearest you and consult him frequently.



*Indirect lighting from luminous bowl fixtures provides comfortable light for seeing and selling in modernized store*



*Modern indirect lighting and modern materials combine to make an efficient, pleasant office. Lighting from "Winner" units*

## STANDARD LUMINAIRES OF SUPERIOR DESIGN AND QUALITY

For the first time it is possible to obtain beauty of design with high quality material and manufacture in standard, moderately priced lighting equipment. The design collaboration of Walter Kantack, eminent artist, and the Curtis Luminaire Studios, plus the extensive Curtis manufacturing facilities, produces these attractive, efficient "Eye Comfort" luminaires in a wide variety of styles to suit the most discriminating taste. "Eye Comfort" is the outstanding quality of the lighting from Curtis luminaires. Reflecting medium is most important in successful lighting performance . . . each Curtis luminaire utilizes one of three mediums . . . "X-Ray" Silver Mirror Glass Reflectors (the most powerful reflectors known), Lunax (Alzak) permanently durable aluminum, or Silvered Bowl Lamps. Curtis Luminaires are made in sizes from 200 to 1500 watts . . . many styles available for quick delivery. To determine correct size and style for job consult Curtis Engineers.



### Portable and Wall Luminaires

In remodeling it is often desirable to relight without adding new wiring. Curtis portable unit "Homer" (500 or 300 watts, with Lunax reflecting surface) is convenient to mount on case and partition tops and connect with existing outlets. It also will build up existing lighting levels. Curtis Wall Applique "Urna" (500 or 300 watts) is a graceful, efficient X-Ray Reflector, mounted on an aluminum bracket.

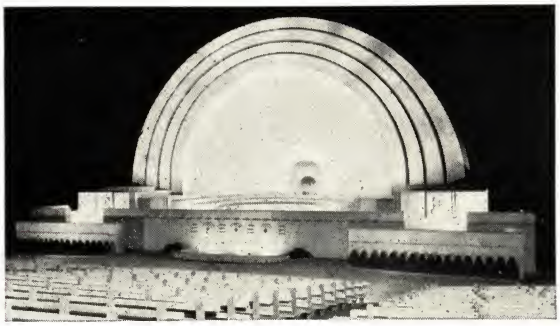






### Floodlighting . . . X-Ray Projectors

The dramatic effectiveness of exterior floodlighting is particularly desirable to beautify buildings of architectural merit . . . for giving advertising prominence to commercial establishments . . . X-Ray Floodlighting also has important industrial uses (yards, mines, etc.). Curtis manufactures a versatile line of sturdy X-Ray Projectors for permanent exterior floodlighting which are weatherproof and adjustable, and Lunax Aluminum floodlights for exterior and interior use. Capacities vary from 200 to 2000 watts. Write for Handbook 777.



*A civic music pavilion enhanced by dramatic Curtis floodlighting*

### Indirect Luminaires

For those interiors, offices, schools, libraries, etc., wherein correct seeing is essential. Curtis totally indirect lighting provides scientific "Eye Comfort". Totally reflected light of adequate intensity eliminates glare, shadow and contrast . . . promotes efficient, speedy eye work. Three popular designs shown: (Suspensions shown are maximum from ceiling to *top* of bowl).

**"Edge-Ray,"** designed by Walter Kantack, is unusually beautiful. A patented "edge-ring" redirects soft light onto the bowl exterior, giving a luminous appearance. Made of Lunax *(Superior Alzak)* Aluminum.

*200 Watts:* Cat. No. 1200
Diameter 17 in.; Suspension 30 in.
*500 or 300 Watts:* Cat. No. 1250
Diameter 21⅜ in.; Suspension 36 in.
*750 to 1500 Watts:* Cat. No. 1270
Diameter 27½ in.; Suspension 48 in.

**"Winner"** is a most efficient X-Ray Reflector luminaire. The simply designed bowl makes it ideal for schools, offices, libraries and drafting rooms.

*500 or 300 Watts:* Cat. No. 5090
Diameter 19½ in.; Suspension 36 in.

**"L'Order"** luminaire is intended for use with the Silvered Bowl Lamp. Easy relamping through hole in bottom of bowl. Features patented "edge-ring" self-illumination on bowl exterior. Made of Lunax *(Superior Alzak)* Aluminum.

*200 Watts:* Cat. No. 121
Diameter 17 in.; Suspension 30 in.
*500 or 300 Watts:* Cat. No. 151
Diameter 21⅜ in.; Suspension 36 in.
*750 or 1000 Watts:* Cat. No. 171
Diameter 25½ in.; Suspension 42 in.

### Direct-Indirect Luminaires

These two-way lighting units utilize only *one* light source. The indirect component affords seeing comfort . . . the direct lighting (controlled by louvers) concentrates brilliant light on the merchandise—or selling plane. This "plus" lighting attracts attention to merchandise and inspires impulse buying . . . a boon to store owners.

**"Hercules"** has Lunax reflecting surface. Has patented "edge-ring". The control louvers are made of steel, painted mat gray.

*500 or 300 Watts:* Cat. No. 1350
Diameter 21⅜ in.; Suspension 36 in.

*Other designs shown in Handbook "J"*




### Industrial "Light-Hood"

The benefits of "Eye Comfort" indirect lighting are *now* available for industrial purposes. "Light-Hood", a self-contained indirect lighting unit, gives high intensity evenly distributed light over continuous areas at working level. Recommended for assembly lines and finishing tables or where critical seeing is performed. Write for Folder 936.



*A modern radio factory . . . completely equipped with "Light-Hood"*





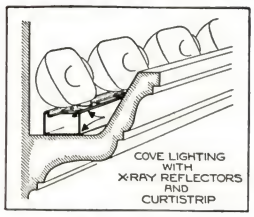
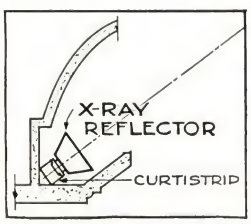




Diagram shows method of mounting X-Ray distributing type cove reflectors on CurtiStrip, a continuous wiring channel.



*Left:* An illustration of this type of X-Ray cove reflector which is available in four sizes (40 to 200 watts) to permit variations in cove widths. The equipment may be entirely concealed by the cove facing.

Below is shown the concentrating type X-Ray silver mirror cove reflector.






This type X-Ray Reflector available in two sizes—40 to 100 watts.

## CURTIS RECESSED LIGHTING WITH X-RAY REFLECTORS

The smooth, clear ceiling lines made possible with X-Ray recessed lighting are in keeping with the "streamline" qualities of modern interior architecture. Especially convenient for low-ceilinged interiors. Recessed lighting may be effectively combined with indirect pendant lighting or cove lighting. Properly planned recessed illumination gives high intensity lighting without glare. Consult Curtis Engineers for efficient results.

Requirements of the lighting job determine the type of X-Ray Reflector to use—concentrating, semi-concentrating, or distributing. The reflectors are mounted above a framed ceiling opening which may be one of several types. Sizes and wattage capacities vary. Below are briefly described the different types:

### Unhoused X-Ray Units

Space limitation and economy are reasons for using unhoused X-Ray units which come with (1) hinged rim and outer flange mounting to hold cover glass, louver, or flat wire guard. (2) stationary rim for same equipment or, (3) if no control equipment is wanted, a flat, flush ceiling flange may be furnished. Ceiling frames furnished unfinished to be painted ceiling color.



### Housed X-Ray Units

When desirable to have units completely enclosed, specify metal-housed X-Ray recessing units. These are of two types—round and square and have fittings as described for "unhoused units." The metal housings are of 20-gauge lead-coated steel.



### Louvers and Cover Glasses

Light control is the prime consideration for louver design; however, decorativeness is also important. Concentric ring louvers are effective and harmonize with modern interior schemes. Pattern louvers are individual and lend an ornamental accent to lighting sources. Curtis louvers available for round or square recessing units. Units may be used individually or grouped architecturally. Louvers may be used with or without cover glass. Diffusing cover glass lens and wire guards (for gymnasium and sports use) are available.

## COVE LIGHTING WITH X-RAY REFLECTORS AND CURTISTRIP

Light from concealed sources finds its most distinctive architectural application in cove lighting. The functional and decorative lighting results of properly engineered cove lighting may be widely varied in effect. Curtis X-Ray cove reflectors permit this flexibility because of their accurate light control and availability in distributing and concentrating types. Engineering recommendations for cove lighting should be made while the interior plans are "on paper."

### Types of Cove Lighting

*Single Cove*—The usual cove lighting installation consists of a single cove with X-Ray Reflectors mounted on CurtiStrip, spaced in a continuous line to permit even distribution of light on ceiling. At right is shown a single cove.

*Multiple Cove*—When one or more coves are tiered above another the lighting result is extremely decorative.

*Reverse Cove*—A portion of the ceiling may be dropped to conceal the cove lighting equipment; the light is directed onto the upper wall areas rather than toward the center of the room.

*Column Cove* lighting finds wide application in church and store interiors.



## CURTIS LIGHTING IN INTERIOR ARCHITECTURE

Light plays an important part in modern architecture. Ofttimes the entire design of an interior is motivated by an architectural lighting scheme. Light is a useful, fascinating medium for gaining height, width, spaciousness, individuality, color and freshness in an interior. Care should be exercised in planning architectural lighting that the application is not so "gaudy" as to lose its lighting effectiveness. Both practical and spectacular angles of the scheme must be considered. Curtis Engineers are constantly employing new materials and methods to achieve distinctiveness, and beauty, plus eye comfort. A complete line of X-Ray Reflectors and accessory equipment is made to meet feasible lighting requirements. Methods of installing equipment vary with each job and early planning of details will profit architect and client.







### Specially Designed Luminaires

In addition to the extensive line of standard Curtis luminaires of superior quality and design, the Luminaire Studios create original lighting elements of unusual beauty. These are conceived to beautify as well as to provide lighting for seeing. Custom-made luminaires naturally require time to design and manufacture. Architects contemplating special luminaires are advised to seek consultation at the earliest possible date. Below is shown the recently completed combination banquet and dance hall in the Students' Service Building of the University of Cincinnati.



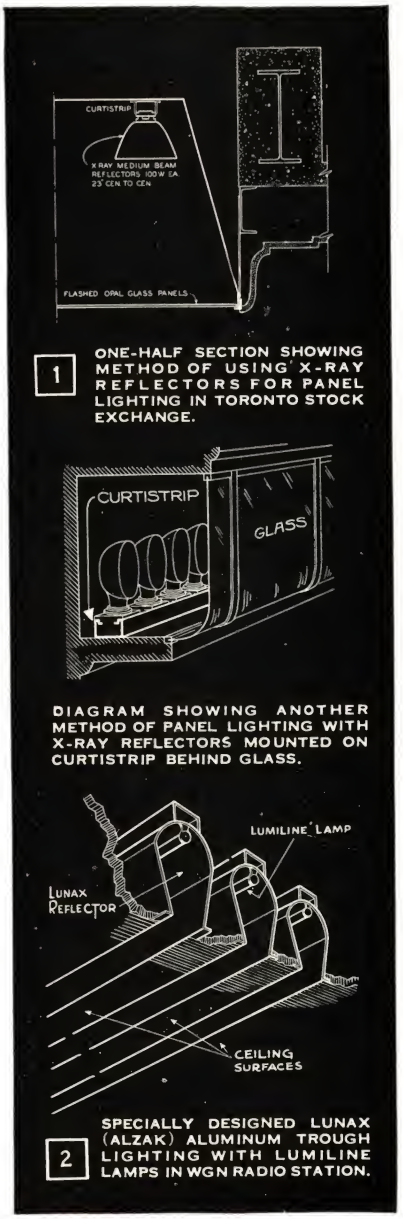
### Panel Lighting

Glass and light may be combined in many ways. Panels of glass may form large or small areas of wall and ceiling surfaces. The diagrams at the right indicate how X-Ray Reflectors may be mounted above or behind flashed opal glass (to insure proper diffusion). Light emanating through the glass is glareless and evenly distributed. The Toronto Stock Exchange (pictured at the left) shows a combination wall and ceiling panel installation. (Observe diagram.) Light forms the major decorative element and provides an even intensity of 25 foot candles over the entire trading floor.

*Skylight Lighting* is a form of panel lighting. For those interiors where daylight is inacessible the installation of a skylight lighting gives the room spacious cheerful "outside" atmosphere. Even intensity lighting may be achieved throughout.

### Linear Lighting

Bands of light play an important part in modern lighting. Many unusual decorative effects are achieved by combining lines of light in pattern arrangements which form the main motif for the decorating scheme. Curtis designs and manufactures standard and special linear lighting equipment. The WGN Radio Studio at the left depicts an extremely interesting example of linear lighting . . . engineered as shown in diagram at right. Adequate light results for seeing comfort.

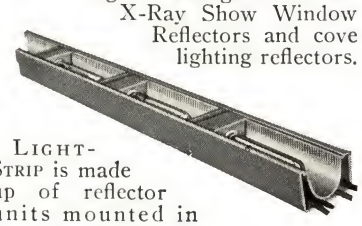



### Lighting of Glass Blocks

A new, interesting contribution to building and decorative materials is the glass block now on the market in several different styles and sizes. The fact that they transmit light means their structural and decorative use is unlimited. Effectively lighting glass block areas involves three considerations . . . color, intensity, and arrangement of lighting equipment. Curtis Engineers have devoted considerable time to their use with light and prospective users are invited to write for suggestions.

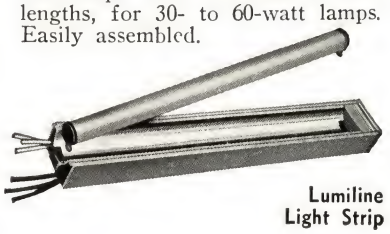
### CURTISTRIP—LIGHTSTRIP—LUMILINE LIGHTING

CURTISTRIP is a convenient, simplified wiring channel and raceway (2½ in. wide, 1⅝ in. deep) that offers unusual flexibility and a wide range of uses with its standardized fittings. It is the most logical wiring device for X-Ray Show Window Reflectors and cove lighting reflectors.



LIGHTSTRIP is made up of reflector units mounted in CurtiStrip and provides a practical, effective linear lighting source. It comes in three sizes and uses tubular lamps 25 to 150 watts.

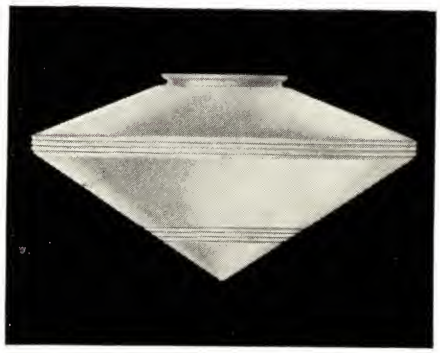
LUMILINE LIGHTSTRIP is a standardized lighting channel for Lumiline lamps. Units available in two lengths, for 30- to 60-watt lamps. Easily assembled.



Lumiline Light Strip

# GLEASON-TIEBOUT GLASS COMPANY

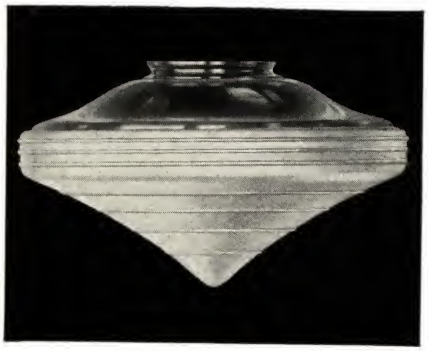
Manufacturers of Lighting Glassware
99 Commercial Street
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FACTORIES: BROOKLYN and MASPETH, L. I., N. Y.
SHOWROOMS
NEW YORK OFFICE AND CELESTIALITE DIVISION
200 FIFTH AVENUE
CHICAGO OFFICE AND SHOW ROOM
20 NO. WACKER DRIVE
RESIDENT REPRESENTATIVES
BALTIMORE BOSTON CLEVELAND DALLAS DENVER DETROIT LOS ANGELES ROCHESTER SEATTLE



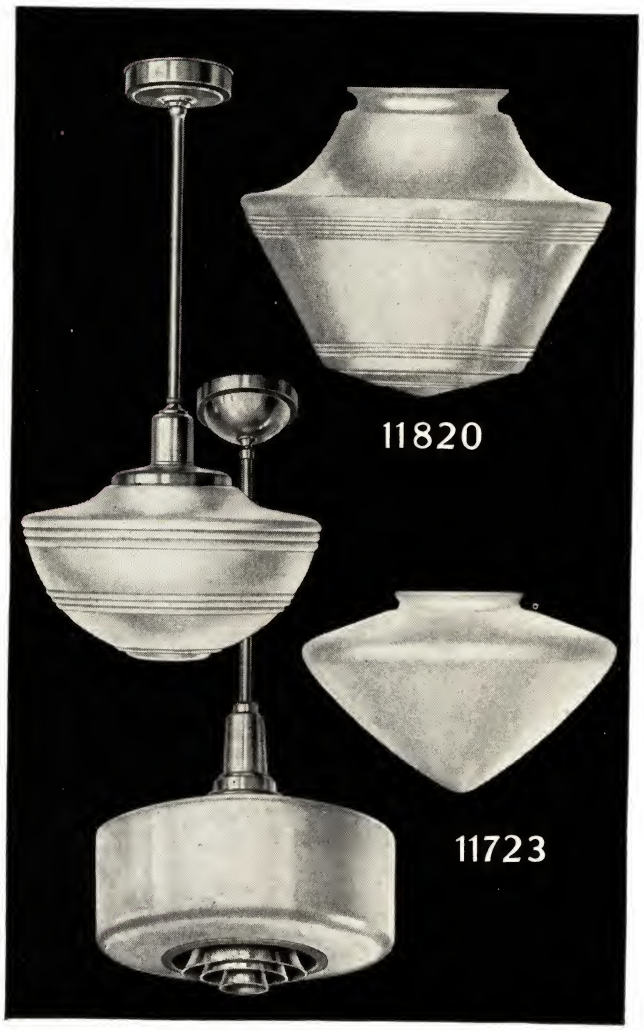
12054



12116



12176—L.S.B. Indirect Enclosing Globe




### Product

Blown and Pressed Lighting Glassware.

### Use

For commercial, residence and street lighting.

### Forms

Balls, Bowls, Globes, Cylinders, Shades, Reflectors, and Architectural glass. Hundreds of catalog shapes in a range of sizes, plain or decorated, or with cut design.

### Special Glassware

Special shapes can be made to your design from moulds constructed in our own Mould Shop.

### Glasses

The glasses used most extensively for commercial lighting are:

**Silvaglo**—A single-layer, high efficiency white opal glass affording perfect diffusion, snow-white when lighted, giving a light output of over 80%.

**Polycase**—A rugged multiple-cased glass, constructed of layers of Clear and Opal glass, this opal casing being only sufficiently heavy to satisfactorily diffuse the light. Light output 80% or more.

**Ivory**—A single-layer diffusing glass, ivory in color, warm enough to be pleasing without decreasing its efficiency materially.

**Celestialite**—A glass of special construction and quality. See following page.

### Architectural Service

We welcome requests for information and suggestion. You may expect our fullest co-operation.

# GLEASON-TIEBOUT GLASS COMPANY

CELESTIALITE DIVISION
200 Fifth Avenue
NEW YORK, N. Y.




Now you can specify lighting units having that extra quality which provides an illumination of highest *visual acuity*, not found in any other type of glassware.

The cost of Celestialite, the three layer glass, is within the budget of any school, hospital or office.

These are a few of the many attractive designs available in sizes suitable for any wattage.

---

Recent laboratory tests have proved that under the influence of Celestialite glass the eye uses only 80% of its total energy to observe a given detail as compared to 100% under the light from ordinary single layer glass. And, in doing so only 80% of the total volume of light is necessary.

## CELESTIALITE

**(Registered and Patented)**

**Next to Daylight**




**Celestialite's Three Layers**

The following wording may be used in specifying Celestialite glass:

Glassware shall be three-layer construction. Outside layer shall be clear crystal glass for body and strength, middle layer of translucent white glass for diffusion and inside layer of special light rectifying transparent blue glass.

Another development—filling the need for Semi-Indirect lighting is CELESTIALIER (Registered and Patented).

Shown below are two of the many popular designs available and described in the following table:

Type A—22 in. for 300-500 watt

Type C—(Illustrated)
18 in. for 300-500 watt
22 in. for 750-1000 watt (Bi-Post)

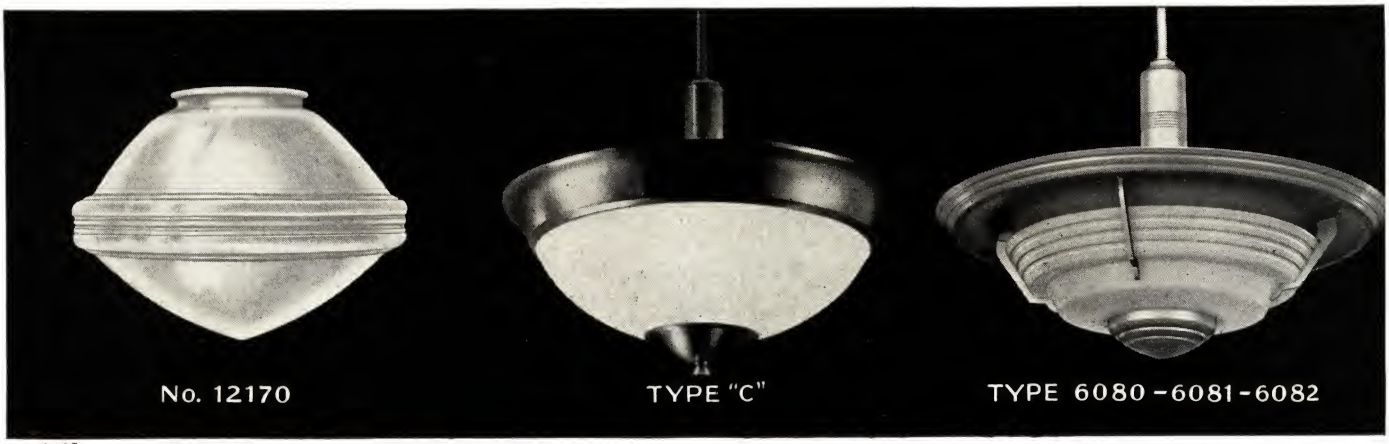
Type G—14 to 20 in., inclusive, for 200-1000 watts

Type L—20 to 26 in., inclusive, for 200 to 1000 watts

Type 6080—(Illustrated)
20 in. for 200-300 watts

Type 6081—(Illustrated)
26 in. for 300-500 watts

Type 6082—(Illustrated)
26 in. for 750-1000 Bi-Post



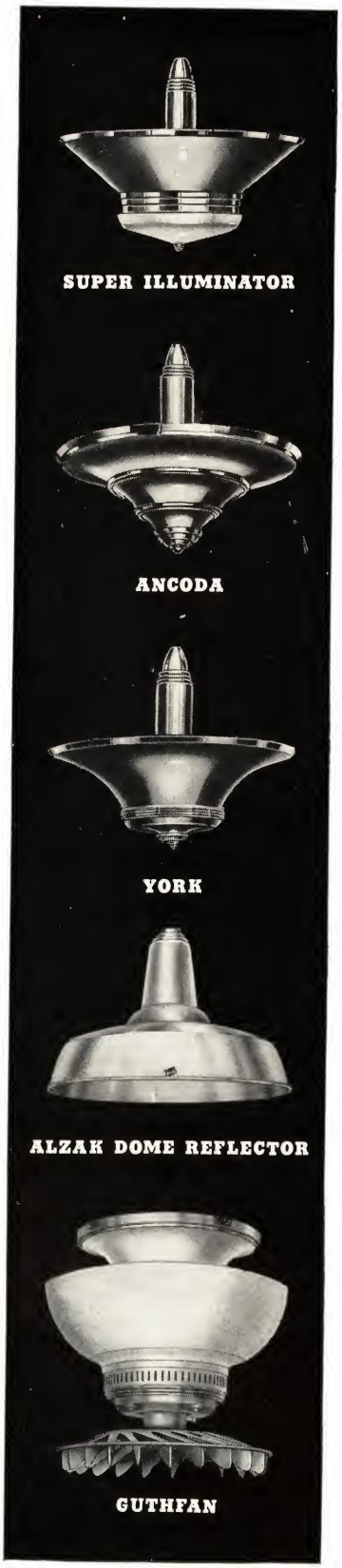
# EDWIN F. GUTH COMPANY

"Lighting Specialists for Architects"

GENERAL OFFICES AND PLANT

2619 Washington Boulevard, ST. LOUIS, MO.

REPRESENTATIVES IN PRINCIPAL CITIES




## "LIGHTING SPECIALISTS FOR ARCHITECTS"

This year, 1937, we celebrate our 35th Anniversary. During these 35 years, we have primarily served the lighting needs of widely-known architects and consulting engineers throughout the country. Our staff of artistic designers and lighting engineers have made suggestions and recommendations that have made our service an invaluable one.

Special designs incorporating intricate and controlled lighting, are fabricated completely within our own plant. Our private foundry, our skilled craftsmen and chandelier makers, our finishing departments which include ALZAK and porcelain enamel, as well as most electroplated finishes, are all combined within one large plant to render undivided, fully responsible, and prompt service to architects and their clients.

### "INDIRECT ILLUMINATION"

Modern requirements featuring eye-ease, shadowless lighting, are fulfilled by our practical experiences in the indirect lighting field. A complete line of indirect illuminants, of all sizes, as well as "custom-built" indirect lighting sources, utilize electrolytically brightened, flint-hard ALZAK reflecting surfaces; also available are clean, electrically-fired porcelain enamel reflectors.

### "INDUSTRIAL LIGHTING"

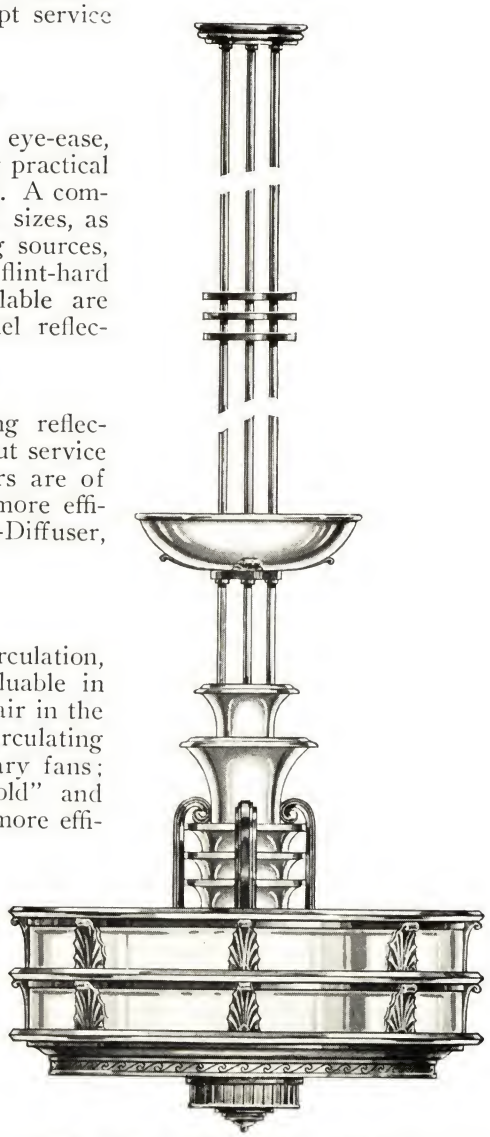
Standard designed industrial lighting reflectors are available, with engineered layout service at your disposal. Guth Dome reflectors are of ALZAK aluminum, and produce 30% more efficient illumination. Also, ALZAK Glass-Diffuser, and other types, are available.

### "GUTHFAN"

Producing a complete cycle of air circulation, GUTHFAN'S patented principle is invaluable in many cases. GUTHFAN circulates that air in the lower stratum of the area, thereby circulating seven-degrees cooler air than do ordinary fans; when used with air conditioning, "cold" and "hot" spots are eliminated, effecting a more efficient air conditioning system.

*Write for*

*"Portfolio of Lighting,"*
*the Architects' Lighting Guide*



*Large Bank Lobby Fixture, artistically designed by Guth staff, collaborating with the architect-in-charge. Unusual "Concealed Indirect" (patent pending) lighting principle incorporated in the fixture.*

ESTABLISHED 1896

# KLIEGL BROS.

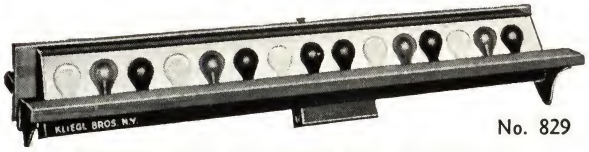
UNIVERSAL ELECTRIC STAGE LIGHTING CO., INC.

TELEPHONE
COlumbus 5-0130

321 West 50th Street, New York, N. Y.

CABLE ADDRESS
"KLIEGLIGHT" N. Y.

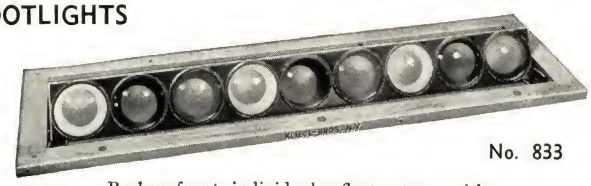
## DISAPPEARING FOOTLIGHTS




No. 829

Unbroken front open trough type. 15 lamps per 5-ft. section, wired for 3 colors

Cover extends full length of section. Footlight when open presents a continuous unbroken front to audience. Mercury switches automatically control circuits in open and closed positions. Both open trough and individual reflector types available with single or double row of 60 to 100-watt lamps.



No. 833

Broken front, individual reflector type, with colored glass roundels

Very efficient single row unit for nine 100 or 150-watt lamps per 5-ft. section; wired for 3 colors; equipped with individual matte Alzak aluminum reflectors, hinged roundel holders, and heat-resisting naturally colored glass roundels, and automatic mercury cut-off switches. Complete line of permanent semi-flush footlights also manufactured.

## PERMANENT TYPE BORDERLIGHTS

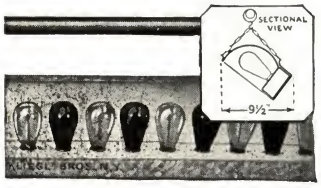



No. 602

All forms of standard and special designs available for theatres, schools, auditoriums, and other applications. Correctly designed to insure proper light distribution and maximum efficiency. Furnished complete, wired, with splice box, scenery guards and adjustable chain hangers. Made in any length and for any number of colors desired.

**No. 602**—Enclosed reflector type borderlight, for 200-watt clear lamps, with individual Alzak aluminum reflectors and slide grooves to receive Universal holder for colored heat-resisting glass roundels or other color mediums. Provide the utmost illumination, with the best possible control. Similar designs available for lamps from 100 to 1000 watts.

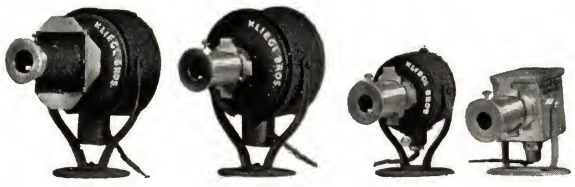
**No. 600**—Open trough type borderlight, for 60 to 100-watt naturally colored lamps, wired for three or more colors, spaced 3 to 4 in. on centers. Reflector painted permanent white, or lined with Alzak aluminum if required. Serviceable, inexpensive model, suitable for small stages.




No. 600

## PICTURE LIGHTING PROJECTORS

Confine the light within chosen area.



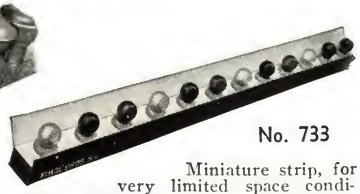
Project a beam of light which may be shaped to fit picture area. Equipped with four adjustable slides and objective lens system. Available in various sizes for lamps from 75 to 400 watts. Provided with round base or wall bracket for mounting. Supplied complete with extension cord and attachment plug.

## COVE LIGHT STRIPS



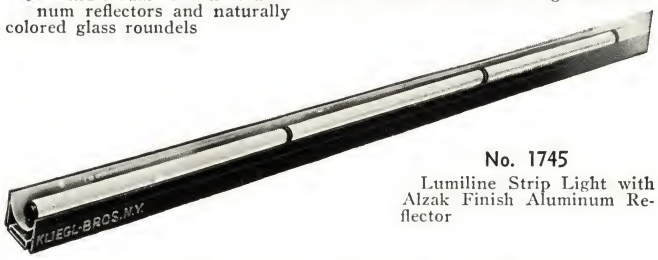
No. 739

Light strip, fitted with individual Alzak aluminum reflectors and naturally colored glass roundels



No. 733

Miniature strip, for very limited space conditions with continuous trough reflector




No. 1745

Lumiline Strip Light with Alzak Finish Aluminum Reflector

Kliegl strip lights are made in every practical design, with or without reflectors, in straight or curved lengths, for lamps ranging from 10 to 200 watts; also various standard and special forms for Lumiline lamps. Furnished completely wired for one or more colors. For all types of concealed illumination and modern architectural treatments.

## DOWNLIGHTS



No. 2164

500-watt unit for straight down projection



No. 2165

500-watt unit for angular projection

For direct illumination without exposed lighting fixtures, units being concealed in the ceiling, and projecting their light through a small opening. Permit control of direction and intensity of light and definition of illuminated area. Available in complete range of sizes for lamps from 50 candle power to 2000 watts. Furnished complete with flush ceiling plate and suitable mounting arrangements.

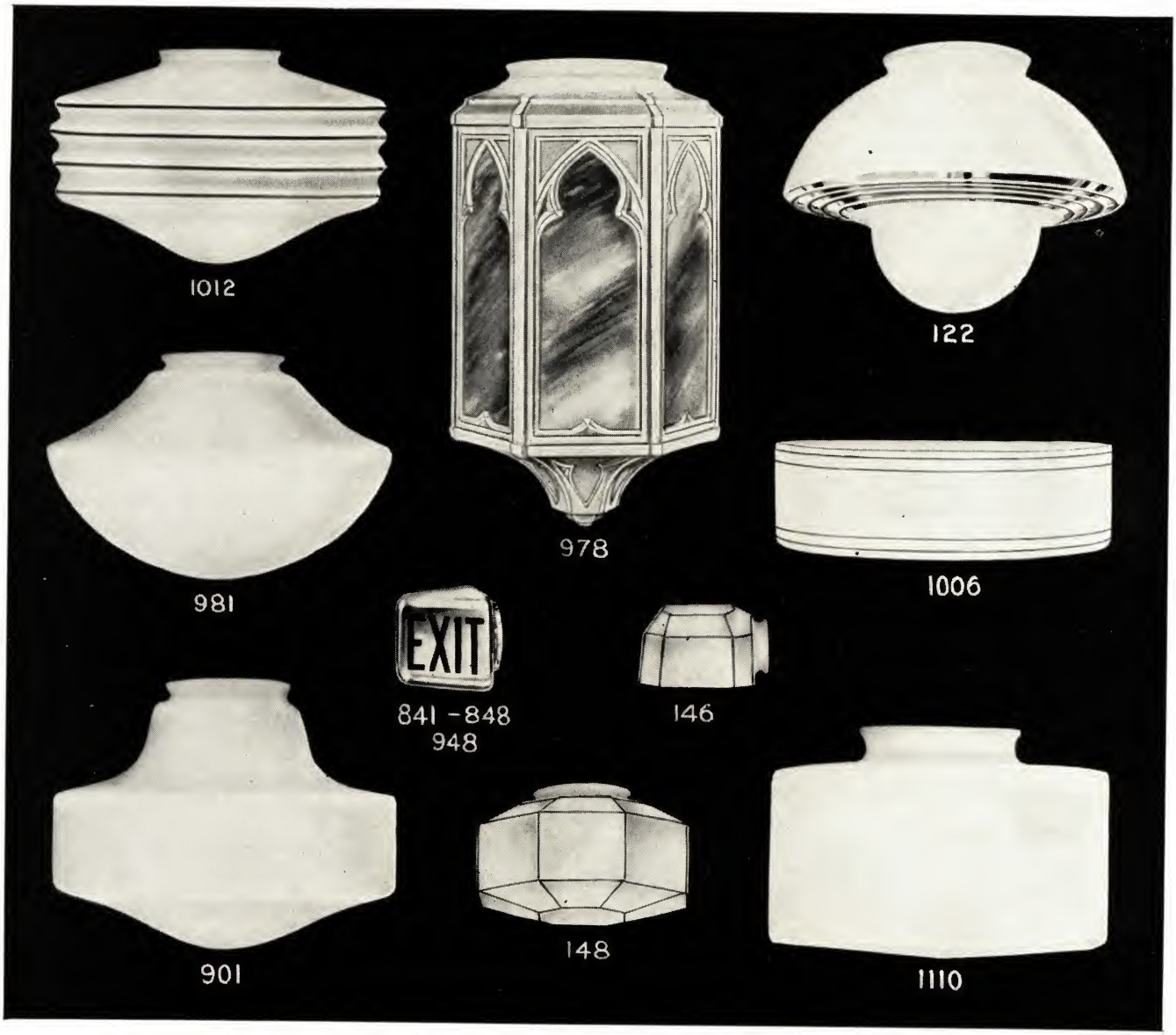
*Catalog No. 40 showing complete line of Kliegl lighting specialties supplied on request.*

# KOPP GLASS, INC.

SWISSVALE, PA.

## KOPP LIGHTING UNITS

Gothic, Modernistic and Conventional Designs Lighting Units: Daylight Cased, Delica White Cased; Crystal and Colored Glass; Gothic Designs, Plain and in Cathedral Color Effects; Nicco Opal Heat Resisting Glass adapted for outdoor use.




**122 Line—Crystal Glass Enameled Top and Bottom**

142—7″ x 4″
122—9″ x 4″
143—12″ x 6″
123—15″ x 6″

**901 Line—Nicco and Delica Glass, Plain and Decorated**

901— 6½″ x 3¼″
902— 8½″ x 4″
903—10½″ x 4″
904—12½″ x 6″
905—14½″ x 6″
906—16″ x 6″
959—18″ x 8″

**981 Line—Nicco, Delica, Daylight, Alabaster Glass**

981— 8½″ x 4″
983—12″ x 6″
984—14″ x 6″
985—16″ x 6″
986—18″ x 8″
987—10″ x 4″

**1006 Line—Nicco Glass, Plain and Decorated**

1006—16″ x 16″ x 4¾″
1007—10″ x 10″ x 3¾″
1008—12″ x 12″ x 4″
1009—14″ x 14″ x 4½″

**1012 Line—Nicco and Delica Glass, Plain and Decorated**

1012—12″ x 6″
1014—14″ x 6″
1016—16″ x 6″
1018—18″ x 8″

**1110 Line—Nicco Glass, Plain and Decorated**

1110—10″ x 4″
1112—12″ x 6″
1114—14″ x 6″
1116—16″ x 6″

**978 Line—Nicco and Ivory Glass, Plain and Decorated Cathedral Color Effects**

974—14″ x 8″ x 24″
976— 6½″ x 4″ x 12″
977—12″ x 6″ x 10″
978—10½″ x 6″ x 18½″
979— 4⅜″ x 3¼″ x 8″

**Kitchen and Bathroom Shades, Plain and Full Tint Colors**

146—5¼″ x 4″ x 2¼″
148—9″ x 4″

**Exit Balls—Nicco and Colored Glass**

841—4½″ x 4½″ x 3¼″
848— 7″ x 8″ x 4″
948—5½″ x 5½″ x 4″

*Write for Catalog of Our Complete Line of Illuminating Glassware.*

# THE MILLER COMPANY

FOUNDED IN 1844

## Manufacturers of Engineered Lighting Equipment for Commercial, Industrial and Residential Requirements

MERIDEN, CONN.

NEW YORK—14 EAST 38TH STREET

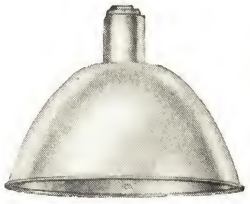
## Ivanhoe—MILLER—Duplexalite

*Fixtures shown are typical units from the extensive Miller lines*

### Ivanhoe Industrial Lighting Equipment

Under the brand "Ivanhoe," THE MILLER COMPANY manufactures a modern and complete line of lighting reflectors to meet every industrial requirement. Suitable for use with MAZDA Incandescent and MAZDA Mercury lamps. This includes RLM Standard Dome Reflectors in porcelain enamel (enameled in Miller's own enameling plant) Glassteel Diffusers, High Mounting Units, Special Angle Reflectors, Protective Covers, Alzak Aluminum High Mounting Units, Vapor Proof Units, Bookstack and Aisle Lighting Reflectors, special Service Reflectors, wire guards, and a complete line of reflectors for mercury lamps, together with sockets, holders and fittings fully described in our catalog, sent on request.

### New Ivanhoe Alzak Aluminum High Efficiency Reflectors for Low Bays



These new low bay units of Alzak processed aluminum are specially designed by Miller engineers and designers to take complete advantage of the new high reflectivity values developed by Alzak processing of aluminum. They feature (1) new and permanently higher lighting efficiency; (2) better distribution of light; (3) more accurate control of reflectivity; (4) new standards of uniformity of illumination, even from exceptionally wide spacing of units; (5) provides sharper detail and whiter light which makes the seeing job easier; (6) lower maintenance costs, no breaking or chipping; (7) greater ease and economy of installation; (8) quick, easy cleaning and restoration to almost initial high efficiency.

The Alzak treatment of aluminum (done in Miller's own Alzak processing plant) is an electrolytic treatment by which the entire aluminum surface is oxide-coated with a sealed-in surface of flintlike hardness and silky smoothness, non-porous and non-corrosive by either weather or inside industrial conditions.

The Ivanhoe line includes a complete line of Alzak aluminum reflectors engineered to meet every lighting requirement of industry.

### Ivanhoe Commercial Lighting Equipment



Includes a complete line of engineered lighting equipment, both fixtures and glassware, for stores, office buildings, hospitals, schools, public buildings, restaurants, drafting rooms, banks, churches, theatre lobbies, foyers, etc. For use with MAZDA Incandescent lamps and MAZDA Mercury lamps in combination with standard MAZDA lamps. All Ivanhoe commercial fixtures are designed for quick, easy, safe installation by means of our new hickey construction which eliminates twisting of wires and permits fixtures to be shortened on the job with hacksaw and drill—no rethreading of parts is required. Other advantages of Ivanhoe commercial fixtures are fully detailed in our special catalog of Commercial Lighting Fixtures, No. 903 sent upon request.

The MAZDA-MERCURY line of Commercial Lighting fixtures is marketed under the name "Mer-Tung" lighting equipment, and a special brochure, giving full details of this special line is available on request.

### Duplexalite Commercial and Residential Lighting Fixtures for Semi-Indirect Lighting

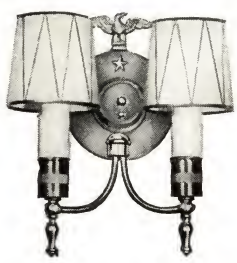


Duplexalite is at once the oldest and most modern engineered lighting fixture on the market. It is the oldest because it is fundamentally right; the march of progress has brought nothing better. It is the most modern and persists in popularity because it so ideally transforms raw light into an agreeable finished product, helpful to the eyes. It provides good indoor seeing conditions and helps eyes to function with ease. It lends itself artfully to complete harmony in color and design with any decorative treatment. Its lighting principles have endured because they are so near perfection. No other lighting equipment can point to an equally impressive array of important installations in stores, offices, schools, hotels, public buildings, etc.

Duplexalite furnishes the correct quantity and quality of light for easy seeing; shadowless light, well distributed throughout the area and without extreme brightness at any point. From 15% to 20% of the total light output is downward and filtered through a bottom disc, so arranged that it illuminates the outer side of deflector, preventing extreme contrasts in brightness. The deflector re-directs those rays of light to the ceiling which would otherwise strike the eye and interfere with comfortable vision. Ask for Catalog No. DP-184-A which illustrates and describes the complete Duplexalite line.

### Miller Residential Lighting Fixtures

Miller has been making lighting equipment for the home since 1844. Miller workers belong to that distinguished strain of metal craftsmen who made New England world famous for its skill in fabricating metals. The new Miller Lighting Fixtures reflect this spirit of craftsmanship and cunning workmanship in metals to a high degree.



Miller offers a condensed, but comprehensive, line of Residential Lighting Fixtures under two general groups: (1) The "Better Sight Series" of lighting fixtures for halls, entries, recreation rooms, breakfast rooms, libraries and living rooms—basically designed to give expression to the principles of the new science of seeing, yet artistically beautiful and in strict accordance with present day ideas; (2) Four series of residential fixtures in various finishes—some of contemporary design and others reflecting the Colonial, Early American and Federal influences.

This brief statement cannot do justice to the variety and extent of the line so we suggest that for complete information you request a copy of Catalog No. 891.

MEMORANDA

# THE PHOENIX GLASS COMPANY

MONACA, PA.

SALES OFFICES

NEW YORK, N. Y., Chrysler Building | CHICAGO, ILL., Garland Building | PHILADELPHIA, PA., Drexel Building

## ILLUMINATING GLASSWARE

### SEMI-INDIRECT LIGHTING

Smartly styled shapes of pleasing character and appearance feature the complete line now offered to the architects and builders for new and modern Semi-indirect lighting.

Bowl No. 6653 is highly endorsed by lighting engineers who agree that proper lighting is secured through semi-indirect sources

Tested by Electrical Testing Laboratories of New York City, this bowl offers a combination of high light output with a low surface brightness, two features which are most essential and important in solving your lighting problems.

| Maximum diameter, inches | Lamp size, watts |
|---|---|
| 16 | 200 |
| 18 | 300-500 |
| 22⅜ | 750-1000 |

### DIRECT LIGHTING

Shape No. 2819, whose well-balanced appearance and symmetry of design, harmonize perfectly with all modern structures.

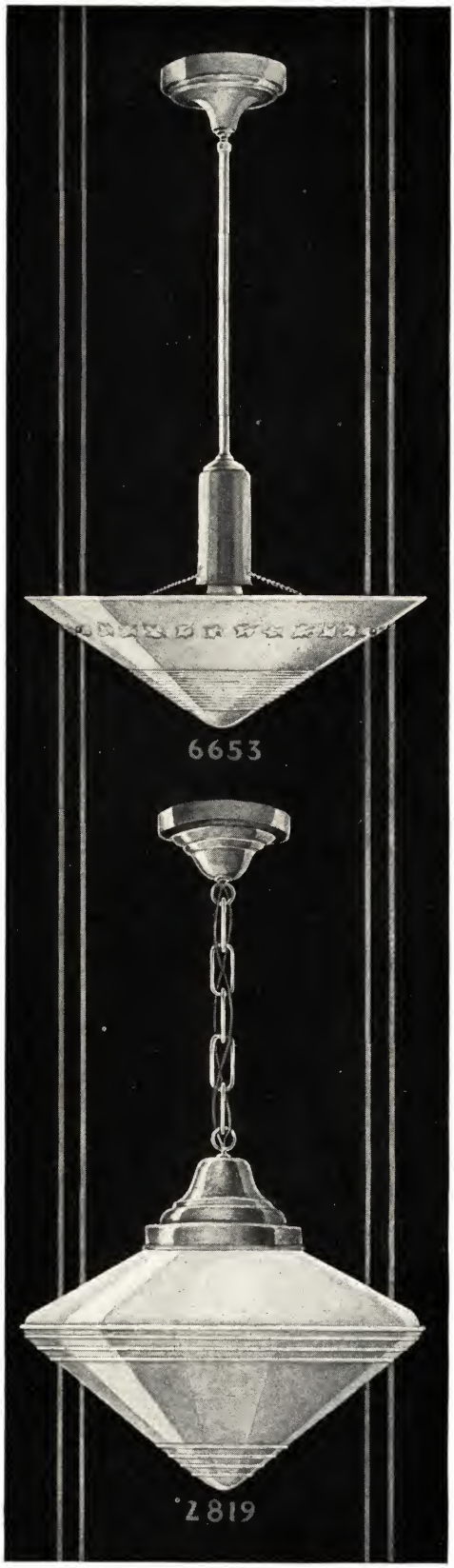
Made of *Phoenix Radiant* glass and coupled with correctness of shape, this unit will give a maximum of light, without glare or contrasting shadows.

| Maximum diameter, inches | Lamp size, watts |
|---|---|
| 9 | 100 |
| 12 | 150 |
| 14 | 200 |
| 16 | 300 |
| 18 | 500 |

### SERVICE

We offer a complete Designing and Engineering Service and welcome the opportunity of co-operating with you on your lighting problems.

Catalogs and samples furnished when desired.



MEMORANDA

# WESTINGHOUSE ELECTRIC & MFG. CO.

## LIGHTING DIVISION

CLEVELAND, OHIO

For Other Westinghouse Electrical Products, see File Index



Stores



Offices



Hotels

Modern lighting equipment is designed to provide a maximum of eye conservation and comfort, and, at the same time, to offer conditions for the best possible business and industrial operations.

To accomplish these standards of illumination, Westinghouse commercial lighting units are made available in three types: Direct, Semi-indirect, and Indirect. Westinghouse industrial units, available for every application, are designed for incandescent, high intensity mercury and combination incandescent-mercury lighting. Westinghouse floodlighting equipment is provided for all heavy-duty and general purpose applications.

In the commercial line, *direct* lighting units cast at least 50% of the light downward. These commercial luminaires are most efficient in providing the highest footcandle intensities.

*Semi-indirect* luminaires cast more than 50% of the light upwards, but allow more than 10% to pass through the basin down into the room. The downward light is diffused and glare is mitigated.

*Indirect* commercial lighting units are divided into two types: *indirect,* which casts *practically* all of the light on the ceiling with less than 10% downward; and *totally indirect,* which casts *all* of the light on the ceiling. With either type, the ceiling acts as a secondary light source with low surface brightness and maximum diffusion. For close seeing tasks, glare is at a minimum and uniform intensity is maintained throughout the room, providing higher footcandle intensities per watt.

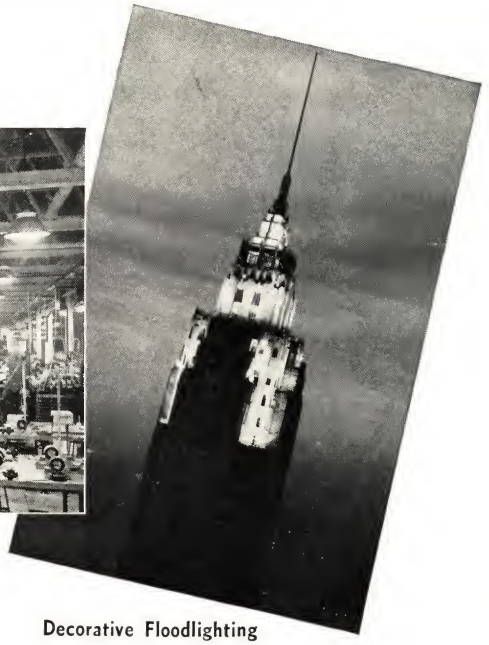
For complete information and engineering details of Commercial, Industrial, and Floodlighting, see your local Westinghouse Distributor Lighting Specialist, or address WESTINGHOUSE ELECTRIC & MFG. CO., Lighting Division, Edgewater Park, Cleveland, Ohio.



Heavy Industry

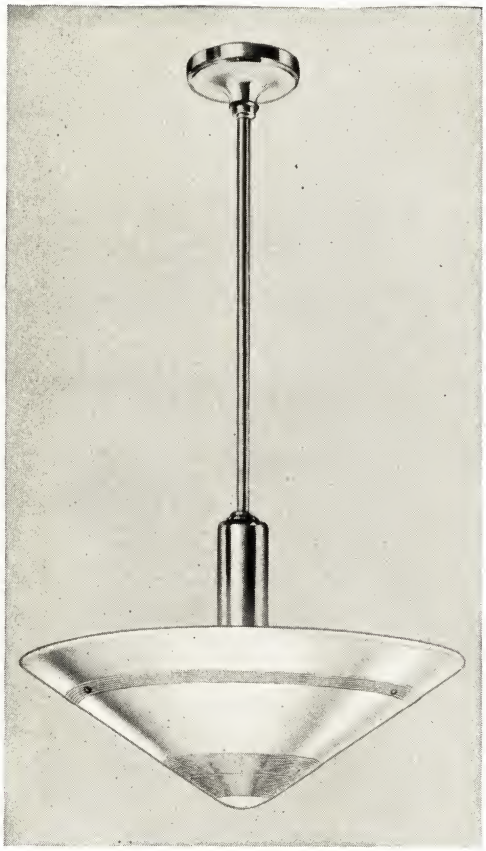
Production Aisles





Decorative Floodlighting

# COMMERCIAL LIGHTING



## Magnalux Luminaire

The Westinghouse Magnalux is an indirect type of luminaire which provides the kind of illumination that science recommends and good business dictates. Contemporary applications in offices, stores, public buildings, hospitals, schools, colleges and other institutions attest its universal utility and popularity.

This modern unit is available in various combinations of hanger types and basin styles to meet a variety of installation conditions. Magnalux basins are moulded from special quality, patented Denax glass, which through selected increase in the glass thickness in the zone of the lamp filament, permits the entire surface to be uniformly illuminated and produces the effect of luminous diffused light for which the name Magnalux is justly famous.

Basin designs include: Ring Relief, Cameo Relief, Decorated Cameo Relief and Totally Indirect Aluminum Ring Relief. Tassels are available with the ornamental designs.

Standard hanger types include: Ceiling Type, Semi-rigid, Single Ornamental and Double-length Ornamental.

The Magnalux Canopy permits the use of a canopy switch if desired. The husk intercepts a minimum amount of upward light for maximum reflection from ceiling and sidewall surfaces. The basin is supported by three rods attached to the husk and are detachable for convenient cleaning and relamping.

The entire unit combines maximum efficiency with intrinsic beauty of design and represents the finest quality of interior lighting for institutional and other buildings.

Write for Magnalux Cat. 61-250 and F-8407.

## Storlite Luminaire

The new Westinghouse Storlite is a radical departure in luminaire design. A direct-indirect lighting unit, it is designed primarily for stores that feature shelf and counter merchandise. Light distribution from the Storlite is such that two or three times more light is available at merchandise display levels . . . with considerably higher intensity on the merchandise itself than may be obtained with ordinary lighting equipment. Sufficient light is also directed upward to the ceiling to provide adequate general illumination throughout store interiors.

The Storlite is available in two models: a Standard Model with plain outer reflector assembly and a De luxe Model with an ornamental glass band at the lower rim of the reflector.

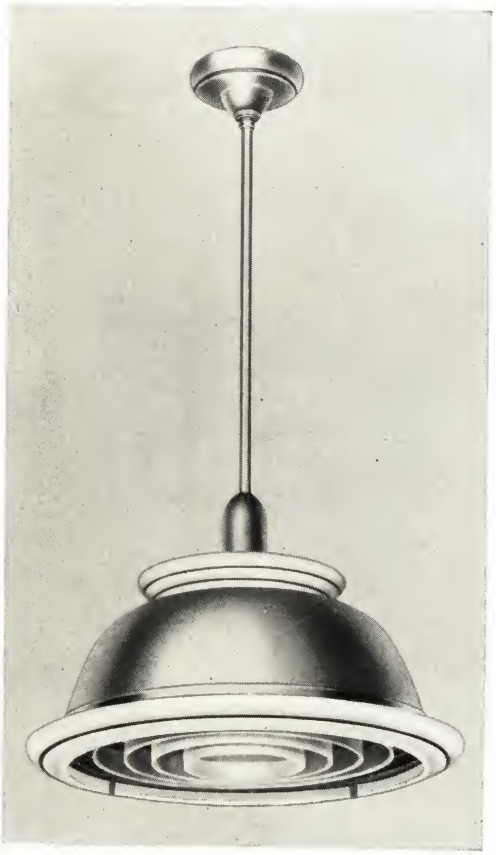
The De luxe Model consists essentially of a hanger, a direct-indirect reflector assembly, an ornamental glass band, glass shield ring and a translucent louver assembly. The Standard Model does not carry the ornamental glass band at the lower rim, but is finished with a polished band that is a part of the metal reflector. The hanger, husk, canopy and outer surface of the reflector have an attractive satin finish.

With semi-rigid suspension, the Storlite may be installed on existing outlets in most stores. The hanger is designed for modern wiring specifications as to canopy switches or deep outlet boxes. For low ceiling heights, the stem may be easily shortened to the desired length at the place of installation.

The louver assembly shields the eyes at normal vision levels from the direct rays of the lamp. This assembly consists of four concentric rings of thermo-plastic material, highly translucent and mounted on a rigid frame. The direct-indirect aluminum basin reflector consists of two parts. The reflecting surface is specular finished on the inner reflector and semi-specular on the outer. Both surfaces are processed with the Alzak finish for permanence.

Here is the luminaire that store proprietors have been asking for . . . because Storlite enhances the appearance of merchandise, provides higher intensities with the same wattage consumption and general store illumination without glare. The Storlite is, we claim, the most efficient and economical luminaire ever built for store lighting.

Write for Storlite Cat. 61-258 and F-8413.



*Westinghouse Manufactures a Complete Line of Commercial, Industrial and Floodlighting Equipment*

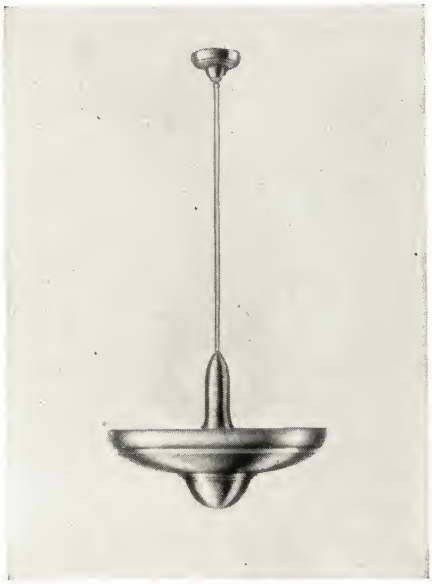
# COMMERCIAL LIGHTING



### Silvurn

The Westinghouse Silvurn luminaire provides efficient, economical illumination for all general commercial applications. A modernly styled semi-indirect luminaire, the aluminum basin exterior is softly illuminated to give the entire unit a rich lustre. Enclosing globes are available in three designs. Silvurn is available in both 300-500 and 750-1000 watt sizes.

Write for Silvurn Cat. 61-250 and F-8406.



### TI Luminaire

The Westinghouse TI luminaire is a totally indirect lighting unit of modern design, construction and performance. TI provides efficient, glare-free, well-distributed illumination for commercial applications. Built for utility, TI is smartly styled to harmonize with modern architectural interiors. TI is supplied with a threadless hanger for simplified installation. TI is available in both 300-500 and 750-1000 watt sizes.

Write for TI Cat. 61-252 and F-8405.



### Lunaire

Designed to give efficient, semi-direct illumination, Westinghouse Lunaire luminaire is typical of the quality built into the wide range of Westinghouse enclosing globe luminaires. In Lunaire, a single-layer dual-density glass enclosing globe transmits abundant, shadowless light for applications where economical high-intensity general illumination is required. Lunaire is available in both plain and decorated globe styles.

Write for enclosing globe Cat. 61-260 and Cat. 61-270.

# INDUSTRIAL AND FLOODLIGHTING

### Millite Luminaire

The new Westinghouse Millite, dust-tight and vaporproof, is specifically designed for use in high-bay industrial plants where atmospheric and general service conditions are too severe for ordinary open-type reflectors . . . where lighting equipment must meet the most rigorous tests of operation and use.



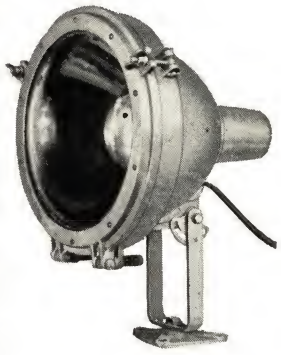
With a heat and impact resisting glass lens cover, protecting the reflector surface from dust and corrosive vapors, the Millite combines maximum mechanical ruggedness with sustained lighting efficiency.

The Millite aluminum reflector, finished by the Alzak process, delivers more than 80% of the bare lamp lumens to the working plane. Specular and semi-specular reflectors are available for application at specific mounting heights.

Write for Millite Cat. 61-166 and F-8408.

### Floodlighting Equipment

Westinghouse Floodlights are available for heavy-duty and general purpose applications. Sturdy construction and the use of aluminum reflectors and socket housings guarantee easy maintenance, high light output and long life.



Floodlights are furnished with narrow beam or wide beam reflectors. Through the use of different lenses and frosted or clear lamps a complete range of narrow, medium or wide beam spread may be obtained.

Typical applications include decorative floodlighting for building exteriors, service station lighting, floodlighting of sportsfields, garages, driveways, yards, gardens, shrubbery, et cetera.

See your local Westinghouse Distributor Lighting Specialist or address the WESTINGHOUSE ELECTRIC & MFG. CO., Lighting Division, Cleveland, Ohio, for complete details on Westinghouse floodlighting equipment.

*Westinghouse Manufactures a Complete Line of Commercial, Industrial and Floodlighting Equipment*

WESTINGHOUSE ELECTRIC & MFG. CO.

# SALES OFFICES AND JOBBERS

## WESTINGHOUSE ELECTRIC & MANUFACTURING CO.

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Moock Elec. Supply Co.
ALBANY, N. Y.
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
ALBUQUERQUE, N. M.
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Westinghouse Elec. Supply Co.
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Central Elec. Supply Co.
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Westinghouse Elec. & Mfg. Co.
McCarthy Bros. & Ford
BURLINGTON, IOWA
Westinghouse Elec. & Mfg. Co.
BURLINGTON, VT.
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
BUTTE, MONT.
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
CANTON, OHIO
Westinghouse Elec. & Mfg. Co.
The Moock Electric Supply Co.
CEDAR RAPIDS, IOWA
Westinghouse Elec. & Mfg. Co.
CHARLESTON, W. VA.
Westinghouse Elec. & Mfg. Co.
Charleston Elec. Supply
CHARLOTTE, N. C.
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
CHATTANOOGA, TENN.
Westinghouse Elec. & Mfg. Co.
Mills & Lupton Supply Co.
CHICAGO, ILL.
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
Hyland Electrical Supply Co.
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Westinghouse Elec. & Mfg. Co.
The Johnson Electric Supply Co.
CLEVELAND, OHIO
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
COLUMBIA, S. C.
Westinghouse Elec. Supply Co.
COLUMBUS, OHIO
Westinghouse Elec. & Mfg. Co.
Pixley Electric Supply Co.
DALLAS, TEXAS
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
DAVENPORT, IOWA
Westinghouse Elec. & Mfg. Co.
DAYTON, OHIO
Westinghouse Elec. & Mfg. Co.
The Nichols Electric Co.
DENVER, COLO.
Westinghouse Elec. & Mfg. Co.
The Mine & Smelter Supply Co.
DES MOINES, IOWA
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
DETROIT, MICH.
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
DULUTH, MINN.
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Westinghouse Elec. Supply Co.
EASTON, PA.
H. N. Crowder, Jr. Co.
EL PASO, TEXAS
Westinghouse Elec. & Mfg. Co.
EMERYVILLE, CALIF.
Westinghouse Elec. & Mfg. Co.
ERIE, PA.
Westinghouse Elec. & Mfg. Co.
Star Electrical Co.
EVANSVILLE, IND.
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
FAIRMONT, W. VA.
Westinghouse Elec. & Mfg. Co.
FALL RIVER, MASS.
Smith Electric Co.
FLINT, MICH.
Westinghouse Elec. Supply Co.
FORT WAYNE, IND.
Westinghouse Elec. & Mfg. Co.
FORT WORTH, TEXAS
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
FRESNO, CALIF.
Westinghouse Elec. & Mfg. Co.
GARY, IND.
Westinghouse Elec. & Mfg. Co.
GRAND RAPIDS, MICH.
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
GREENSBORO, N. C.
Westinghouse Elec. & Mfg. Co.
GREENVILLE, S. C.
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
HAMMOND, IND.
Westinghouse Elec. & Mfg. Co.
HARTFORD, CONN.
Westinghouse Elec. & Mfg. Co.
Electrical Supplies Inc.
HAZELTON, PA.
Jere Woodring & Company
HOUSTON, TEXAS
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
HUNTINGTON, W. VA.
Westinghouse Elec. & Mfg. Co.
Banks-Miller Supply Co.
INDIANAPOLIS, IND.
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
ISHPEMING, MICH.
Westinghouse Elec. & Mfg. Co.
JACKSON, MICH.
Westinghouse Elec. & Mfg. Co.
JACKSONVILLE, FLA.
Westinghouse Elec. Supply Co.
JOHNSTOWN, PA.
Westinghouse Elec. & Mfg. Co.
JOPLIN, MO.
Westinghouse Elec. & Mfg. Co.
KANSAS CITY, MO.
Westinghouse Elec. & Mfg. Co
Columbian Electrical Co.
Continental Electric Co.
KINGSPORT, TENN.
Electric Appliance Co.
KNOXVILLE, TENN.
Westinghouse Elec. & Mfg. Co.
LAWRENCE, MASS.
Dyer-Clark Company
LEXINGTON, KY.
Tafel Electric Co.
LITTLE ROCK, ARK.
Westinghouse Elec. & Mfg. Co.
LOS ANGELES, CALIF.
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
LOUISVILLE, KY.
Westinghouse Elec. & Mfg. Co.
Tafel Electric Company
LYNN, MASS.
Des Roberts Electric Supply Co.
MADISON, WISC.
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
MARSHALL, TEXAS
Westinghouse Elec. & Mfg. Co.
MEMPHIS, TENN.
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
MIAMI, FLA.
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
MILWAUKEE, WISC.
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
MINNEAPOLIS, MINN.
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
MOBILE, ALA.
McGowin-Lyons Hardware Co.
MONROE, LA.
Westinghouse Elec. & Mfg. Co.
Monroe Hardware Company
MUSKEGON, MICH.
Industrial Elec. Supply Co.
NASHVILLE, TENN.
Westinghouse Elec. & Mfg. Co.
Tafel Electric Company
NEWARK, N. J.
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
NEW HAVEN, CONN.
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
NEW ORLEANS, LA.
Westinghouse Elec. & Mfg. Co.
Electrical Supply Company
NEW YORK, N. Y.
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
NIAGARA FALLS, N. Y.
Westinghouse Elec. & Mfg. Co.
NORFOLK, VA.
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
OAKLAND, CALIF.
Westinghouse Elec. Supply Co.
OKLAHOMA CITY, OKLA.
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
OMAHA, NEB.
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
PEORIA, ILL.
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
PHILADELPHIA, PA.
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
PHOENIX, ARIZ.
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
PITTSBURGH, PA.
Westinghouse Elec. & Mfg. Co.
Iron City Electric Company
PORTLAND, ME.
Westinghouse Elec. & Mfg. Co.
PORTLAND, ORE.
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
PROVIDENCE, R. I.
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
RALEIGH, N. C.
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
READING, PA.
Westinghouse Elec. Supply Co.
RICHMOND, VA.
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
ROANOKE, VA.
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
ROCHESTER, N. Y.
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
ROCKFORD, ILL.
Westinghouse Elec. & Mfg. Co.
SACRAMENTO, CALIF.
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
ST. LOUIS, MO.
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
ST. PAUL, MINN.
Westinghouse Elec. Supply Co.
SALT LAKE CITY, UTAH
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
SAN ANTONIO, TEXAS
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
SAN DIEGO, CALIF.
Electric Supplies Distributing Co.
SAN FRANCISCO, CALIF.
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
SCRANTON, PA.
Penn Elec. Engineering Company
SEATTLE, WASH.
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
SIOUX CITY, IOWA
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
SOUTH BEND, IND.
Westinghouse Elec. & Mfg. Co.
McCaffery Company
SPOKANE, WASH.
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
SPRINGFIELD, ILL.
Westinghouse Elec. & Mfg. Co.
SPRINGFIELD, MASS.
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
SPRINGFIELD, OHIO
W. W. Electric Company
SYRACUSE, N. Y.
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
TACOMA, WASH.
Westinghouse Elec. & Mfg. Co.
TAMPA, FLA.
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
TAUNTON, MASS.
The Pierce Hardware Company
TOLEDO, OHIO
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
TRENTON, N. J.
Westinghouse Elec. Supply Co.
TULSA, OKLA.
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
UTICA, N. Y.
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
WASHINGTON, D. C.
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
WATERLOO, IOWA
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
WICHITA, KAN.
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
WILKES-BARRE, PA.
Westinghouse Elec. & Mfg. Co.
WILMINGTON, DEL.
Westinghouse Elec. Supply Co.
WORCESTER, MASS.
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
YORK, PA.
Westinghouse Elec. & Mfg. Co.
Westinghouse Elec. Supply Co.
YOUNGSTOWN, OHIO
Westinghouse Elec. & Mfg. Co.
Moock Electric Supply Company
HONOLULU, T. H.
The Hawaiian Electric Company

WESTINGHOUSE ELECTRIC
INTERNATIONAL CO.
150 BROADWAY, NEW YORK, U. S. A.

CANADIAN WESTINGHOUSE CO., LIMITED
HAMILTON, ONTARIO

# ALUMINUM COMPANY OF AMERICA

Member of The Producers' Council, Inc.

Manufacturers of Alcoa Aluminum and Its Alloys

1844 Gulf Building
PITTSBURGH, PA.

For Sales Offices, see Metals Section
For Other Pages on Alcoa Aluminum, Its Alloys and Uses, see File Index



## ALCOA ALUMINUM FOR LIGHTING

### What Is the Alzak Reflector* Process?

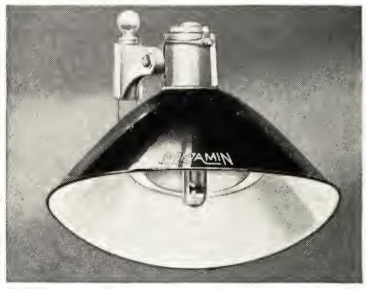
Alzak Reflectors have a reflectivity approaching that of freshly polished silver. In addition, the hard, integral, Alzak Reflector Coating protects the metal from attack of the elements, so aluminum so processed can be restored to high reflectivity by simple cleaning. Comes in specular or diffuse surfaces.

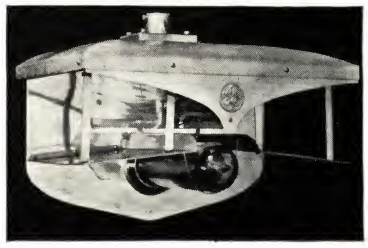
Where conditions do not require it, aluminum not Alzak Reflector Coated is, naturally, a more economical choice. Aluminum, Alzak Reflector finished or not, is easy to fabricate, forms no colored salts to stain adjacent surfaces, is long-lived.

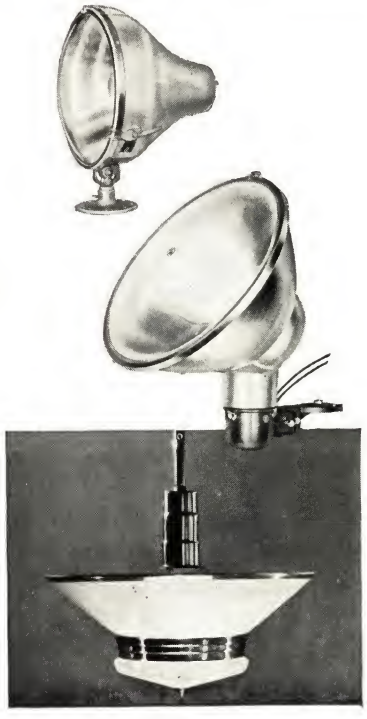
Numerous manufacturers offer reflectors and other standard lighting equipment of Alcoa Aluminum. Sheets are available in a range of sizes for the fabrication of trough and panel lighting.

Write us for complete information.

*Alzak Reflectors patented.







# BRIGHT LIGHT REFLECTOR CO., INC.

ESTABLISHED 1921

Manufacturers of Commercial and Industrial Lighting Equipment

TELEPHONE
EVergreen 8-6068

Metropolitan and Morgan Avenues
BROOKLYN, N. Y.

SALES OFFICES

ATLANTA, BOSTON, CHICAGO, CLEVELAND, DALLAS, DETROIT, KANSAS CITY, LOS ANGELES, MINNEAPOLIS, PITTSBURGH, ST. LOUIS, SAN FRANCISCO

## *Silver Mirrored* SILV-A-KING SHOW WINDOW REFLECTORS *Crystal Glass*

Silv-A-King Show Window Reflectors are scientifically designed for efficient window illumination. They are silvered, copper-plated and finished with two coats of specially prepared silver bronze, creating unexcelled efficiency and durability. The holder is constructed to permit the use of two sizes of lamps with the same reflector by loosening the screws and extending the holder to full length. This holder may be attached to brass shell or porcelain socket. Types 110, 130 and 510 are recommended for "flush type" mounting using ceiling rings. Each unit individually packed in a corrugated container to facilitate handling and to prevent breakage.

### For Deep Windows



| Cat. No. | Lamp size, watts | Diam., in. | List price |
|---|---|---|---|
| 105 | 100–150 | 8 3/8 | $3.50 |
| 115 | 150–200 | * 9 1/8 x 9 1/8 | 4.00 |
| 135 | 150–200 | 9 1/2 | 4.00 |
| 505 | 300–500 | *12 x12 3/8 | 9.25 |

### For Shallow Windows



| Cat. No. | Lamp size, watts | Diam., in. | List price |
|---|---|---|---|
| 110 | 100–150 | 8 3/8 | $3.50 |
| 120 | 150–200 | * 9 x 9 5/8 | 4.00 |
| 130 | 150–200 | 9 1/2 | 4.00 |
| 510 | 300–500 | 12 3/8 | 9.25 |

### Auxiliary Reflectors



| Cat. No. | Lamp size, watts | Diam., in. | List price |
|---|---|---|---|
| 125 | 150–200 | 10 | $4.50 |
| 150 | 150–200 | 10 | 4.50 |
| 550 | 300–500 | 12 3/8 | 8.75 |

### Spotlights and Floodlights



| Cat. No. | Lamp size, watts | Diam., in. | List price |
|---|---|---|---|
| 200 | 150–200 | 10 1/2 | $ 9.50 |
| 250 | 150–200 | 10 1/2 | 9.50 |
| 350 | 300 | 12 3/8 | 11.75 |
| 500 | 500 | 13 3/8 | 13.75 |

*Excentric in shape. Louvre equipment and plaster flanges cannot be furnished.

## FLUSH MOUNTING ACCESSORIES



Ceiling Flange



Flush Concentric Louvre



Flush Parallel Louvre



Plaster Flange




Typical Show Windows Illuminated with Silv-A-King Reflectors

# SILV-A-KING FLOOD-LIGHTING EQUIPMENT

## Aluminum Enclosed Type



2500



7750

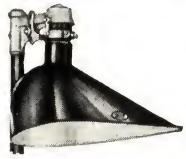


1500

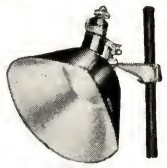
## Porcelain Enameled Open Type



4700



6750
Super Service



3750

| Cat. No. | Lamp size, watts | Diam., in. | List price |
|---|---|---|---|
| *1200 | 75–100 | 8½ | $ 5.85 |
| *1500 | 150–200 | 10 | 9.50 |
| *2500 | 300–500 | 12 | 16.75 |
| *7500 | 300–500 | 12 | 22.00 |
| 7750 | 750–1500 | 15½ | 32.00 |

*Colored lenses (Red, Green, Amber, Blue) available. Prices may be obtained upon application.

## Porcelain Enameled Island Light



19500

| Cat. No. | Lamp size, watts | Diam., in. | List price |
|---|---|---|---|
| 19200 | 200 | 20 | $11.00 |
| 19500 | 300–500 | 20 | 11.50 |
| 19700 | 750–1000 | 24 | 13.00 |
| 19750 | 750–1500 | 27 | 18.00 |

| Cat. No. | Lamp size, watts | Dim., in. | List price |
|---|---|---|---|
| 3300 | 300–500 | 15x16 | $12.75 |
| 3750 | 750–1500 | 16x18 | 17.00 |
| 4300 | 300–500 | 15x16 | 14.50 |
| 4700 | 750–1500 | 16x18 | 19.00 |
| 5300 | 300–500 | 19x20 | 20.00 |
| 5750 | 750–1500 | 25x24 | 26.00 |
| 6300 | 300–500 | 19x20 | 22.00 |
| 6750 | 750–1500 | 25x24 | 28.00 |

AL2AK or oxidized Aluminum Inner Beam Projectors available for the above units.

# SILV-A-KING INDUSTRIAL LIGHTING EQUIPMENT

## Glassteel Diffusers

### R.R. Threaded Type With Pendant Hood



For the very best results in the general illumination of industrial interiors. The use of "Speed-Lox" type equipment allows easy removal of reflectors for cleaning and relamping.

### "Speed-Lox" Type With Pendant Hood



| Cat. No. | Lamp size, watts | Dia. in. | Type globe | List price |
|---|---|---|---|---|
| 1518 | 150–200 | 18 | Opal | $9.00 |
| 1518B | 150–200 | 18 | Dayl't | 9.50 |
| 1520 | 300–500 | 20 | Opal | 12.50 |
| 1520B | 300–500 | 20 | Dayl't | 13.25 |

| Cat. No. | Lamp size, watts | Dia. in. | Type globe | List price |
|---|---|---|---|---|
| 21518 | 150–200 | 18 | Opal | $9.30 |
| 21518B | 150–200 | 18 | Dayl't | 9.80 |
| 21520 | 300–500 | 20 | Opal | 12.90 |
| 21520B | 300–500 | 20 | Dayl't | 13.65 |
| 21524 | 750–1500 | 24 | Opal | 18.90 |
| 21524B | 750–1500 | 24 | Dayl't | 20.65 |

All glassteel diffusers are regularly furnished in open type, unless closed type is specified.

## Standard Dome Reflectors

### Socket Type



For good general illumination of industrial interiors. "Speed-Lox" easily attached hoods are available in angle, ceiling or pendant (as illustrated) iron castings.

### "Speed-Lox" Type

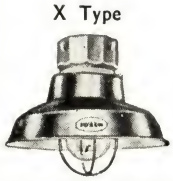


| Cat. No. | Lamp size, watts | Dia., in. | List price |
|---|---|---|---|
| 512 | 60–100 | 12 | $3.20 |
| 514 | 150 | 14 | 3.50 |
| 516 | 200 | 16 | 4.10 |
| 518 | 300–500 | 18 | 5.30 |
| 522 | 750–1500 | 22 | 7.20 |

| Cat. No. | Lamp size, watts | Dia., in. | List price |
|---|---|---|---|
| 24512 | 75–100 | 12 | $3.50 |
| 24514 | 150 | 14 | 3.80 |
| 24516 | 200 | 16 | 4.40 |
| 24518 | 300–500 | 18 | 5.70 |
| 24522 | 750–1500 | 22 | 7.50 |

## Vapor-Proof Units

### X Type



For use where deteriorating conditions such as acid fumes, steam, moisture and smoke are prevalent. Listed as Vapor-proof by the Underwriters' Laboratories, N.E.C. standard.

### Pendent Type



| Cat. No. | Lamp size, watts | Dia., in. | List price |
|---|---|---|---|
| 8512 | 75–100 | 12 | $7.35 |
| 8514 | 150 | 14 | 8.75 |
| 8516 | 200 | 16 | 9.25 |

| Cat. No. | Lamp size, watts | Dia., in. | List price |
|---|---|---|---|
| 7612 | 75–100 | 12 | $7.25 |
| 7616 | 150–200 | 16 | 8.90 |

X Type Units are tapped four ways and are furnished with three plugs, making this unit adaptable and universal for all installations.

## Mercury-Vapor Units



Presenting a complete line of lighting equipment for the 250-watt and 400 watt, Type H, mercury-vapor lamp. Line consists of glassteel diffuser standard dome, deep bowl, circular angle and rectangular angle reflectors.



| Cat. No. | Lamp size, watts | Dia., in. | List price |
|---|---|---|---|
| 94518 | 250 | 18 | $9.70 |
| 94522 | 400 | 22 | 9.00 |

| Cat. No. | Lamp size, watts | Dia., in. | List price |
|---|---|---|---|
| 94920 | 250 | 12 | $9.60 |
| 94950 | 400 | 18 | 9.10 |

## Combination Mercury Units



Silv-A-King presents a complete line of combination mercury-vapor and incandescent lighting equipment as its contribution to the latest developments in the field of high intensity industrial lighting. Units are constructed to take one mercury lamp and three incandescent lamps.



| Cat. No. | Lamp size | Dia.. in. | List price |
|---|---|---|---|
| 97518 | (1) 250 watt mercury vapor (3) 75-150 watt incandescent | 18 | $12.50 |
| 97522 | (1) 400 watt mercury vapor (3) 100-200 watt incandescent | 22 | 14.70 |

| Cat. No. | Lamp size | Dia., in. | List price |
|---|---|---|---|
| 97520 | (1) 250 watt mercury vapor (3) 75-150 watt incandescent | 20 | $16.50. |
| 97524 | (1) 400 watt mercury vapor (3) 100-200 watt incandescent | 24 | 24.90 |

## Sign Lighting Equipment

### Circular Angle



Silv-A-King sign-lighting equipment has been designed to provide an efficient, uniform illumination. Some of its features are a bayonet type socket housing, which makes it easy to remove reflector for cleaning, and a patented armored socket.

### Rectangular Angle



| Cat. No. | Lamp size, watts | Dia., in. | List price |
|---|---|---|---|
| **Vertical Fitting** | | | |
| 600 | 60–100 | 8 | $2.20 |
| 610 | 150–200 | 10½ | 2.50 |
| 620 | 300–500 | 12 | 4.50 |
| 650 | 750–1500 | 16 | 7.60 |
| **Horizontal Fitting** | | | |
| 605 | 60–100 | 8 | 2.20 |
| 615 | 150–200 | 10½ | 2.50 |

| Cat. No. | Lamp size, watts | Dim., in. | List price |
|---|---|---|---|
| **Vertical Fitting** | | | |
| 800 | 60–100 | 6¾x 8¼ | $2.50 |
| 810 | 150–200 | 9¼x10¾ | 3.60 |
| 820 | 300–500 | 11x13 | 6.15 |
| 850 | 750–1500 | 15x16 | 9.25 |
| **Horizontal Fitting** | | | |
| 805 | 60–100 | 6¾x 8¼ | 2.50 |
| 815 | 150–200 | 9¼x10¾ | 3.60 |

# BENJAMIN ELECTRIC MFG. CO.

## Benjamin Lighting Equipment for Commerce and Industry, Floodlighting Equipment, Electrical Specialties and Signals

GENERAL OFFICES AND FACTORY
DES PLAINES (Chicago Suburb), ILL.
NEW YORK OFFICE, 230 West 17th Street
SAN FRANCISCO OFFICE, 448 Bryant Street

### Products

The Benjamin line includes: PORCELAIN ENAMELED STEEL REFLECTORS and SPECIALTIES; ACIDPROOF, EXPLOSIONPROOF, MERCURY LAMP, VAPORPROOF and WEATHERPROOF LIGHTING EQUIPMENT; FLOODLIGHTING EQUIPMENT. Also Wiring Devices; Industrial Signals.

With a few exceptions, all Benjamin sockets and receptacles are listed by Underwriters' Laboratories, Inc.

Leading electrical wholesalers in every city carry a stock of Benjamin Products and are in position to render prompt service on inquiries and orders.

Benjamin district representatives have headquarters in strategically located cities, while divisional sales offices and warehouses are maintained at New York and San Francisco.

### "Turnlox" Two-piece Lighting Equipment

Benjamin Reflector and lamp removable as unit by simple quarter turn of reflector in the hood. Reflectors are porcelain enameled steel. Pendent and angle hoods tapped ½ in., standard ceiling hoods fit 4-in. standard, round or octagonal boxes.

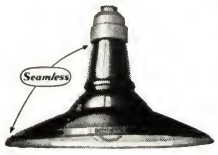


RLM Dome

#### RLM DOME REFLECTOR

| Lamp, watts | List price | Dia., in. | Cat. No. of unit | | |
|---|---|---|---|---|---|
| | | | Pendent | Ceiling | Angle |
| 75 | $3.60 | 12 | 7640 | 9640 | 3640 |
| 100 | 3.60 | 12 | 7641 | 9641 | 3641 |
| 150 | 3.80 | 14 | 7642 | 9642 | 3642 |
| 200 | 4.40 | 16 | 7643 | 9643 | 3643 |
| 300, 500 | 5.70 | 18 | 7644 | 9644 | 3644 |
| 750, 1500 | 7.60 | 20 | 7645 | 9645 | 3645 |

Standard package is 10 on 50 to 200 watts; 5 on 300 to 1500 watts. Schedule 2 discounts.

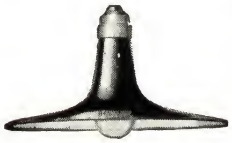



Shallow Dome

#### SHALLOW DOME REFLECTOR

| Lamp, watts | List price | Dia., in. | Cat. No. of unit | | |
|---|---|---|---|---|---|
| | | | Pendent | Ceiling | Angle |
| 50, 60 | $3.50 | 12 | 7437 | 9437 | 3437 |
| 75,100 | 3.60 | 12 | 7421 | 9421 | 3421 |
| 150 | 3.80 | 14 | 7423 | 9423 | 3423 |
| 200 | 4.40 | 16 | 7425 | 9425 | 3425 |
| 300, 500 | 5.70 | 18 | 7509 | 9509 | 3509 |

Standard package is 10 on 50 to 200 watts; 5 on 300 to 500 watts. Schedule 2 discounts.



Flat Cone

#### FLAT CONE REFLECTOR

| Lamp, watts | List price | Dia., in. | Cat. No. of unit | | |
|---|---|---|---|---|---|
| | | | Pendent | Ceiling | Angle |
| 50, 60 | $3.60 | 14 | 7431 | 9431 | 3431 |
| 75, 100 | 3.60 | 14 | 7411 | 9411 | 3411 |
| 150 | 3.80 | 16 | 7402 | 9402 | 3402 |
| 200 | 4.40 | 18 | 7403 | 9403 | 3403 |

Standard package is 10. Schedule 2 discounts.



RLM Symmetrical Angle

#### RLM SYMMETRICAL ANGLE REFLECTOR

| Lamp, watts | List price | Dia., in. | Cat. No. of unit | | |
|---|---|---|---|---|---|
| | | | Pendent | Ceiling | Angle |
| 100 | $3.25 | 8 | 7541 | 9541 | 3541 |
| 150 | 3.75 | 10 | 7542 | 9542 | 3542 |
| 300, 500 | 5.35 | 14 | 7543 | 9543 | 3543 |
| 750, 1500 | 8.00 | 16 | 7544 | 9544 | 3545 |

Standard package is 10 on 50 to 150 watts; 5 on 300 to 1500 watts. Schedule 2 discounts.



Elliptical Angle

#### ELLIPTICAL ANGLE REFLECTOR

| Lamp, watts | List price | Lgth., in. | Cat. No. of unit | | |
|---|---|---|---|---|---|
| | | | Pendent | Ceiling | Angle |
| 75, 100 | $3.80 | 12¾ | 7522 | 9522 | 3522 |
| 150 | 4.50 | 12¾ | 7525 | 9525 | 3525 |
| 200 | 5.10 | 16¼ | 7526 | 9526 | 3526 |
| 300, 500 | 9.10 | 20 | 7537 | 9537 | 3537 |
| 750, 1500 | 10.10 | 21⅞ | 7538 | 9538 | 3538 |

Standard package is 10 on 75 to 200 watts; 5 on 300 to 500 watts and 2 on 750 to 1500 watts. Schedule 2 discounts.

Pull chain lamp holders for all above units medium base only, $0.80 advance in list; suffix unit catalogue number with "PUL." Self-locking lamp holders, medium base only, $0.50 advance in list; suffix fixture catalogue number with "LOK." Shock-absorbing lamp holders (except for elliptical angles) medium or mogul base, $0.10 advance in list; suffix fixture catalogue number with "SHB."

### Socket-reflectors—One-piece Equipment

Benjamin Seamless porcelain enameled steel reflectors. Porcelain sockets have separable "X" type fitting tapped ½ in. standard; ¾ in. when specified, or bushed for drop cord. Reflectors are green outside, reflecting white inside.



RLM Dome

#### RLM DOME REFLECTOR

| Lamp, watts | Cat. No. | *List price | Dia., in. | Std. pkg. |
|---|---|---|---|---|
| 75 | 5640 | $3.30 | 12 | 10 |
| 100 | 5641 | 3.30 | 12 | 10 |
| 150 | 5642 | 3.50 | 14 | 10 |
| 200 | 5643 | 4.10 | 16 | 10 |
| 300, 500 | 5644 | 5.30 | 18 | 5 |
| 750, 1500 | 5645 | 7.20 | 20 | 5 |




Shallow Dome

#### SHALLOW DOME REFLECTOR

| Lamp, watts | Cat. No. | *List price | Dia., in. | Std. pkg. |
|---|---|---|---|---|
| 50, 60 | 5437 | $3.20 | 12 | 10 |
| 75, 100 | 5421 | 3.30 | 12 | 10 |
| 150 | 5423 | 3.50 | 14 | 10 |
| 200 | 5425 | 4.10 | 16 | 10 |
| 300, 500 | 5509 | 5.30 | 18 | 5 |



Flat Cone

#### FLAT CONE REFLECTOR

| Lamp, watts | Cat. No. | *List price | Dia., in. | Std. pkg. |
|---|---|---|---|---|
| 50, 60 | 5431 | $3.30 | 14 | 10 |
| 75, 100 | 5401 | 3.30 | 14 | 10 |
| 150 | 5402 | 3.50 | 16 | 10 |
| 200 | 5403 | 4.10 | 18 | 10 |




RLM Bowl

#### RLM BOWL REFLECTOR

| Lamp, watts | Cat. No. | *List price | Dia., in. | Std. pkg. |
|---|---|---|---|---|
| 60 | 6166 | $2.90 | 7 | 10 |
| 100 | 6161 | 3.10 | 8 | 10 |
| 200 | 6169 | 3.50 | 10 | 10 |
| 300, 500 | 6173 | 5.20 | 12 | 5 |
| 750, 1500 | 6177 | 6.40 | 16 | 5 |



RLM Symmetrical Angle

#### RLM SYMMETRICAL ANGLE REFLECTOR

| Lamp, watts | Cat. No. | *List price | Dia., in. | Std. pkg. |
|---|---|---|---|---|
| 100 | 5541 | $2.95 | 8 | 10 |
| 150 | 5542 | 3.45 | 10 | 10 |
| 300–500 | 5543 | 4.95 | 14 | 5 |
| 750, 1500 | 5544 | 7.60 | 16 | 5 |



Elliptical Angle

#### ELLIPTICAL ANGLE REFLECTOR

| Lamp, watts | Cat. No. | *List price | Lgth., in. | Std. pkg. |
|---|---|---|---|---|
| 75, 100 | 5522 | $3.50 | 12¾ | 10 |
| 150 | 5525 | 4.20 | 12¾ | 10 |
| 200 | 5526 | 4.80 | 16¼ | 10 |
| 300, 500 | 5537 | 8.70 | 20 | 5 |
| 750, 1500 | 5538 | 9.70 | 21⅞ | 2 |

*Schedule 2 discounts on all the above reflectors.

## The Meaning of the RLM Label on Industrial Lighting Reflectors




The RLM Label is a warranty of uniform quality in industrial lighting reflectors. It certifies that reflectors so labeled conform in every detail to the RLM standards established by the RLM Standards Institute, which is a non-profit organization dedicated to the establishment and maintenance of quality standards in industrial lighting equipment. The RLM label is an assurance of more light at no extra cost as efficiency specifications for RLM reflectors are from 10-12% higher than the average reflector efficiency.

It likewise assures a porcelain enameled reflecting surface of durability which is impervious to atmospheric conditions, and can be easily maintained in excellent condition at lowest possible maintenance cost.

Reflectors bearing the RLM label are subjected to periodic tests by the well-known independent organization, "The Electric Testing Laboratories," assuring strict conformity at all times with the RLM standards.

## Benjamin "Shall-O-Hood" Equipment

Two-piece threaded neck industrial lighting units with a new shallow, easy-to-wire hood. Reflectors are of porcelain enameled steel, green outside, reflecting white inside, with a rolled copper screw thread which fits threading on any of the four styles of hoods illustrated. Numbers listed below include reflector and hood with socket. Pendent hoods tapped ½ in. standard. Ceiling hoods fit 3¼ and 4-in. standard outlet boxes.



Pendent Cast Hood



Ceiling Cast Hood



Pendent Steel Hood



Ceiling Steel Hood



RLM Dome



RLM Bowl



RLM Angle

**UNITS COMPLETE WITH RLM DOME REFLECTORS**

| Lamp, watts | Diam., inch. | Pendent cast hood | | Ceiling cast hood | | Pendent steel hood | | Ceiling steel hood | |
|---|---|---|---|---|---|---|---|---|---|
| | | Cat. No. | List Price | Cat. No. | List Price | Cat. No. | List Price | Cat. No. | List Price |
| 75 | 12 | 3700 | $3.50 | 3763 | $3.70 | 3761 | $3.30 | 3762 | $3.30 |
| 100 | 12 | 3701 | 3.50 | 3711 | 3.70 | 3706 | 3.30 | 3716 | 3.30 |
| 150 | 14 | 3702 | 3.70 | 3712 | 3.90 | 3707 | 3.50 | 3717 | 3.50 |
| 200 | 16 | 3703 | 4.30 | 3713 | 4.50 | 3708 | 4.10 | 3718 | 4.10 |
| 300, 500 | 18 | 3704 | 5.50 | 3714 | 5.70 | 3709 | 5.30 | 3719 | 5.30 |
| 750-1500 | 20 | 3705 | 7.40 | 3715 | 7.60 | 3710 | 7.20 | 3720 | 7.20 |

**UNITS COMPLETE WITH RLM BOWL REFLECTORS**

| Lamp, watts | Diam., inch. | Pendent cast hood | | Ceiling cast hood | | Pendent steel hood | | Ceiling steel hood | |
|---|---|---|---|---|---|---|---|---|---|
| | | Cat. No. | List Price | Cat. No. | List Price | Cat. No. | List Price | Cat. No. | List Price |
| 100 | 8 | 3733 | $3.30 | 3741 | $3.30 | 3737 | $3.10 | 3745 | $3.10 |
| 200 | 10 | 3734 | 3.70 | 3742 | 3.70 | 3738 | 3.50 | 3746 | 3.50 |
| 300, 500 | 12 | 3736 | 5.40 | 3744 | 5.40 | 3740 | 5.20 | 3748 | 5.20 |
| 750-1500 | 16 | 3772 | 6.60 | 3775 | 6.80 | 3773 | 6.40 | 3774 | 6.40 |

**UNITS COMPLETE WITH RLM SYMMETRICAL ANGLE REFLECTORS**

| Lamp, watts | Diam., inch. | Pendent cast hood | | Ceiling cast hood | | Pendent steel hood | | Ceiling steel hood | |
|---|---|---|---|---|---|---|---|---|---|
| | | Cat. No. | List Price | Cat. No. | List Price | Cat. No. | List Price | Cat. No. | List Price |
| 100 | 8 | 3776 | $3.15 | 3779 | $3.35 | 3777 | $2.95 | 3778 | $2.95 |
| 200 | 12 | 3749 | 4.15 | 3755 | 4.35 | 3752 | 3.95 | 3758 | 3.95 |
| 300, 500 | 14 | 3750 | 5.15 | 3756 | 5.35 | 3753 | 4.95 | 3759 | 4.95 |
| 750-1500 | 16 | 3751 | 7.80 | 3757 | 8.00 | 3754 | 7.60 | 3760 | 7.60 |

Standard package is 10 on medium base and 5 on mogul base units.
Schedule 2 discounts.

## "Turnlox" Glassteel Diffusers

Reflector, lamp and glass globe removable as a complete unit, for easy cleaning. Reflectors are interchangeable among any of three styles of hoods. Improved, quick-acting, "safety" globe holding ring is controlled by lever on outside of reflector. Reflectors are white porcelain enamel inside and out.





**WITH OPAL GLOBES**

| Lamp, watts | List price | Dia., in. | Unit Cat. No. | | |
|---|---|---|---|---|---|
| | | | Pendent | Ceiling | Angle |
| 150, 200 | $ 9.30 | 18 | 7201 | 9201 | 3201 |
| 300, 500 | 12.90 | 20 | 7202 | 9202 | 3202 |
| 750, 1000 | 18.90 | 24½ | 7203 | 9203 | 3203 |

**WITH DAYLIGHT GLOBES**

| Lamp, watts | List price | Dia., in. | Unit Cat. No. | | |
|---|---|---|---|---|---|
| | | | Pendent | Ceiling | Angle |
| 150, 200 | $ 9.80 | 18 | 7226 | 9226 | 3226 |
| 300, 500 | 13.65 | 20 | 7227 | 9227 | 3227 |
| 750, 1000 | 20.65 | 24½ | 7228 | 9228 | 3228 |

## Benjamin Intensifier



For lighting small areas to extremely high intensities for fine work. Highly polished reflector of non-tarnishing metal; protected by easily removable glass cover held in place by detachable band. Handy focusing arrangement for controlling beam. Fully adjustable mounting bracket. Tapped ½ in.

| Lamp, watts | Cat. No. | List price | Glass cover | Std. pkg. |
|---|---|---|---|---|
| 60, 100 | 5603 | $ 8.00 | Clear glass | 1 |
| 150, 200 | 5604 | 12.00 | Stippled glass | 1 |
| 150, 200 | 5632 | 13.30 | Daylight blue glass | 1 |

Schedule 2 discounts.

## Benjamin Beam-Director Attachment



Quickly converts RLM dome reflectors of the overhead lighting system into supplementary lighting units, without affecting the reflector's general lighting efficiency. Provides a high candlepower beam of light to any point where additional illumination is needed on nearby work benches or machines. Adds 10 to 15 footcandles illumination over small areas 30 to 36 in. in diameter, 12 or 15 ft. away from the unit.

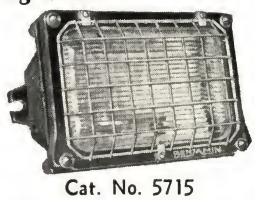
Shallow parabola reflector of etched Alzak Aluminum with cast aluminum bracket and thumb screws.

| Cat. No. | List price | Description | Std. pkg. |
|---|---|---|---|
| 5596* | $3.40 | For attaching to 200-watt RLM domes | 1 |
| 5598 | 4.30 | For attaching to 300-500 watt RLM domes | 1 |

Schedule 2 discounts.
*Also fits 200-watt domes using 300-watt medium base lamps.

## Pit and Tunnel Lighting Units

Listed as vapor proof by Underwriters' Laboratories. Ruggedly constructed for built-in or surface installation. Units with refractor cover change direction of light; plain cover units do not change light direction. Porcelain Enameled Steel reflector. Body tapped ½ in. at both ends; other tapping available.



Cat. No. 5715

| Lamp, watts | List price | Refractor Cover Cat. No. | Plain Cover Cat. No. | Dimen., in inches | | |
|---|---|---|---|---|---|---|
| | | | | Depth top to bot. | Lgth. | Width ft. to bk. |
| 100, 150 | $18.00 | 5715 | 5710 | 6½ | 12½ | 8⅜ |
| 200 | 20.00 | 5720 | 5717 | 7½ | 13 | 8⅜ |

Schedule 2 discounts.

## Benjamin Mercury Lamp Units

This line of equipment for 250 and 400-watt mercury lamps provides an effective and economical means of obtaining high levels of illumination with minimum current consumption, in industrial locations where no need exists for color discrimination. A special transformer or reactor, which is not included with the unit must be provided for operation of the mercury lamp. Only a few reflector types are shown; write for bulletin giving the complete line.

## Glassteel Diffuser for 250 and 400-Watt Mercury Lamps

For soft evenly diffused general illumination. Porcelain enameled steel reflector, with socket-reflector fittings tapped ½ in. standard or Turnlox detachable hoods. Pendent and angle Turnlox hoods tapped ½ in. standard. Ceiling hoods fit 4-in. standard boxes. Reflector finished white inside and outside.




| Type of fittings | For 400-watt lamps | | | For 250-watt lamps | | |
|---|---|---|---|---|---|---|
| | Cat. No. | List price | Dia., in. | Cat. No. | List price | Dia., in. |
| Turnlox Pendent | 7203 | $18.90 | 24½ | 7211 | $12.90 | 20 |
| Turnlox Ceiling | 9203 | 18.90 | 24½ | 9211 | 12.90 | 20 |
| Turnlox Angle | 3203 | 18.90 | 24½ | 3211 | 12.90 | 20 |
| Socket-reflector | 5203 | 18.50 | 24½ | 5211 | 12.50 | 20 |

Schedule 2. Standard package 2 on 400-watt and 4 on 250-watt units.

## 20 in. Spread Dome for 400-Watt Mercury Lamps

For general interior lighting. Porcelain enameled steel dome reflector with 72½° angle of cut-off. Choice of socket-reflector fittings or Turnlox detachable hoods, as described for Glassteel Diffusers. Steel or cast aluminum neck on socket-reflectors. Reflector, green outside, white inside. Steel necks electro-plated.



| Type | Cat. No. | List price | Dia., in. | Std. pkg. |
|---|---|---|---|---|
| Turnlox Pendent, steel neck | 7480 | $9.10 | 20 | 4 |
| Turnlox Ceiling, steel neck | 9480 | 9.10 | 20 | 4 |
| Turnlox Angle, steel neck | 3480 | 9.10 | 20 | 4 |
| Socket-reflector, steel neck | 5480 | 8.70 | 20 | 4 |
| Socket-reflector, alum. neck | 4480 | 9.80 | 20 | 4 |

Schedule 2 discounts.

## 22 in. Spread Dome for 400-Watt Mercury Lamps

Porcelain enameled steel reflectors for general interior lighting. The 78° cut-off (bottom of light source) is lowered to 61 degrees by an opal glass cylinder. Supplied with fittings described for Glassteel Diffusers; for neck construction and finish see 20-in. Dome units.



| Type | Cat. No. | List price | Dia., in. | Std. pkg. |
|---|---|---|---|---|
| Turnlox Pendent, steel neck | 7485 | $9.10 | 22 | 4 |
| Turnlox Ceiling, steel neck | 9485 | 9.10 | 22 | 4 |
| Turnlox Angle, steel neck | 3485 | 9.10 | 22 | 4 |
| Socket-reflector, steel neck | 5485 | 8.70 | 22 | 4 |
| Socket-reflector, alum. neck | 4485 | 9.80 | 22 | 4 |

Schedule 2 discounts.

## Concentrating Aluminum for 400-Watt Mercury Lamps

For lighting high narrow rooms where light must be concentrated on working plane. Reflectors, Alzak, oxidized, etched aluminum inside, natural aluminum outside. Supplied with either socket-reflector fittings tapped ½ in. standard or Turnlox hood; pendent and angle Turnlox hoods tapped ½ in.; ceiling fits 4-in. standard boxes. Steel or aluminum necks on socket-reflectors. Steel necks are electro-plated.

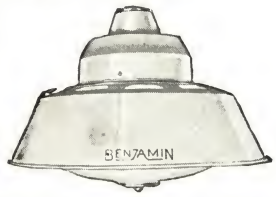


| Type | Cat. No. | List price | Dia., in. | Std. pkg. |
|---|---|---|---|---|
| Turnlox Pendent, steel neck | 7470 | $16.90 | 18 | 4 |
| Turnlox Ceiling, steel neck | 9470 | 16.90 | 18 | 4 |
| Turnlox Angle, steel neck | 3470 | 16.90 | 18 | 4 |
| Socket-reflector, steel neck | 5470 | 16.50 | 18 | 4 |
| Socket-reflector, alum. neck | 4470 | 17.60 | 18 | 4 |

Schedule 2 discounts.

## 400-Watt Mercury Combination Diffusers

For best general lighting where more natural color rendition than is provided by the mercury lamp only is desired. Mixes the light from one 400-watt lamp and three 150 or 200-watt incandescent lamps. Porcelain enameled steel reflector with opal globe and porcelain hood tapped ½ in. Finish white.

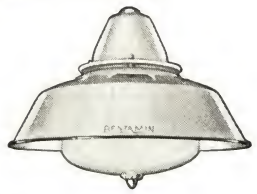



| Number of lamps, type and size, watts | Cat. No. | List price | Dia., in. | Std. pkg. |
|---|---|---|---|---|
| One 400-W. mercury and three 150 or 200-W. incandescent lamps | 5330 | $24.90 | 24½ | 1 |

Schedule 2 discounts.

## 250-Watt Mercury Combination Diffusers

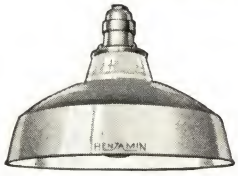
For best general illumination where it is desired to obtain light of greater color accuracy than is provided by the mercury lamp. Mixes the light from one 250-watt mercury lamp and one or more incandescent lamps. Porcelain enameled steel reflector and hood with opal glass globe. Fitting tapped ½ in.



| Number of lamps, type, and size, watts | Cat. No. | List price | Dia., in. | Std. pkg. |
|---|---|---|---|---|
| 1 250-w. mercury and 2 medium base incandescent | 5301 | $16.50 | 20 | 2 |
| 1 250-w. mercury and 1 mogul base incandescent | 5305 | 16.50 | 20 | 2 |

Schedule 2 discounts.

## Benjamin "Silvered Lamp" Diffusers




Benjamin "Silvered Lamp" Diffusers are for use with silvered bowl lamps in industrial interiors where it is desired to provide diffused illumination with minimized glare and good shadow conditions: Opal glass neck permits 5% of light to reach ceiling to relieve contrast.

Porcelain enameled steel reflectors, finished white inside and outside. Supplied with socket-reflector "X" type fittings tapped ½ in. or with Turnlox Hoods; pendent and angle types tapped ½ in. standard; ceiling hoods fit 4-in. standard boxes.

| Type of construction | Dia., in. | 200-watt lamp size | | 300-500 watt lamp size | | Std. pkg. |
|---|---|---|---|---|---|---|
| | | Cat. No. | List price | Cat. No. | List price | |
| Socket-reflector | 20 | 5247 | $9.55 | 5249 | $10.00 | 4 |
| "Turnlox" Pendent | 20 | 7247 | 9.85 | 7249 | 10.40 | 4 |
| "Turnlox" Ceiling | 20 | 9247 | 9.85 | 9249 | 10.40 | 4 |
| "Turnlox" Angle | 20 | 3247 | 9.85 | 3249 | 10.40 | 4 |

Schedule 2 discounts apply.

## Aluminum Units for General Service Lamps

Concentrating reflectors for lighting high narrow rooms where not more than three rows of units are required. Reflectors are permanent Alzak, oxidized etched aluminum inside, aluminum outside. Supplied with socket-reflector fittings tapped ½ in. or Turnlox hoods. Turnlox pendent and angle hoods tapped ½ in.; ceiling hoods fit standard 3¼ or 4-in. round or octagonal boxes.




Cat. No. 4166

| Type | For 300-500 watt lamps | | | For 750-1500 watt lamps | | | Std. pkg. |
|---|---|---|---|---|---|---|---|
| | Cat. No. | List price | Diam., inch. | Cat. No. | List price | Diam., inch. | |
| "Turnlox" Pendent | 7166 | $13.90 | 16 | 7168 | $16.90 | 18 | 4 |
| "Turnlox" Ceiling | 9166 | 13.90 | 16 | 9168 | 16.90 | 18 | 4 |
| "Turnlox" Angle | 3166 | 13.90 | 16 | 3168 | 16.90 | 18 | 4 |
| "Socket-Reflector" | 4166 | 13.50 | 16 | 4168 | 16.50 | 18 | 4 |

Schedule 2 discounts.

## Explosionproof Lighting Units



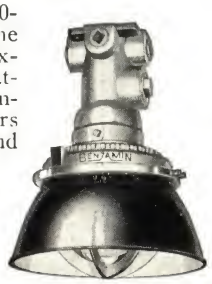
Class I, Group D—listed by Underwriters' Laboratories, Inc., for Class I, Group D, hazardous locations. Improved, totally enclosed reflector construction reduces amount of exposed glass.

Electro-plated cast iron hoods. Pendent hood tapped ¾-in.; ½-in. when specified at a $0.10 reduction in list price. Ceiling hood has 4-way tapping; 3 outlets with plugs. Ceiling hoods tapped ¾-in. standard; ½-in. when specified at a $0.30 reduction in list price.

| Cat. No. | List Price | Lamp, watts | Type of hood | Std. pkg. |
|---|---|---|---|---|
| 7520 | $31.75 | 200 | Pendent | 1 |
| 7521 | 36.25 | 200 | Ceiling | 1 |

Schedule 2 discounts.

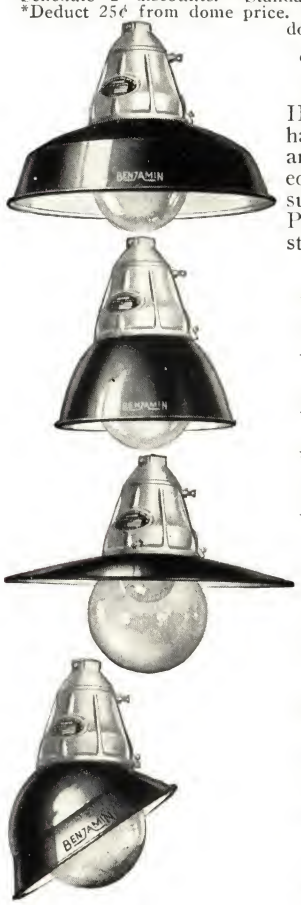




Units for 75 to 200-watt lamps; same features as above, except provided with attachable porcelain enamel steel reflectors in dome, bowl and symmetrical angle shapes. Tapped ¾ in.; for ½ in. see above.

| Lamp, watts | Type hood | With guard less reflector | | Complete with reflector and guard | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Dome | | *Shallow dome No. | †Bowl Cat. No. | Angle Cat. No. |
| | | Cat. No. | List price | List price | Cat. No. | | | |
| 75,100 | Pendent | 7501 | $19.50 | $22.25 | 7511 | 7515 | 7529 | †7533 |
| 1 0 | Pendent | 7502 | 19.50 | 22.75 | 7512 | 7516 | 7530 | †7534 |
| 200 | Pendent | 7503 | 28.00 | 31.75 | 7513 | 7517 | ..... | ‡7535 |
| 75,100 | Ceiling | 7501-CX | 24.00 | 26.75 | 7511-CX | 7515-CX | 7529-CX | †7533-CX |
| 150 | Ceiling | 7502-CX | 24.00 | 27.25 | 7512-CX | 7516-CX | 7530-CX | †7534-CX |
| 200 | Ceiling | 7503-CX | 32.50 | 36.25 | 7513-CX | 7517-CX | ..... | ‡7535-CX |

Schedule 2 discounts. Standard package 1.
*Deduct 25¢ from dome price. †Add 25¢ to dome price. ‡Add 75¢ to dome price.



## "Type 11-G" Dust-tight Units

Listed by Underwriters for Class II, Group G and Classes III and IV hazardous locations; also moisture and vaporproof. Highest quality equipment; thoroughly gasketed and supplied with cast aluminum hoods. Pendent hoods only; tapped ½-in. standard, ¾-in. when specified.

**DOME REFLECTOR**

| Lamp, watts | Cat. No. | List price | Dia., in. | Std. pkg. |
|---|---|---|---|---|
| 100 | 8500 | $11.50 | 12 | 10 |
| 100 | 8500-HR | 13.00 | 12 | 10 |
| 150, 200 | 8503 | 16.50 | 18 | 10 |

**BOWL REFLECTOR**

| Lamp, watts | Cat. No. | List price | Dia., in. | Std. pkg. |
|---|---|---|---|---|
| 100 | 8506 | $11.90 | 9 | 10 |
| 100 | 8506-HR | 13.40 | 9 | 10 |

**FLAT CONE REFLECTOR**

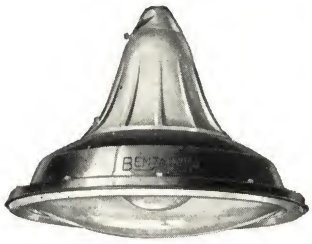
| Lamp, watts | Cat. No. | List price | Dia., in. | Std. pkg. |
|---|---|---|---|---|
| 100 | 8513 | $11.50 | 14 | 10 |
| 100 | 8513-HR | 13.00 | 14 | 10 |
| 150, 200 | 8515 | 15.40 | 18 | 10 |

**ANGLE REFLECTOR**

| Lamp, watts | Cat. No. | List price | Dia., in. | Std. pkg. |
|---|---|---|---|---|
| 100 | 8517 | $12.00 | 10 | 10 |
| 100 | 8517-HR | 13.50 | 10 | 10 |

Schedule 2 discounts. "HR," heat-resisting globes.

## "Vapor-Seal" Units



Class II, Group G—Listed by Underwriters' Laboratories, Inc., for Class II, Group G, Hazardous locations — atmospheres containing grain dust, and similar inflammable mixtures.

Dome shape porcelain enameled steel reflector, with heat-resisting glass cover. Removable cast aluminum hoods carry socket and auxiliary inner reflector of oxidized aluminum.

| Lamp, watts | Cat. No. | List price | Dia., in. | Std. pkg. |
|---|---|---|---|---|
| 75,100 | 5650 | $18.00 | 14 | 2 |
| 150 | 5651 | 20.00 | 14 | 2 |
| 200 | 5652 | 24.00 | 17¼ | 2 |
| 300, 500 | 5653 | 30.00 | 17¼ | 1 |

Schedule 2 discounts.



No. 657

## Benjamin "Type 11-G" Dust-tight and Moistureproof Units

Listed by Underwriters for Class II, Group G and Class III and IV locations. One-piece copper casings with removable one-piece porcelain sockets. Globes sealed by asbestos gaskets; wire guard threads on to outside of casing.



No. 665

| Lamp, watts | Cat. No. | List price | Description | Std. pkg. |
|---|---|---|---|---|
| 25, 60 | 663 | $2.10 | Less guard..... | 10 |
| 75, 100,150 | 665 | 2.65 | Less guard..... | 10 |
| 75, 100,150 | 665-HR | 4.15 | Less guard (heat-resis. globe). | 10 |
| 75, 100,150 | 665-OP | 3.15 | Less guard (opal globe)..... | 10 |
| 25, 60 | 657 | 3.10 | Complete with guard..... | 10 |
| 75, 100,150 | 658 | 4.25 | Complete with guard..... | 10 |

Schedule 2 discounts.

## Benjamin Industrial Lighting Vapolets



Pendent



Ceiling



Angle

Listed as vaporproof by Underwriters' Laboratories, Inc. Cast iron alloy bodies with conduit stops; finished sprayed aluminum over plating. Plain clear glass screw globes; aluminum alloy guards. One-piece Underwriters' listed composition receptacle seals body even if the globe is broken or removed.

**PENDENT VAPOLETS—"A" TOP TAPPING**

| Lamp, watts | ½-in. top tapping | | ¾-in. top tapping | |
|---|---|---|---|---|
| | Cat. No. | List price | Cat. No. | List price |
| 15-40 | 7110A | $4.40 | 7120A | $4.45 |
| 50-100 | 7111A | 4.50 | 7121A | 4.55 |
| 100-200 | 7112A | 5.40 | 7122A | 5.45 |

**CEILING VAPOLETS—"C" FEED-THRU TAPPING**

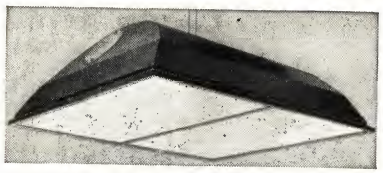
| Lamp, watts | ½-in. feed-thru tap | | ¾-in. feed-thru tap | | 1-in. feed-thru tap | |
|---|---|---|---|---|---|---|
| | Cat. No. | List price | Cat. No. | List price | Cat. No. | List price |
| 15-40 | 7117C | $4.50 | 7127C | $4.60 | 7137C | $4.70 |
| 50-100 | 7113C | 4.60 | 7123C | 4.70 | 7133C | 4.80 |
| 100-200 | 7114C | 5.50 | 7124C | 5.60 | 7134C | 5.65 |

**ANGLE VAPOLETS—"J" FEED-THRU TAPPING**

| Lamp, watts | ½-in. feed-thru tapping | | ¾-in. feed-thru tapping | |
|---|---|---|---|---|
| | Cat. No. | List price | Cat. No. | List price |
| 15-40 | 7119J | $5.05 | 7129J | $5.15 |
| 50-100 | 7115J | 5.15 | 7125J | 5.25 |
| 100-200 | 7116J | 5.90 | 7126J | 6.00 |

Schedule 11 discounts.
For other tapping arrangements see Benjamin Catalog No. 26.

## Benjamin "Skylight" Unit



A large size diffusing unit of low-uniform surface brightness which provides an artificial luminous ceiling for local lighting. Ideal for lighting printers' imposing stones, inspection of plated material, drawing boards, etc. Porcelain enameled steel reflector with opal or daylight diffusing glass covers. Fitting tapped ¾ in. standard. Unit is easily relamped without removing glass cover.

| Number and size of lamp, watts | Cat. No. | List price | Cover glass | Dimensions, in. | | Std. pkg. |
|---|---|---|---|---|---|---|
| | | | | Length | Width | |
| 2 15- to 300-watt medium base lamp... | 5618 | $40.00 | Opal | 36 | 28 | 1 |
| 2 15- to 300-watt medium base lamp... | 5618-D | 45.00 | Daylight | 36 | 28 | 1 |

Schedule 2 discounts.

## Benjamin Play Area Floodlight



Cat. No. 5752



Cat. No. 5754

A wide angle, open type diffusing floodlight combining a large porcelain enameled steel reflector with an inner reflector of oxidized aluminum. Provides strong illumination on the ground areas to the front and sides of the unit as well as improving illumination in the upper areas. Ideal for baseball, football, soft-ball, playgrounds, etc.

Easily adjustable—simple to install. Outside finish of the large reflector is green; inside is white. All exposed metal fittings are electro-plated. Supplied with either a 1½ or 2-in. iron pipe size slip fitter base or a cross arm bracket, either with or without pipe clamp. Reflector is 28½ in. long and 17½ in. from front to back.

| Lamp watts | Cat. No. | List price | Descriptions |
|---|---|---|---|
| 750-1500 | 5752 | $31.00 | With 1½-in. i. p. size opening |
| 750-1500 | 5752-A | 31.00 | With 2-in. i. p. size opening |
| 750-1500 | 5751 | 29.00 | With cross arm bracket |
| 750-1500 | 5754 | 30.00 | Cross arm bracket and pipe clamp |

Schedule 7 discounts.

## Benjamin "Ellipto-Lite" Floodlight



Cat. No. 5774

A wide angle open type diffusing floodlight combining a porcelain enameled reflector of elliptical shape with an inner reflector of oxidized aluminum. Ideal for lighting the smaller type of outdoor recreational areas. Detachable hood construction simplifies wiring and cleaning. Reflector can be rotated in the hood to the most desirable position. Wide vertical range.

Reflector is green outside, white inside. Hood is electro-plated.

| 300-500 Watt | | Description | 750-1500 Watt | |
|---|---|---|---|---|
| Cat. No. | List price | | Cat. No. | List price |
| 5770 | $19.00 | Pendent hood tapped ¾ in. | 5970 | $20.00 |
| 5771 | 21.00 | Cross arm bracket for 4¼ in. cross arms | 5971 | 22.00 |
| 5777 | 22.00 | Cross arm and pipe clamp for 1 to 2 in. pipe | 5977 | 23.00 |
| 5774 | 23.00 | Slip fitter for 1½-in. pipe | 5975 | 24.00 |

Schedule 7 discounts.

## Benjamin "Stock-Bin-Lite" Reflectors



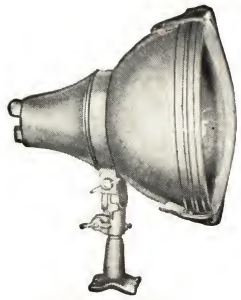
Designed to provide uniform illumination from top to bottom of rows of books, shelving filing cabinets, etc. The lamp is carefully shielded to prevent glare when looking down aisles.

Porcelain enameled steel reflector with a choice of four styles of removable hoods. Finished white inside and outside. All hoods, except ceiling, tapped ½ in., ceiling head fits 4-in. box.

| Lamp, watts | Complete with following hood | | | | | | Std. pkg. |
|---|---|---|---|---|---|---|---|
| | Pendent Cat. No. | Ceiling Cat. No. | Angle Cat. No. | List price | Feed-through Cat. No. | Feed-through List price | |
| 60 | E1875 | C1875 | L1875 | $3.75 | T1875 | $3.90 | 10 |
| 75, 100 | E1876 | C1876 | L1876 | 3.85 | T1876 | 4.00 | 10 |
| 150 | E1877 | C1877 | L1877 | 4.00 | T1877 | 4.15 | 10 |

Schedule 2 discounts.

## Benjamin Floodlighting Projectors



Cat. No. 5850

Housings are made of aluminum. Ventilation is unnecessary and the interior is sealed. Reflectors are of glass, silver plated, while glass covers are heat-resisting.

Completely adjustable — easily attached. The beam spread is controlled by a knob outside the housing. Wiring connections are made outside the housing.

Color plates, visors, louvers, stops, supplied at additional cost. See accessories listed below and in Benjamin *Catalog No. 26.*

| Cat. No. | List price | Cover style | Outside dimensions of floodlight, in. | | |
|---|---|---|---|---|---|
| | | | Diameter | *Over-all height | Depth front to back |
| **Model RD 11—With 11-in. Diameter Reflector** | | | | | |
| For 250-watt Floodlighting Lamps and 200-watt General Service Lamps | | | | | |
| 5825 | $34.00 | Plain | 13 | 17 | 15 |
| 5826 | 34.00 | Stippled | 13 | 17 | 15 |
| 5827 | 34.00 | Ribbed | 13 | 17 | 15 |
| **Model RD 14—With 14¼-in. Diameter Universal Service Reflector** | | | | | |
| For 300 to 500-watt General Service, 500-watt Floodlighting Lamps | | | | | |
| 5850 | $60.00 | Plain | 16¼ | 21¾ | 17½ |
| 5851 | 60.00 | Stippled | 16¼ | 21¾ | 17½ |
| 5852 | 60.00 | Ribbed | 16¼ | 21¾ | 17½ |
| **Model RD 18—With 18-in. Diameter Universal Service Reflector** | | | | | |
| For 750 to 1000-watt General Service, 1000-watt Floodlighting Lamps | | | | | |
| 5875 | $85.00 | Plain | 20¼ | 26½ | 21 |
| 5876 | 85.00 | Stippled | 20¼ | 26½ | 21 |
| 5877 | 85.00 | Ribbed | 20¼ | 26½ | 21 |
| **Model RD 20—With 20-in. Diameter Universal Service Reflector** | | | | | |
| For 1500-watt General Service, and 1500-watt Floodlighting Lamps | | | | | |
| 5892 | $140.00 | Plain | 22⅜ | 28⅝ | 22⅛ |
| 5893 | 140.00 | Stippled | 22⅜ | 28⅝ | 22⅛ |
| 5894 | 140.00 | Ribbed | 22⅜ | 28⅝ | 22⅛ |

Schedule 7 discounts. *With lamp in horizontal position.

### ACCESSORIES

| Description | For Model RD 11 | | For Model RD 14 | | For Model RD 18 | | For Model RD 20 | |
|---|---|---|---|---|---|---|---|---|
| | Cat. No. | List price | Cat. No. | List price | Cat. No. | List price | Cat. No. | List price |
| Color plate, red | 5831 | $6.00 | 5861 | $9.00 | 5881 | $13.00 | 5839 | $30.00 |
| Color plate, green | 5832 | 6.00 | 5862 | 9.00 | 5882 | 13.00 | 5828 | 30.00 |
| Color plate, amber | 5833 | 6.00 | 5863 | 9.00 | 5883 | 13.00 | 5829 | 30.00 |
| Color plate, blue | 5834 | 6.00 | 5864 | 9.00 | 5884 | 13.00 | 5830 | 30.00 |
| Aluminum visor | 5840 | 3.00 | 5870 | 5.00 | 5890 | 7.00 | 5880 | 10.00 |
| Circular louver | 5841 | 6.75 | 5871 | 10.00 | 5891 | 10.00 | 5835 | 17.00 |
| Pipe clamp | 5846 | 1.00 | 5846 | 1.00 | 5896 | 1.10 | 5896 | 1.10 |

Schedule 7 discounts.

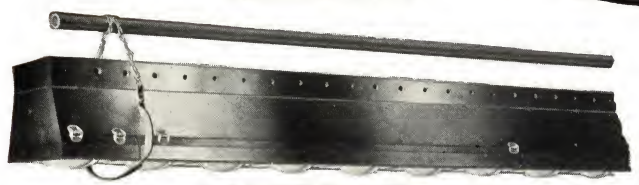
# CENTURY LIGHTING, INC.

Manufacturers of Theatrical, Architectural and Photographic Lighting Equipment

419 West 55th Street, NEW YORK, N. Y.

CABLE ADDRESS: LEKOLITE

## BORDERLIGHTS



Individual Reflector Type

*Description:* Individual chromium or Alzak reflectors. Chain hangers. Scenery guards. Heat-resisting colored glass roundels with spring ring holders. Splice box for feed cables.

| Cat. No. | Type reflector | Outlet center, in. | Wattage | Price, ft. |
|---|---|---|---|---|
| 450 | Alzak | 6 | 75–150 | $7.00 |
| 451 | Chromium | 6 | 75–150 | 7.00 |
| 455 | Alzak | 8–10 | 200 | 8.00 |
| 456 | Chromium | 8–10 | 200 | 8.00 |
| 460 | Alzak | 12 | 500 | 9.00 |
| 461 | Chromium | 12 | 500 | 9.00 |



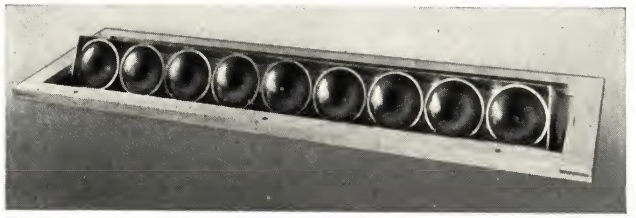
Continuous Reflector Type

*Description:* Wired 3, 4, 6-in. on center to receive 25- to 100-watt lamps.

| Cat. No. | Type reflector | Price, ft. |
|---|---|---|
| 400 | Non-fade white or aluminum paint | $3.10 |
| 401 | Matte aluminum stripping | 4.35 |
| 402 | Chromium plated stripping | 5.65 |
| 403 | Alzak aluminum stripping | 7.50 |

## DISAPPEARING FOOTLIGHTS

Made in standard 5-ft. sections. Kiln-dry maple wood trims. Mercury disconnect switches (on and off). Splice box for leads.

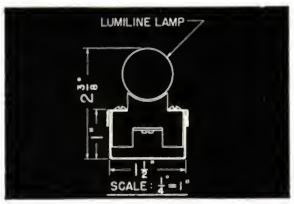


Individual Reflector Type

| Cat. No. | Type reflector | No. of Outlets | Wattage | Price per section |
|---|---|---|---|---|
| 842 | Chromium | 9 | 75–150 | $73.00 |
| 843 | Alzak | 9 | 75–150 | 75.00 |
| 844 | Matte aluminum | 9 | 75–150 | 68.00 |
| 845 | Chromium | 12 | 75–100 | 70.00 |
| 846 | Alzak | 12 | 75–100 | 72.00 |
| 847 | Matte aluminum | 12 | 75–100 | 65.00 |
| | **Continuous Reflector Type** | | | |
| 811 | White paint | 15 | 25–100 | $50.00 |
| 811A | Alzak stripping | 15 | 25–100 | 60.00 |
| 811C | Chromium stripping | 15 | 25–100 | 55.00 |

## COVELIGHTS

Reflecting surfaces available: Non-fade paint, chromium or Alzak stripping. State which type.

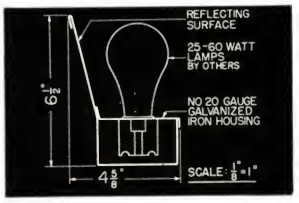


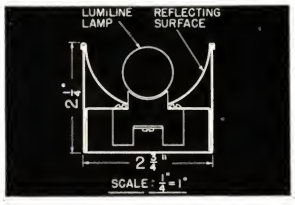

Cat. No. 1941

Skeleton type, narrow base wiring channel, 12 or 18-in. centers, 30 to 60-watt Lumiline lamps.

Cat. No. 1937

Reflector type, color circuits as specified. Straight or curved. 15 to 100-watt A type lamps.



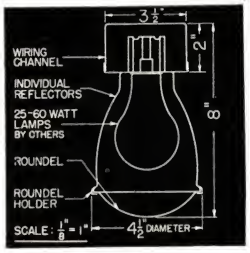




Cat. No. 1939

Reflector type. Wide base wiring channel, 12 or 18-in. centers, 30 to 60-watt Lumiline lamps.

Cat. No. 1910

Individual Alzak reflector type. Narrow beam. Wiring channel. Outlets and color circuits as specified. Heat-resisting colored glass roundels. Spring ring holder. 25 to 60-watt A type lamps. 4 or 6-in. centers.

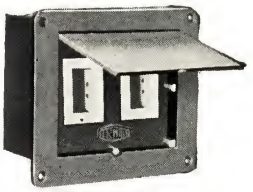



## STAGE FLOOR AND WALL POCKETS



3092

Widely utilized for making heavy wiring connections for temporary use. *Strict adherence to Underwriters' approval and code rulings.*



3102 Wall Type

STAGE-FLOOR POCKETS (250 VOLTS, 50 AMPERES)

| Cat. No. | Type | Inches A | B | C | D | E |
|---|---|---|---|---|---|---|
| 3091 | 1-outlet with stage plug | 11 1/16 | 6 1/8 | 9 1/8 | 9 5/16 | 5 1/8 |
| 3092 | 2-outlet with stage plugs | 11 1/16 | 9 | 9 7/8 | 9 5/16 | 7 |
| 3093 | 3-outlet with stage plugs | 11 1/16 | 12 | 9 7/8 | 9 5/16 | 10 1/2 |
| 3094 | 4-outlet with stage plugs | 11 1/16 | 14 1/2 | 9 7/8 | 9 5/16 | 13 3/16 |

Wall pockets, flush type (250 volts, 50 amperes), available in all sizes.

LEKOLITES, FRESNELITES, *and* PROJECT-O-LITES *for theatrical, architectural and photographic lighting are illustrated and described in our complete Catalog No. 3. Send for it.*

# DAY-BRITE LIGHTING INC.

GENERAL OFFICE AND FACTORY

ST. LOUIS, MO.

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Modern Retail Store



St. Louis Municipal Auditorium

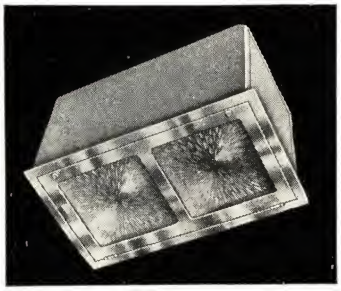


Modern Factory

## Service

This page will give you a general idea of the scope of the Day-Brite line. As designers and manufacturers of lighting equipment, we offer you, without obligation, the services of our engineers to recommend the best solution to your lighting problems.

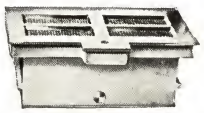
The Day-Brite catalog of lighting equipment is yours for the asking. Send for it today.



Boxes with Holophane Controlens

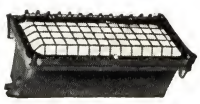
## Boxes with Holophane Controlens

For 6½, 8½ and 12 in. Controlens in one, two, and four-light boxes of various metals and finishes. Made for flush, fully exposed, or semi-exposed mountings. Higher intensities and definite control of light make them ideal in stores over counters and sales areas, and in "high-ceilinged" auditoriums, churches, gymnasiums, etc.



## Pedestrian Tunnel Light

Consists of cast aluminum body and frame, steel porcelain enameled reflector, and sockets for two lamps to 100 watts. Cover is hinged and furnished with Yale flush type lock. Galvanized iron wire guard.



## Pit Reflector

A heavy cast iron fixture cadmium plated, with Tuf-Flex heat resisting glass, and heavy wire guard. Takes two lamps up to 100 watts. For use in grease pits, washracks, and tunnel locations.



## Panel-Lites

Flush type panels, for either Type A or Lumiline lamps, come in a variety of standard and special sizes and finishes. Used in ceilings, walls and under balconies. Gives excellent lighting for modern residences, stores, public buildings, etc.

## Chan-L-ite

Consists of two styles of steel porcelain-enameled reflectors that snap into place on a 1⅝ x 1-in. channel and take the 12 or 18-in. Lumiline lamp. Complete system includes one and two-light reflectors for either lamp, couplings, junction boxes, and wiring channels, to make an installation to fit any requirement. Approved by Underwriters.



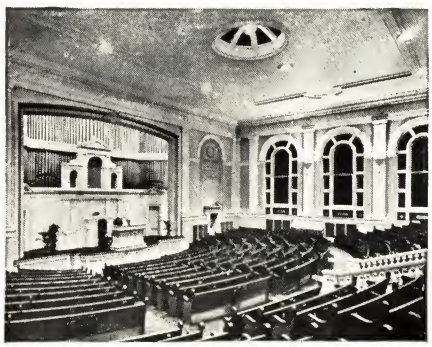
Chan-L-ite makes possible the most advantageous use of Lumiline lamps in decorative lighting, in coves, niches, luminous panels, and similar applications. Write for folder 23A.



The "Super-Lume"

## The "Super-Lume"

Here is a real improvement in industrial lighting. By means of its new design, the "Super-Lume" eliminates sharp contrasts and those deep pools of shade that surround ordinary industrial fixtures and cause discomforting glare and needless eyestrain. An all-metal fixture, white porcelain enamel inside and out. Manufactured in all sizes up to 500 watts, and also for the high intensity mercury vapor lamps. Write for Bulletin M.



Church

# ERIKSON ELECTRIC COMPANY

## Specialized Lighting Equipment

6 Power House Street, BOSTON, MASS.

SALES REPRESENTATIVES MAINTAINED IN THE PRINCIPAL CITIES

### The Company

ERIKSON ELECTRIC COMPANY are designers and manufacturers of lighting equipment for all types of special applications. Over forty years of national experience in production of built-to-order equipment, for both architectural and commercial applications, have enabled this company to perfect the manufacturing technique peculiar to this type of product.

### Engineering

This organization is ideally equipped to suggest the most suitable system of illumination to harmonize with a particular architectural treatment, and to work out such details as: determination of desirable intensity, balance of light distribution to eliminate or produce shadows as the case may require, color modification to suit theme of the design, together with necessary structural and electrical details. This service is particularly valuable to the architect in connection with use of light as a decorative medium in modern architectural design.

### Products

The diversified nature of the products of this company, which range from simplified wiring strips to elaborate systems of reflector and lens combinations, makes it possible to select equipment best suited to individual requirements.

### Publications

The ERIKSON ELECTRIC COMPANY maintains a complete file of Data Sheets devoted to special lighting equipment and its application. These Data Sheets, which show illustrations of typical installations, scale details and engineering data pertaining to the following subjects, will be mailed on request:

| | | |
|---|---|---|
| Auditoriums | Gymnasiums | Schools |
| Banks | Hospitals | Stores |
| Churches | Offices | Temples |
| Galleries | Prisons | Theatres |

## RECENT ERIKSON INSTALLATIONS




Hayden Planetarium, New York, N. Y.



New York Central R.R. Waiting Room, Syracuse, N. Y.



Virginia Museum of Fine Arts, Richmond, Va.



J. L. Hudson Co., Detroit, Mich.

ESTABLISHED 1898

# GARCY REFLECTORS DIVISION

**OF GARDEN CITY PLATING & MFG. CO., INC.**

Corner Ogden Boulevard and South Talman Avenue, CHICAGO, ILL.

NEW YORK OFFICE and WAREHOUSE, 133 Wooster Street

REPRESENTATIVES IN PRINCIPAL CITIES

For our pages on Ornamental Metal Work, Metal Letter Signs, Adjustable Shelving Hardware, Drawer Slides, see File Index






## Illuminated Glass Letters

Moulded glass letters, placed in specially designed reflector which fills each letter with light (patent applied for). They have been used successfully in some of the latest architectural successes, among which is the J. N. Adams Store, Niagara Falls, N. Y. For complete information write for Garcy Bulletin 37-100. Section shows surface mounted type of drawn bronze, lustrous satin finish housing. Letters are ¾ in. thick and 6 in. high. All letters are interchangeable. Other sizes available in quantities. Colored letters can be had.

## Easy Installation of Garcy Alzak Reflectors

Furnished open face as shown or with glass face, concentric or grid louvers, wire guards, etc. Plaster rings furnished if required. Wiring attachment, and lamping easily accomplished from below. Plastic louvers available.



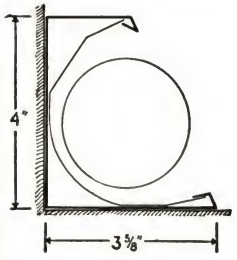


## Alzak Finish Window Reflectors

Concentrating and diffusing, straight and angle type with reflecting surface that will not tarnish, break or peel. Recessed as shown or mounted on wire channels. This unit is the most popular reflector sold for "down lighting".




## Cove Lighting




Most cove lighting trough reflectors are Garcy products, whether surface mounted as **6282** on left or in coves as **6289** on right. Section B Cat. 36 shows several pages of standard cove lighting troughs. Interior Garlite reflecting surfaces are generally fabricated to produce most efficient lighting for specific jobs. Therefore architects should state room dimensions when asking for free engineering layout. Among recent installations of this type is new Roosevelt Hotel, New Orleans, Louisiana. Curved sections are a Garcy specialty.

## "Down-Lighting" Fixture

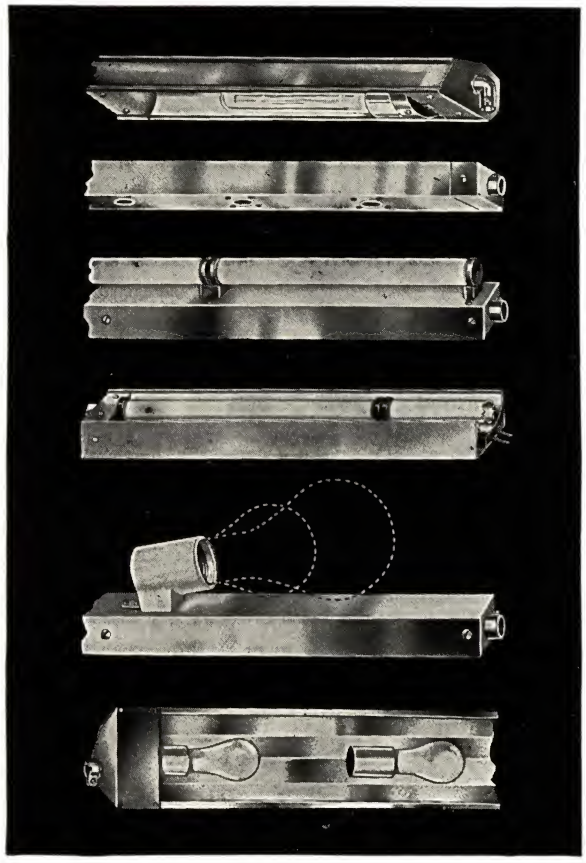


A surface mounted adaptation of the Alzak reflecting unit mentioned in column at left. An attractive cylindrical housing, lustrous bronze fins and louver rings are its salient features. Plastic louvers available. Recommended where recessed mounting is impractical.

## Engineering and Designing Service

A planning service is maintained for the convenience of architects and designers.

Suggested treatments and working details for the illumination of any project will be furnished without obligation.




**(1)** No. **3302** is the most popular showcase reflector for intermediate base lamps. Has 1½-in. face. Also made for lumiline (No. **3199** and T10 (No. **3196**) lamps, 2-in. face.

**(2)** No. **6596.** Any socket spacing. Alzak reflectors can be attached. Recommended for show window lighting. Size, 1¾ in. x 2½ in. wide.

**(3)** No. **6867** lumiline lamp channels completely wired and assembled. Splice pockets at each end. Size, 1¾ in. x ⅝ in.

**(4)** No. **6861** lumiline light reflecting strips. Has Garlite reflecting surface. Size, 2½ in. x 1⅛ in.

**(5)** No. **6865,** lamps 25 to 200 watts fit snug to raceway. The all-purpose raceway completely wired, ready to install. Splice pockets, each end, every section. Size 1¼ in. x ⅝ in. No. **6864** is 1¾ in. x 1⅜ in.

**(6)** No. **N3050** for continuous trough reflector lighting. Any socket spacing any length. Wired with splice pockets at each end. 3½-in. face. 32 similar standard shapes, page 13, Catalog 36.

# GARCY FIXTURES

## Typical Garcy Luminaires for Every Purpose




**No. 6628. Aluminum or Bronze**
For 200 or 300-watt mirror bowl lamps. Note graceful lines of this architectural lighting fixture. Also for 500-750-1000-watt lamps.

**No. 6626. Semi-indirect Fixture**
In addition to open glass bowl, it has removable louvers for direct light. 200 and 300-watt. 300-500-watt sizes available.

**No. 6627. Semi-indirect**
With a beautifully designed white glass bowl. When lighted bowl gives off soft warm glow. 200-300 and 300-500-watt sizes.

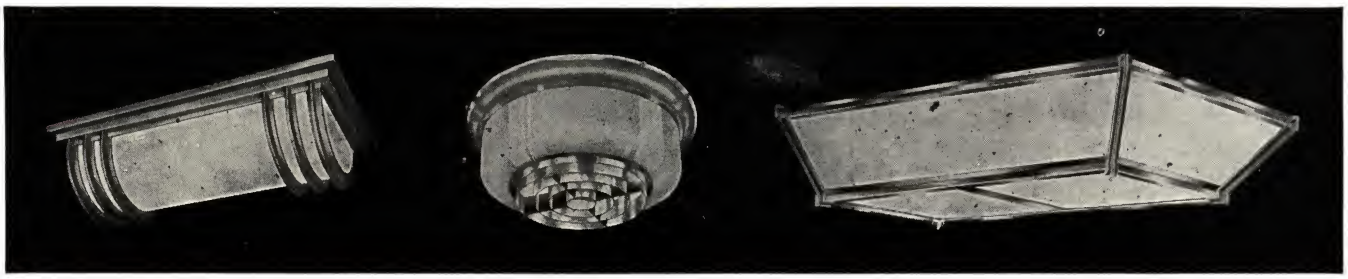


**Luminous Trough Indirect No. 6550**
One of many stock patterns. This item illustrated as used in Wm. H. Block Co., Indianapolis, Ind., with other equipment for complete illumination of this store, all illustrated Section B, Catalog 36

*Right:*

**Indirect Trough Fixtures**
Illustration shows installation of Garcy trough No. 6566 in the Fur Salon of Earl Groth, Fort Wayne, Ind. Soft, even illumination is provided by this unit which can be had in any length. See Section B, Catalog 36, for 25 standard indirect, semi-indirect and direct trough fixtures for lobbies, stores, public buildings, etc.

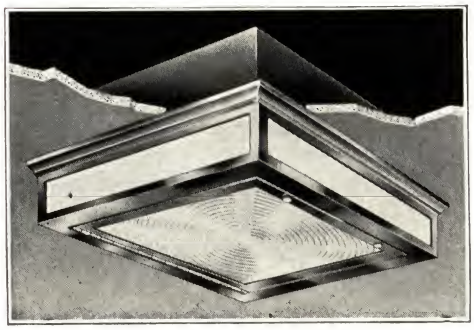




**The Aristocrat No. 6668**
A stock fixture of extruded and cast aluminum with curved glass. Unit is 17 in. wide, 35 in. long. Frame hinges down for relamping. Also furnished in continuous lengths for "line of light" effects. No. 6669, 10 in. wide, 18 in. long. Typical installation, Foley Brothers, Houston, Tex.

**No. 6540**
12-in. glass bowl with satin-finished fitter mounted to ceiling. Has louver at bottom for direct light. Plastic louvers available. For all low ceiling heights. Takes one 200 or 300-watt lamp.

**Controlens Luminaire No. C6845-2**
A surface mounted fixture of beautiful lines. Flashed opal glass sides, metal lustrous finish, with lens plates bottom for maximum efficiency. Typical installations: Marshall Field & Co., Chicago; M. O'Neil Co., Akron; Arizona Trust Co., Tucson



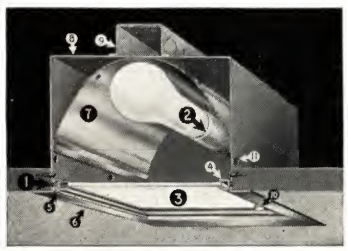
*Left:*

**Controlens Lighting No. 6831**
Typical of luminaires illustrated in Section C, Catalog 36. Lenses control light. Typical installations are: Boston Store, Milwaukee; Feller Co., Harrisburg; Peoples Drug, Norfolk, Va.



*Left:*

**Lumiline Wall Bracket No. 6677**
12 or 18-in. lumiline lamp supplies even, spotless light. This beautiful bracket fixture is furnished with frosted finish, moulded glass front. No. A6677, 14 in. long over all, No. B6677, 20 in. long over all. Widths, 3⅞ in.



**Flush Recessed Light Boxes No. 6210**
Easily installed; has hinged frame; maximum efficiency reflector. Furnished for plaster and other types of ceilings. No lamp spots; ample ventilation diffusing glass, or lenses, 29 standard stock sizes available

# GENERAL ELECTRIC COMPANY

## Designers and Engineers of Floodlighting for Buildings
## Manufacturers of Floodlighting Projectors

GENERAL OFFICE
1 River Road, SCHENECTADY, N. Y.

For Sales Offices, Service Shops and Associated Companies, see File Index for Section on Motors
For Other G-E Products, see File Index

### FLOODLIGHTING IS AN IMPORTANT FACTOR IN MODERN ARCHITECTURE

The well-established place of floodlighting in modern architecture, the artistic beauty of its effects, and its recognized commercial utility have been made possible by the development of projection apparatus that meets every professional and electrical requirement.

These requirements are severe. Projectors must be designed primarily with a view to efficient distribution of light; lens and focusing mechanism must be easily and perfectly adjustable. The unit must be portable, accessible for service, compact, immune to weather, economical. In many cases, the projector cannot be concealed. Hence, it must be characterized by a refinement of design worthy of the structure to be illuminated. It must also deliver the utmost light value that can be obtained from the energy consumed.

General Electric floodlights are so designed and manufactured that they meet—without abatement—every one of these requirements. A silvered-glass reflector of the highest possible efficiency redirects the light beam in the most effective manner; interchangeable lenses, differing in optical design, permit complete control. The copper and bronze of which the projectors are built prevent rust and corrosion. They are totally enclosed; the glass lens, which prevents the entrance of insects and dirt, also protects the hot bulb from breakage that would otherwise result from gusts of rain or flurries of snow. The flexible swivel-and-trunnion adjustment facilitates mounting and positioning; the three-clamp construction of the door allows easy opening and insures positive gasketing when it is closed. Finally, the unit is housed in metal of lasting beauty and shaped into a contour of artistic excellence.

unrivaled laboratory resources, can furnish complete plans and specifications for every type of outdoor floodlighting. Special problems are referred directly to the Illuminating Engineering Laboratory, at Schenectady, for recommendations. In every case the architect can be assured of free expert counsel and sincere co-operation.

Back of this service is a national organization of commercial offices, warehouses, and service shops, which keep the architect in close contact with the manufacturer, regardless of where his floodlighting installation is made. This insures instant servicing. In every district office there is a specialist who keeps in touch at all times with every G-E installation.



Los Angeles Times Building Floodlighted with G-E Novalux Projectors

General Electric manufactures a complete line of all the miscellaneous equipment for outdoor lighting installations. This includes wire and cable, switches, transformers, and projectors, and enables the architect or ultimate purchaser to determine at a glance the complete equipment necessary and to order all the apparatus from one source.

### General Electric Service



Type AL-31 Standard G-E Projector with Lightly Stippled Door Glass

The architect who provides for floodlighting *when a building is designed* is sure that his thought will be faithfully interpreted at night and he obviates structural changes that a future installation might necessitate. To assist him in the technical aspects of floodlighting design, General Electric maintains a nation-wide service of specialists who are ready to co-operate with him in working out the most effective installations for projected buildings, as well as for old structures. This engineering personnel, with its extensive experience and

### Floodlighting Applications

There are many special applications of floodlighting that are of interest to architects. Important among these is the illumination of statues, monuments, and memorials; of park shrubbery, public playgrounds, fountains and swimming pools; of athletic fields and winter sports; of industrial plants, gas filling stations, and construction work. These and many others call for special experience and technical training in order to obtain the best results. Here, again, the services of General Electric specialists are at the free disposal of architects.

# GOODRICH ELECTRIC COMPANY

## Manufacturers of Industrial, Commercial and Floodlighting Equipment

TELEPHONE
Bittersweet 8200

GENERAL OFFICES AND FACTORY
2912 North Oakley Avenue, CHICAGO, ILL.

### Products

Goodrich offers a complete line of porcelain enameled reflectors for indoor and outdoor service; floodlights, mercury vapor lamp and vaporproof fixtures, etc.; as well as reflectors with exclusive mechanical features.

### Diskonect R.L.M. Dome Reflectors

Offered in six sizes from 12 to 20 in. in diameter to accommodate







lamps ranging from 60 to 1500 watts. Porcelain enameled reflector and lamp disconnect from the hood as a complete unit without disturbing the wiring.

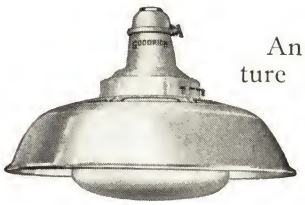


### Goodrich Diskonect

*Left:* A slight lift of the plunger releases reflector and lamp from hood.

*Right:* A snap of the plunger tells it is securely attached.



### Glassteel Diffusers

An efficient general lighting fixture with glass diffusing globe which eliminates sharp shadows, provides a soft, evenly diffused light. Apertures in the top of the reflector permit a part of the light to reach the ceiling.

### Outlet-Box Reflectors

To meet limited headroom conditions. Goodrich standard and shallow dome styles are the closest mounting reflectors on the market. Socket fits standard outlet box. Sizes up to 16-in. diameter for basements, ramp garages, mezzanines, tunnels, etc. See catalog for complete information.







### Keystone Sign Reflectors

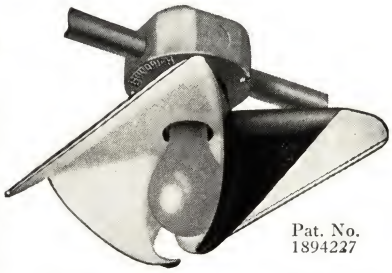
For the lighting of square or rectangular signs. Cuts light to fit form of sign, spreads an even, well diffused light over the entire surface without waste at edges or corners. Lamp burns in normal, vertical position with the Goodrich resilient socket, prolongs life of lamp, reduces maintenance.

### Catalogs

In addition to a general catalog on the complete line, literature is also available covering special lighting equipment for various industrial requirements. Copies may be had upon application to the home office in Chicago.

### The Stocklite

*For Better Stock Bin Illumination*




An exclusive Goodrich product. Because of its ingenious design, reflector throws light to sides to illuminate shelf surfaces from top to bottom while the curved V-shaped flange eliminates aisle glare. Makes it possible to identify small parts numbers, read stock sheets, typewritten orders, etc; with uniform illumination in the aisles. An important improvement in stock bin illumination which speeds up handling—cuts handling costs. Write for folder or see Goodrich general catalog for complete details.

### Mercury Vapor Lamp Fixtures




Offered in styles for mercury vapor lamps and for combination mercury vapor and incandescent lamps. Various sizes available for high, medium and low bay mounting, and for 250 and 400-watt mercury vapor lamps. Fixtures supplied in porcelain enamel and Durak aluminum. See general catalog.

### Floodlights



For illuminating large areas at small cost. Deliver a bright, evenly diffused light for illumination of gasoline stations, athletic fields, parking lots, freight yards, etc. Offered in styles and sizes with a choice of mountings. Write for folder on floodlighting or see Goodrich general catalog for full details.

### Goodrich Standlites



Deliver high intensity of illumination, ideal for gasoline service stations, pump islands, parking lots driveways, entrances, yards, platforms, etc. Complete information on request. Ask for catalog No. 62.

MEMORANDA

FOR

# Modern Lighting




PERMAFLECTORS

PITTSBURGH REFLECTOR COMPANY



TWO decades of manufacturing experience and engineering research form the background for Permaflectors, the modern word for good lighting. In 1916, after much experimental work, we developed a process for coating silvered glass with copper. This process enabled us to absolutely guarantee Permaflectors against weaknesses common to other silvered glass reflectors.

Today, hundreds of thousands of Permaflectors have been in service for ten, fifteen and twenty years—not one out of ten thousand has been reported to us as having the silvered reflecting surface darkened, or the backing crack, check or peel.

The Permaflector line of silvered glass reflectors includes more than 70 designs—a correctly shaped unit for practically every need in the lighting of show windows, cove lighting, direct and indirect lighting, flood lighting and color lighting. There is scarcely any lighting problem which Permaflectors will not help to solve.

# A COMPLETE LIGHTING SERVICE

We want all users of Pittsburgh Permaflectors to get excellent service from the Permaflectors they purchase from us. A glance at the following pages of this catalog will indicate the great variety of reflectors and complete lighting units, we have for various lighting conditions. We realize that it would be almost an impossibility for our customers to be able to select the Permaflector best suited for a particular lighting condition. Having designed and produced the line, our engineers have a thorough knowledge of the proper lighting applications for the various units.

For this reason we offer the services of our engineering department to our customers at no extra cost. When you need lighting, consult our engineering department at Pittsburgh, or any of our field representatives all of whom have a thorough knowledge of lighting needs. Our trained men will make certain that you have the correct Permaflector for your particular requirements. Do not hesitate to make use of this service.

"Pittsburgh" Permaflector

**PITTSBURGH REFLECTOR COMPANY**

**PITTSBURGH, PA.**

FOR SALES OFFICES—SEE BACK COVER

# INDEX ARRANGED ACCORDING TO SERVICE CONDITIONS

## LIGHTING UNITS

**SHOW WINDOW LIGHTING** . . . . . 11-13

The correct lighting of show windows has a marked effect on sales displays. The Permaflector units for show window lighting are designed for all types of show windows from high shallow windows to wide deep windows and provide the correct illumination for all conditions.

**INTERIOR FLOOD LIGHTING** . . . . . 14

Intended as an auxiliary to regular window lighting equipment Permaflector Interior Floods distribute a broad beam of light with a less intense beam center than obtained with Spots.

**INTERIOR SPOT LIGHTING** . . . . . 15

Permaflector Interior Spots provide an effective means of high-lighting with clear or colored light, any portion of the window display on which the display man wishes to focus the attention of the customers. Interior Spots are auxiliary window lighting equipment and are **not intended as the sole source** of illumination.

**COVE LIGHTING** . . . . . 16-17

Among the Permaflectors used for cove lighting are the P Type which are designed for use with lamps in the horizontal position and find their greatest use for indirect lighting in coves. They are also used in shallow indirect lighting bowls employing a number of lamps radiating horizontally from a center body carrying the sockets.

**INDUSTRIAL LIGHTING** . . . . . 18

Permaflector Industrial Lighting Units are especially designed to meet exceptional service conditions such as excessive dust, high mounting, etc.

**BUILT-IN DIRECT LIGHTING** . . . . . 19

Particularly adapted for high intensity illumination on counters or show cases with diminished intensity in the aisles. Exceptionally good for locations having low ceiling heights, where a surface mounted lighting unit constitutes an obstruction.

**PERMAFLECTOR COMPLETE LIGHTING FIXTURES** . . . . . 27-31

Permaflector Lustroliers and Luminaires are designed primarily for commercial service such as the lighting of stores and offices. Fixtures are available for direct and indirect illumination, depending upon the conditions of service.

**THEATRE LIGHTING EQUIPMENT** . . . . . 26

Permaflector Foot Lights and Border Lights are applicable to all types of theatre lighting requirements. Permaflector Color-Lites may be employed with either foot or border lights if desired.

**PERMAFLECTORS WITH WIDE RANGE OF APPLICATION** . . . . . 20-25

Permaflectors shown on these pages may be used with spot or flood lights, for direct lighting service, cove lighting, wall case lighting and many other requirements.

## ACCESSORIES

**Color-Lites** . . . . . 32

**Louvers**
**Roundels**
**Flush and Plaster Rings**
**Spill Shields** . . . . . 33

**Knockout Strip and Fittings** . . . . . 34

**Easy-to-Install Conduit**
**Adapters**
**Assemblies** . . . . . 35

# TYPICAL LIGHTING PROBLEMS

## Fundamentals of Good Lighting

Good lighting, regardless of the job, requires just five things:

(1) Proper size and type of lamp
(2) Correct location and spacing
(3) Good reflectors
(4) Correct design
(5) Correct installation

It is the purpose of this catalog to suggest the correct answer to these questions, as to as wide a variety of lighting problems as may be possible. However, we realize that frequently requirements create problems which are not covered here. Where this is the case our engineering department will be glad to help solve your problem.

## Approximate Absorption of Reflecting Surfaces

| | Absorption Loss |
|---|---|
| Polished silver, unprotected, new (darkens rapidly) | 5% |
| Silver surface, plated on glass | 8% |
| Silver plated glass | 10% |
| Silver surface lacquered, **New** | 25% |
| Silver surface, lacquered, **Old,** as high as | 65% |
| Nickel, freshly polished (tarnishes rapidly) | 40% |
| Common aluminum and alloys, more than | 40% |
| Stainless steel, more than | 60% |

From this tabulated data—the particular efficiency and adaptability of silver-plated glass is established. But it is not sufficient to select any silver-plated glass reflector. Unless the silver-plating be properly protected, the silvered reflecting surface will gradually deteriorate, until it has no more value than aluminum, stainless steel, or other similar surfaces.

There is one silvered glass reflector which does stay bright—the reflecting surface of which does not discolor.

Permaflectors stay bright—at the end of ten, fifteen, twenty-five or thirty years, you will find the reflecting surface of Permaflectors just as bright, just as efficient, as when first placed in service.

# A MODERN FOOD STORE





### The Problem—

A little over a year ago Strickland's, at Oak Park, Illinois, decided to modernize their store. Situated in the midst of many ultra-modern and well-designed stores, most of which were branches of some of Chicago's smart establishments, Strickland's while in no sense old-fashioned or obsolete, was not exactly in keeping with its new surroundings. The Store Engineering Company, of Chicago, were engaged to plan this new store and were given a free hand. Special attention was given to lighting.

### The Solution—

The general lighting of the store is produced by the indirect method (see illustration). A metal trough, painted on the outside to match the interior color scheme, is suspended from the ceiling, running the entire length of the store. Installed within the trough are fifty-six Pittsburgh Permaflectors No. P-76 (see page 16), mounted on Pittsburgh "Easy-to-Install" Conduit No. 2-A (see page 35), with openings spaced on 12 in. centers and equipped with Angle Sockets No. 3 and 2¼" Form "L" Holders (see page 35).

The Permaflectors are equipped with 100-Watt lamps, producing a fine, soft, evenly distributed illumination throughout the store, averaging approximately 20 foot-candles intensity.

Located in the right front of the store and extending along the right wall for perhaps twenty-five feet, is the fruit and vegetable department. Auxiliary direct lighting is employed here, to attract attention to a fine display of fruits and vegetables.

Directly above the produce display is a cornice in which are recessed eleven Pittsburgh Permaflectors No. 55 (see page 11), fitted with Flush Mounting Rings No. 55 (see page 33), and equipped with Permaflector Concentric Louvres No. FM-55-C (see page 33).

The windows are illuminated by sixteen Pittsburgh Permaflectors No. 54 (see page 11), mounted flush in the ceiling, fitted with Flush Mounting Rings No. 54 (see page 33), and equipped with Parallel Louvres No. FM-54 (see page 33).

The results of this installation have attracted considerable attention, in fact Strickland's has been referred to as "The Food Store of Tomorrow."

# SOLVED WITH PERMAFLECTORS

## A MODERN SCHOOL

### The Problem—

The lighting of rural schools has, for years, presented a major problem in most small or medium size communities. Light has usually been uncertain, the sun or oil lamps frequently providing the only illumination. Even in those schools where electric lighting systems have been installed, really efficient illumination is rare. Most children, when they begin school, have normal vision. By the time they reach the Sixth Grade, 9% to 20% have defective vision. Among High School students, 25% to 30% have defective vision. Sunshine throughout the 48 States during the ten school months amounts to only 59% which means that 41% of school lighting must be artificial if satisfactory conditions are to be provided. The present cost per pupil enrolled in elementary and secondary schools in a typical city amounts to only 33 cents—less than one cent per pupil. If the eyesight of children is to be protected, school authorities must be sold on proper lighting.

One instance in which the poor lighting conditions have been successfully remedied is in East Allen Township, Northhampton County, Pennsylvania. There are five schools in this township and they all had faulty illumination.





### The Solution—

In all of these schools the ceilings are of the wainscoting type rather than plaster, presenting uneven surfaces making the accomplishing of a lighting job doubly hard, but this was remedied to a large extent by the application of white paint. After a number of demonstrations, the school board selected Permaflector Luminaires No. B-51 (see page 27) equipped with 500 watt lamps. The second illustration at the right shows the new lighting in one of the five schools in this township.

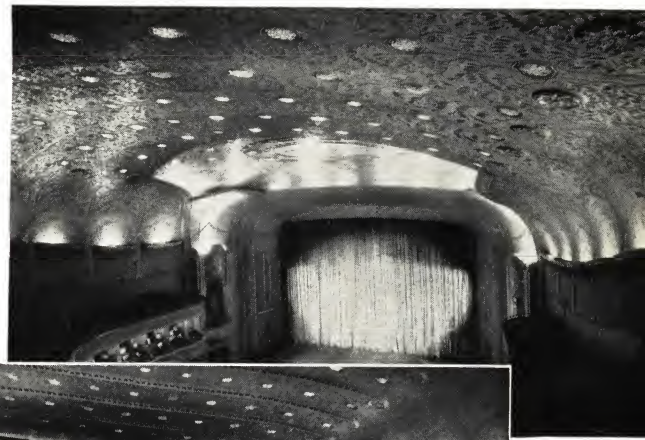
The first picture shows pupils at work under correct lighting, in the "Sight Saving" classroom in Niagara Falls, N. Y., schools.

The Pittsburgh Reflector Company's Engineering Department will gladly cooperate with the architect in the selection of the proper lighting equipment for school installations.

## A MODERN AUDITORIUM

### The Problem—

A combination of music and light, the colors and graduations of the latter being scheduled to follow the musical score and to heighten the emotional reaction by visual as well as auditory means and the use of colored light, as an independent decorative medium, stimulated the architects, Walker and Weeks, in the development of the lighting scheme of Severance Hall in Cleveland.





### The Solution—

The Main Auditorium lighting is divided into direct and tonal indirect lighting. The direct lighting units one above each of the flower pattern grilles in the ceiling, vary from No. C-500A Permaflectors with 300 watt lamps at the front, to No. I-60's (see page 22) at the rear, with 60 watt lamps. Each of these is mounted on top of a galvanized iron enclosure, 2 ft. 9 in. high and projects its light vertically downward through louvres 9 in. high which permits a beam spread of about 30 degrees and gives a fairly uniform intensity of about 9 foot-candles at seat level. About two-fifths of these units have daylight lamps, and the others, clear lamps, each group separately forming a decorative pattern and separately controlled. The orchestra is lighted by similar units above the ceiling of the "permanent set."

Above the proscenium arch, extending around each side to the light beam, and at a lower level, extending completely around side and rear walls, are coves containing tonal indirect lighting units, in general No. WS-200 Permaflector Interior Spots with 200 watt lamps and No. 2 Color lites (see page 32) are used.

The "light beam," really a continuous booth extending across above the ceiling, contains, for the present, eight 1000 watt projectors. Eight 1000 watt spots are placed in the center and ends of the balcony rail. These, as well as the spots in the light beam, have four color boomerangs remotely controlled from the light console.

# TYPICAL INDUSTRIAL AND

## A MODERN OFFICE





### The Problem—

The Oliver Building was erected about twenty years ago. It is located in the "Golden Triangle" of downtown Pittsburgh and despite its age, today ranks with any of the newer buildings from the standpoint of rentability. Illumination has been a major factor in keeping the offices rented. About fifteen years ago the most efficient office lighting was installed. In 1932, however, the building was again completely refixtured and once more takes rank with the best illuminated office buildings. Having found it desirable to change the lighting equipment twice during the past twenty years, the management of the Oliver Building made a careful investigation before deciding on the latest installation. This investigation extended over a period of two years. Several important conclusions determined the decisions reached:

(1) Tenants were entitled to an average of ten to fifteen foot-candles on the office desks.

(2) To secure these intensities, higher wattage incandescent lamps were required.

(3) That the use of higher wattage lamps leads to undesirable glare unless steps are taken to prevent it.

(4) For the Oliver Building, indirect illumination would be the most economical and efficient means of eliminating glare.

(5) That indirect illumination would have the advantage of being diffuse, thus softening the shadows and providing more uniform illumination over the desk area.

### The Solution—

The results of this exhaustive investigation led to the decision to install specially designed indirect lighting fixtures throughout the building. The fixtures are equipped with individual silvered-glass reflectors made by the Pittsburgh Reflector Company. These new fixtures are so designed that it is possible to double their capacity by merely changing the socket position. This arrangement makes every allowance for further advances in lighting standards.

## A MODERN BANK





### The Problem—

Like many other places of business and gathering, the seeming first thought in designing the lighting system of a bank used to be the use of one or more massive and ornate chandeliers which presented a glaring mass of electric lamps, but did not afford good illumination. Bank lighting, even today, has been seriously neglected especially in many of the older banks.

### The Solution—

The two illustrations at the left, of the Forbes and Murray branch, Peoples Pittsburgh Trust Co., Pittsburgh, Pa., show how modern lighting improves the appearance as well as making for greater efficiency. As a general rule, it is agreed that indirect illumination is best for bank interior lighting. This may take the form of artificial lighting through skylights; indirect lighting from the top of bank cages; indirect lighting from coves, wall urns, pedestals, etc., thus eliminating suspended fixtures; indirect lighting by means of suspended opaque or illuminated bowls; or combination direct-indirect lanterns and similar fixtures. These five methods offer the most practical and efficient balance of the aesthetic and utilitarian. The principal interior lighting for the bank illustrated is from asymetric reflectors (Permaflectors No. 54) recessed in the window ledges. The exterior is lighted by the use of asymetric Permaflectors in metal boxes.

Obviously, it is not possible to fully describe the various lighting arrangements which will provide the ultimate in illumination in this limited space; for further details concerning bank or public building lighting, write direct to the main office or any of our representatives listed on the back cover.

# COMMERCIAL LIGHTING PROBLEMS

## A MODERN FACTORY

### The Problem—

The most important tool in any industrial plant is the lighting equipment. Early in 1934 the General Steel Castings Corporation, located at Eddystone, Pa., (see picture at right) decided to relight their plant. After a careful study of the lighting problem, taking into consideration the conditions to be met, it was decided that there was not a standard industrial lighting unit on the market that would meet the requirements.

The old lighting consisted of spun aluminum reflectors, mounted on 25 ft. x 22 ft. centers at a height of 50 ft., above traveling cranes. The lamp wattages varied from 500 watts to 1000 watts, producing a lighting intensity of about one foot-candle maximum, and in most cases from ½ to ¾ of a foot-candle. This was very inadequate lighting for a modern industrial plant.



### The Solution—

It was finally decided that Permaflector No. F-1001 was the ideal silver-plated glass reflector for the job having a very concentrated beam, and with this very high mounting, proved to be the correct answer to the problem. On an application of this sort, it was deemed advisable to completely enclose the reflector and lamp in a metal housing because of the dust and soot from oil burners when running carloads of castings into smelting furnaces.

The Permaflector Engineering Department, in cooperation with Hopkins Brothers, Philadelphia representatives, and Mr. Brainerd of the Philadelphia Electric Company, developed Permaflector C-1000-S (see page 18), a completely enclosed unit for this particular application. A trial installation of 14 of these new Permaflectors was installed 50 ft. above the floor, spaced 32 ft. on centers. The results were so gratifying that 29 additional units were ordered immediately to complete the installation. Illumination tests after the trial installation revealed an average intensity of 13-foot candles. Quite an improvement over the old lighting.

The illustration lower right shows the application of Permaflector No. E-225, low mounted over machines in a hosiery mill.



## A MODERN DEPARTMENT STORE

### The Problem—

When the plans were drawn for the building that houses the Eastern Store in Huntington Park, California, it was necessary to have crossbeams 18 in. deep and 12 in. wide approximately 20 ft. apart and similar beams running the length of the building about 12 in. deep and 10 in. wide, approximately 7½ ft. apart. It was decided to leave these beams in the open.

When the electrical layout was made it was found necessary to allow for two fixtures in each of the small bays made by the beams. This made so many lighting fixtures as to spoil the appearance.




### The Solution—

Furring down the ceiling was suggested as a means to remedy the situation, but objections were raised because of the cost. Tests of various lighting equipment were made and flush units equipped with Permaflectors was the solution. The desired illumination could be obtained with two-thirds as many fixtures as originally specified and on checking the cost of the wiring and fixtures under both the original plan and the recommendations, it was found that the savings would practically pay for the suspended ceiling. Accordingly, the ceiling was suspended and Pittsburgh Permaflectors were installed. As shown in the illustrations at the right, the Eastern store has no windows at all on the second and third floors, in fact, the only daylight that reaches the interior of the building is the little that is admitted through the glass in the front and side doors on the first floor. All lighting is from Permaflectors used with flush fixtures and from Pittsburgh indirect fixtures. The average intensity throughout the store is 20 foot-candles. The display windows are equipped with 150 No. 85 and No. 990 Permaflectors.

The Eastern people are so satisfied that they will use the same equipment in all their future stores.



# WHAT IS MEANT BY

PERMAFLECTORS are the silver-plated glass reflectors with the **Permanent** reflecting surface made only by the Pittsburgh Reflector Company.

When Type "C" lamps were introduced in 1915, trouble began for manufacturers and users of silvered glass reflectors.

The greater heat of the new lamp caused the backing to crack, check or peel, and the silvered reflecting surface to tarnish or darken.

After a long series of experiments we perfected a process which we have thus far kept secret, whereby we lay a thin sheet of copper over the silver plating. This seals the silver between the glass and the copper.

Like a copper roof—it is a lifetime job.

The silver stays bright.

It is not sufficient that a reflector installation be efficient when first installed.

Initial effectiveness of lighting is important, of course, but it is just as important that this efficiency be maintained.

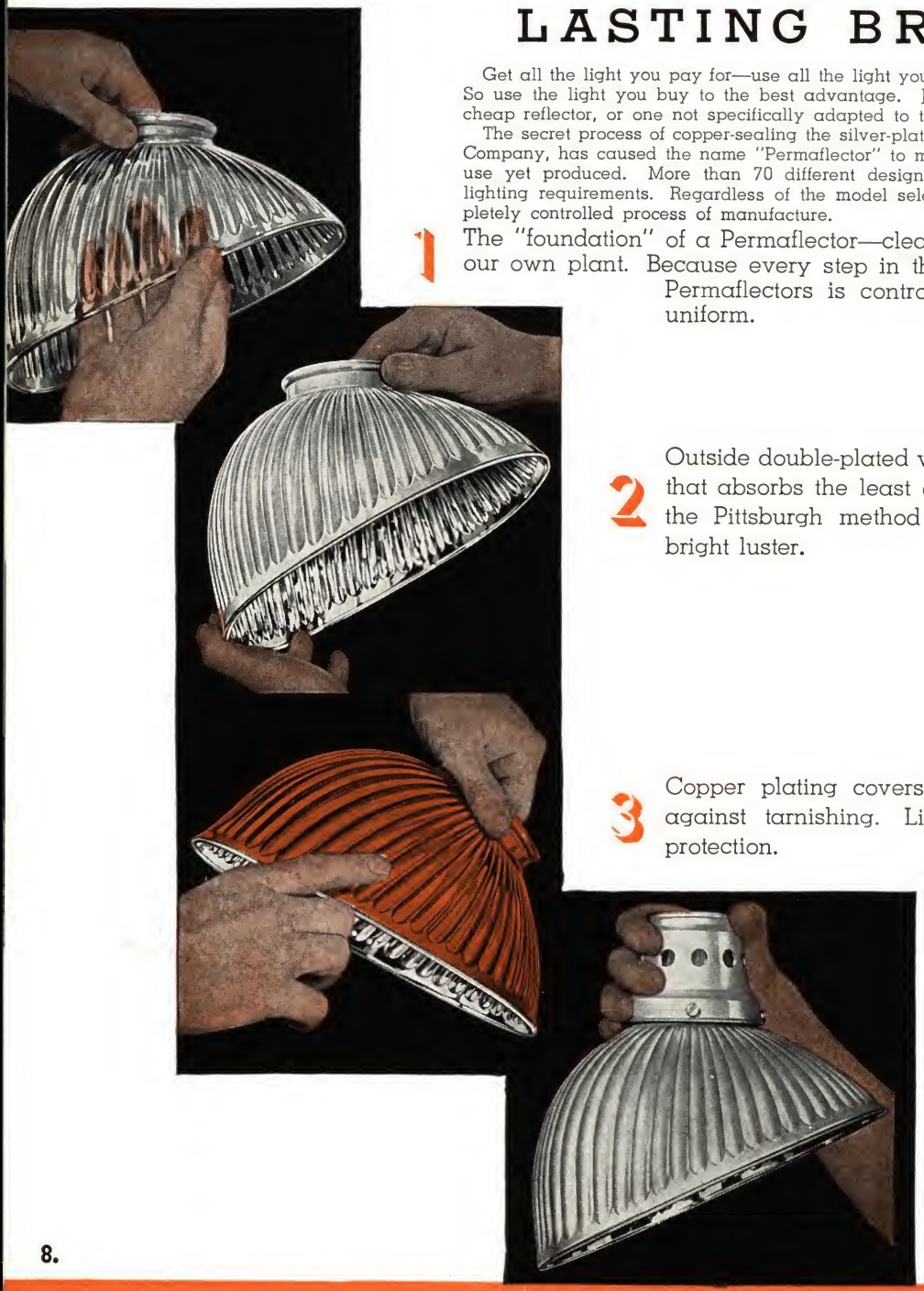
Not only is the "Pittsburgh" ten-year guarantee an agreement to replace any goods of defective manufacture—but the twenty-one-year history of perfection in manufacture is assurance that replacement will not be needed; that the initial lighting satisfaction will be fully maintained throughout a period of a great many years and that the lighting installation will cost the user least per year.

The following steps show how Permaflectors are made.

## 4 REASONS FOR PERMAFLECTORS LASTING BRIGHTNESS

Get all the light you pay for—use all the light you get. Light, like water and gas, costs money. So use the light you buy to the best advantage. Just as a cheap gas burner wastes gas, so a cheap reflector, or one not specifically adapted to the purpose intended, wastes electricity.

The secret process of copper-sealing the silver-plated glass developed by the Pittsburgh Reflector Company, has caused the name "Permaflector" to mean the most efficient reflector for commercial use yet produced. More than 70 different designs afford a range wide enough to meet any lighting requirements. Regardless of the model selected, uniform quality is assured by our completely controlled process of manufacture.



1 The "foundation" of a Permaflector—clear, sparkling Crystal Glass, blown in our own plant. Because every step in the manufacture of the glass used in Permaflectors is controlled by us, the results are always uniform.

2 Outside double-plated with pure silver, the reflecting surface that absorbs the least amount of light. When protected by the Pittsburgh method it retains permanently its original bright luster.

3 Copper plating covers the silver, sealing it permanently against tarnishing. Like a copper roof it is a lifetime protection.

4 A special silver colored satin finish, attractive and distinctive is properly applied over the copper coating. This finish of neutral tone harmonizes admirably with all surrounding materials and fitments.

# PERMAFLECTOR LIGHTING

## Comparative Costs of Good and Bad Lighting

There is a difference in reflector efficiency just as there is a difference in automobile efficiency.

In reflectors there is the cost-to-use as well as the cost-to-buy. Reflectors are not standardized. There are many different kinds in the United States—rated good, poor, fair, etc., each has its price. You can pay as little or as much as you like. But making allowances for bargain-driving—you'll get just about what you pay for. You cannot get more out of a reflector, in the way of effective light distribution, continuous light economy, and year-after-year service than was originally put there by the maker. When buying reflectors the most important consideration is **not the price, but the service.**

The price-to-buy may be attractively low, but the cost-to-use expensively high.

If, for every dollar which the merchant spends for current, he gets only 60 cents worth of light (because 40 cents is wasted by poor reflectors) wherein lies the economy of a poor reflector?

If the merchant can buy a good reflector for $4.50 and it gives brilliant, untarnished service for 15 years—(we know of many in their 20th year of service)—the cost-per-year is only 30 cents, or 2½ cents per month!

If a price reflector can be bought for $1.50, and it lasts for 3 years, (many are discarded long before that time because of discoloration, checking, peeling, etc.), the cost-per-year is 50 cents, or 4⅙ cents per month. Again the cheap reflector costs too much.

The cheap reflector takes profit. It can not make profit.

## Thorough Tests Under Severe Conditions

Before a Permaflector may be wrapped and packed —before the trade-mark label may be attached—it is subjected to a most severe heating test.

It is put in the oven at 350° F. and this heat is maintained for several hours. This is a necessary process in the making of a Permaflector, and is of itself a severe test.

It is a simple job for you to test a Permaflector under extremely severe conditions in a gas or electric oven equipped with a thermometer. Put the reflectors you wish to test into an oven; heat them to 400 degrees; keep them at that temperature for thirty minutes; then allow them to cool.

Continue this alternate heating and cooling and you will soon find that the Permaflector is the one that will come through with the backing and the reflecting surface undamaged. This is positive proof of the superiority of Permaflector.

## A Few Typical Installations

### Department Stores

| | |
|---|---|
| Gimbel Brothers | New York City |
| Marshall Field & Co. | Chicago, Ill. |
| Frederick & Nelson | Seattle, Wash. |
| Robert Simpson Co., Ltd. | Toronto, Canada |
| Wanamaker's | Philadelphia, Pa. |

### Industrial Buildings

| | |
|---|---|
| International Harvester Co. (Sales & Service) | Indianapolis, Ind. and Winnipeg, Canada |
| General Steel Castings Corp. | Eddystone, Pa. |
| Carnegie-Illinois Steel Co. | Pittsburgh, Pa. |
| American Sheet & Tin Plate Co. | Gary, Indiana |
| Glenn L. Martin Company | Baltimore, Md. |

### Auditoriums

| | |
|---|---|
| Severance Hall | Cleveland, Ohio |
| Roosevelt High School | Washington, D. C. |
| Fort Slocum | New Rochelle, N. Y. |
| Women's Contemporary Club | White Plains, N. Y. |
| Carmichael's High School | Carmichaels, Pa. |

### Schools and Colleges

| | |
|---|---|
| University of Washington | Seattle, Wash. |
| Columbia University | New York City |
| West Point M. A. Gymnasium | West Point, N. Y. |
| Howard University | Baltimore, Md. |
| University of Vermont, Southwick Memorial | Burlington, Vt. |

### Office Buildings

| | |
|---|---|
| Oliver Building | Pittsburgh, Pa. |
| Archives Building | Washington, D. C. |
| Merchandise Mart | Chicago, Ill. |
| Manufacturers Trust Co. | New York City |
| New Interior Department Building | Washingon, D. C. |

### Other Installations

| | |
|---|---|
| Horace C. Henry Art Gallery | Seattle, Wash. |
| Pittsburgh Equitable Meter Co. | Pittsburgh, Pa. |
| Bronx Zoological Garden | New York City |
| Royal Ontario Museum | Toronto, Canada |
| American Museum of Natural History | New York City |

## A 10 Year Guarantee and a 21 Year Record

While there are guarantees and guarantees, a guarantee backed by twenty-one years of practical experience means something. When a customer purchases Permaflectors, he is less interested in the assurance that a responsible manufacturer will replace the equipment if it turns out to be defective than he is in the comfort of this conviction that the product is so good that it will never have to be replaced, a conviction backed up by twenty years of nearly faultless production.

"We unconditionally guarantee to the original purchaser that the backing on Pittsburgh silver plated glass reflectors will not crack, check or peel, and that the silvered reflecting surface will not tarnish, for a period of ten years from date of purchase from us."

If a Permaflector does not make good, we do, but from the 21-year record of almost perfection in the manufacture of silver plated glass reflectors you know that there is not one chance in ten thousand that any of the Permaflectors you purchase will go bad.

# SIMPLIFIED SELECTION OF THE CORRECT TYPE OF PERMAFLECTOR

THE task of selecting a reflector for a particular need is not always as simple as it may at first appear. There are a great number of factors to take into consideration if the correct reflector for a particular job is to be chosen. On the following pages we have endeavored to make the task of selection as simple as possible—but should there be the slightest doubt in your own mind concerning the type of reflector best suited for your requirements, do not hesitate to call on our engineering department. It will be noted that we show the distribution curve for each reflector, illustrating its performance. For window reflectors the **full** line curve gives distribution in the plane perpendicular to the plate glass, dotted curve is for the plane parallel with the glass. Select the distribution that best fits the window.

## The Factors to Be Considered

In the selection of lighting equipment for any usage, regardless of the problem four pertinent factors must be considered. We give these four factors as applied to a single problem—show window lighting. It is easily apparent that these factors apply similarly in other instances:

(1) To conceal the light source and thus avoid glare.
(2) To so locate lamps as to illuminate the display.
(3) To control the light—gathering up the light that would, with a bare lamp, be wasted on the ceiling or sidewalk, and re-direct it, concentrating it evenly upon the display plane.
(4) To use plenty of light, not merely to make the display visible, but to attract the passers-by.

Actually these four factors are simple, but it is easy to see how easily a violation of these factors can defeat the work of the sales display. Design the window with best lighting results as the objective.

## Show Window Lighting

Permaflectors for show window lighting may roughly be classified according to the size of the window in which they are to be employed. For example: To light a shallow window 4 to 9 ft. high, Permaflector No. 55 (see opposite page) is recommended in most instances. By consulting the distribution curve, it is apparent why this Permaflector is recommended. The illustration showing installation serves to show one method of mounting that may be employed. However, this mounting need not be followed in every case as any of the other methods of installation may be employed with equal effectiveness under normal conditions. For unusual applications we recommend consulting our engineering department. Use louvers in corner and island windows.

## Interior Floods and Spots

The use of Interior Floods or Interior Spots is frequently recommended to supplement other forms of lighting already in use. Interior Floods give a somewhat broader beam of light with less intense beam center than do Interior Spots and should be employed accordingly. The use of the distribution chart opposite each flood and spot shown will make its range of usefulness instantly apparent. It is frequently advisable to make use of Permaflector Colorlites (see page 32), when employing Interior Floods or Spots for a particular need. With Interior Spots use the spill shield to confine the beam.

## Indirect Lighting

Permaflectors are available for indirect lighting in the form of complete fixtures known as Lustroliers and Luminaires (see pages 27 to 31). In addition Permaflectors are available for the special adaptation of indirect lighting, commonly known as cove lighting. Cove lighting has all of the advantages of other forms of indirect lighting plus the additional advantage of entirely concealing all lighting fixtures as well as the light source. Permaflectors offer a large number of units for either of the above forms of indirect lighting, and in addition offer the services of their engineering department when it becomes necessary to design a special unit for an unusual application. It's the Permaflector that controls the light. The enclosure may be widely varied.

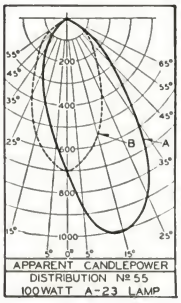
## Industrial and Direct Lighting

Permaflectors offer a variety of industrial lighting units (see page 18) to meet all conditions of service. The distribution curves shown will simplify the task of selecting the particular type of Permaflector needed to meet your particular problem. In addition to these industrial units, Permaflectors are also available for direct lighting where a built-in unit is preferable (see page 19). These built-in units may be recessed and louvered as necessary to conceal the lights as completely as possible.

# REPRESENTATIVE PERMAFLECTORS FOR SHOW WINDOW LIGHTING

## SHALLOW WINDOWS

### 4 to 9' High





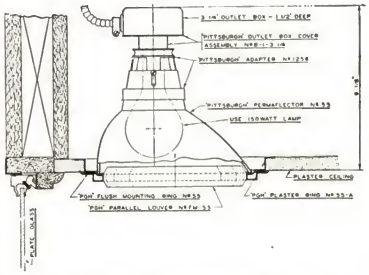

**PERMAFLECTOR NO. 55**

**Application:** For windows with medium trim; island windows; or windows with upper portion of background of glass. Also for other display lighting, churches, indoor sports, and indirect cove lighting.

**SELECTION DATA**

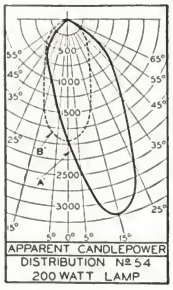
**Spacing Recommended:** 12 in. on centers.
**Bottom Opening:** Circular, 8½ in. diameter.
**Lamp Size:**
100 watt A-23, Adapter compressed.
150 watt A-25, Adapter extended.
**Mounting:** May be mounted on Conduit (Nos. 1, 61 or Knockout Strip KO-1) or Outlet Box Cover Assembly (Nos. B-1-3¼ or B-1-4).
**When Recessed:** *In plaster ceiling*—use Plaster Ring, No. 55-A with Flush Mounting Ring, No. 55.
*In ceiling not plastered* —use Flush Mounting Ring, No. 55.
**Louvers:** *For External Mounting* — Nos. EM-55 or EM-88-CA.
*For Recessed Mounting* — Nos. FM-55 or FM-88-CA (use with Flush Mounting Ring, No. 55).

**INSTALLATION DIAGRAM**



**No. 55 with Plaster Ring, Flush Mounting Ring and Louver**
Minimum spacing 11 in. on centers.

### 7 to 10' High

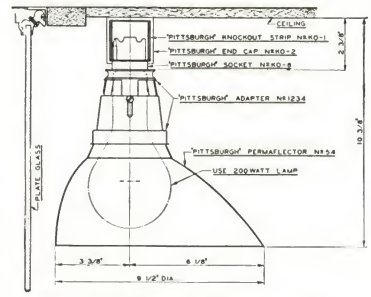





**PERMAFLECTOR NO. 54**

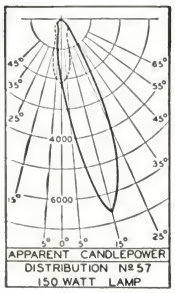
**Application:** For windows with medium trim; island windows; or windows with upper portion of background of glass.

**Spacing Recommended:** 12 in. on centers.
**Bottom Opening:** Circular, 9½ in. diameter.
**Lamp Size:**
150 watt A-25, Adapter compressed.
200 watt PS-30, Adapter extended.
**Mounting:** May be mounted on Conduit (Nos. 1, 61 or Knockout Strip KO-1) or Outlet Box Cover Assembly (Nos. B-1-3¼ or B-1-4).
**When Recessed:** *In plaster ceiling*—use Plaster Ring, No. 54 with Flush Mounting Ring, No. 54.
*In ceiling not plastered* —use Flush Mounting Ring, No. 54.
**Louvers:** *For External Mounting* — Nos. EM-54 or EM-99-CA.
*For Recessed Mounting* — Nos. FM-54 or FM-99-CA (use with Flush Mounting Ring, No. 54).



**No. 54 General Arrangement**
Minimum spacing 10½ in. on centers.

## HIGH and VERY SHALLOW WINDOWS

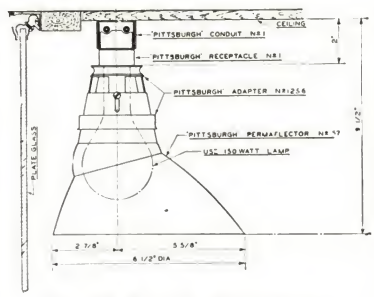




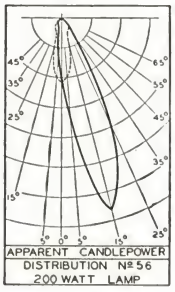

**PERMAFLECTOR NO. 57**

**Application:** For windows having height 2 to 3 times the depth; or windows in which display is placed low—such as jewelry, etc.

**Spacing Recommended:** 12 in. on centers.
**Bottom Opening:** Circular, 8½ in. diameter.
**Lamp Size:**
100 watt A-23, Adapter compressed.
150 watt A-25, Adapter extended.
**Mounting:** May be mounted on Conduit (Nos. 1, 61 or Knockout Strip KO-1) or Outlet Box Cover Assembly (Nos. B-1-3¼ or B-1-4).
**When Recessed:** *In plaster ceiling*—use Plaster Ring, No. 55-A with Flush Mounting Ring, No. 55.
*In ceiling not plastered* —use Flush Mounting Ring, No. 55.
**Louvers:** *For External Mounting* — Nos. EM-55 or EM-88-CA.
*For Recessed Mounting* — Nos. FM-55 or FM-88-CA (use with Flush Mounting Ring, No. 55).



**No. 57 General Arrangement**
Minimum spacing 9 in. on centers.

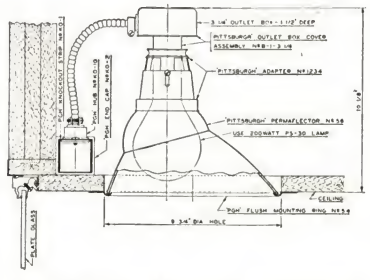





**PERMAFLECTOR NO. 56**

**Application:** For windows having height 2 to 3 times the depth; or windows in which display is placed low—such as jewelry, etc.

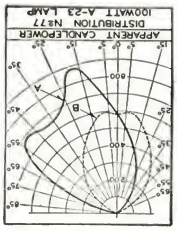
**Spacing Recommended:** 12 in. on centers.
**Bottom Opening:** Circular, 9½ in. diameter.
**Lamp Size:**
150 watt A-25, Adapter compressed.
200 watt PS-30, Adapter extended.
**Mounting:** May be mounted on Conduit (Nos. 1, 61 or Knockout Strip KO-1) or Outlet Box Cover Assembly (Nos. B-1-3¼ or B-1-4).
**When Recessed:** *In plaster ceiling*—use Plaster Ring, No. 54 with Flush Mounting Ring, No. 54.
*In ceiling not plastered* —use Flush Mounting Ring, No. 54.
**Louvers:** *For External Mounting* — Nos. EM-54 or EM-99-CA.
*For Recessed Mounting* — Nos. FM-54 or FM-99-CA (use with Flush Mounting Ring, No. 54).



**No. 56 Flush Mounting Arrangement**
Minimum spacing 12 in. on centers.

# REPRESENTATIVE PERMAFLECTORS

DEEP WINDOWS





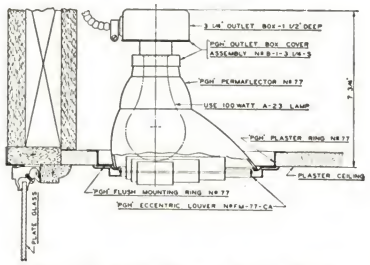

## PERMAFLECTOR NO. 77

**Application:** Illuminates full height of background without sharp cut-off of more concentrating types. Also for indirect lighting from wall urns, coves, columns and indirect floor lamps.

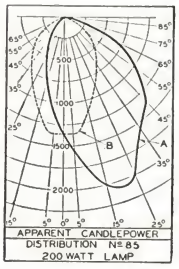
**SELECTION DATA**

**Spacing Recommended:** 12 in. on centers.
**Bottom Opening:** Circular, 7 in. diameter.
**Lamp Size:**
100 watt A-23.
**Holder:** 2¼ in. Form "S".
**Mounting:** May be mounted on Conduit (Nos. 1, 61 or Knockout Strip KO-1) or Outlet Box Cover Assembly (Nos. B-1-3¼-S or B-1-4-S).
**When Recessed:** *In plaster ceiling*—use Plaster Ring, No. 77 with Flush Mounting Ring, No. 77.
*In ceiling not plastered* —use Flush Mounting Ring, No. 77.
**Louvers:** *For External Mounting* — Nos. EM-77 or EM-77-CA.
*For Recessed Mounting* — Nos. FM-77 or FM-77-CA (use with Flush Mounting Ring, No. 77).

**INSTALLATION DIAGRAM**




**No. 77 with Plaster Ring, Flush Mounting Ring and Louver**
Minimum spacing 9¾ in. on centers.

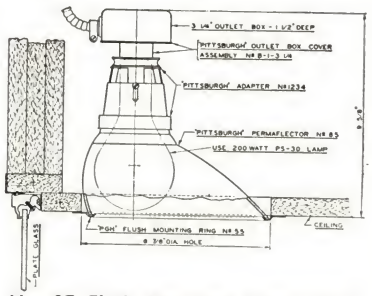





## PERMAFLECTOR NO. 85

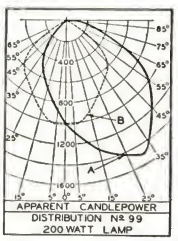
**Application:** Illuminates full height of background without sharp cut-off of more concentrating types. Also for indirect lighting from wall urns, coves, columns and indirect floor lamps.

**Spacing Recommended:** 12 in. on centers.
**Bottom Opening:** Circular, 8½ in. diameter.
**Lamp Size:**
150 watt A-25, Adapter compressed.
200 watt PS-30, Adapter extended.
**Mounting:** May be mounted on Conduit (Nos. 1, 61 or Knockout Strip KO-1) or Outlet Box Cover Assembly (Nos. B-1-3¼ or B-1-4).
**When Recessed:** *In plaster ceiling*—use Plaster Ring, No. 55-A with Flush Mounting Ring, No. 55
*In ceiling not plastered* —use Flush Mounting Ring, No. 55.
**Louvers:** *For External Mounting* — Nos. EM-55 or EM-88-CA.
*For Recessed Mounting* — Nos. FM-55 or FM-88-CA (use with Flush Mounting Ring, No. 55).




**No. 85 Flush Mounting Arrangement**
Minimum spacing 10½ in. on centers.

DEEP WINDOWS

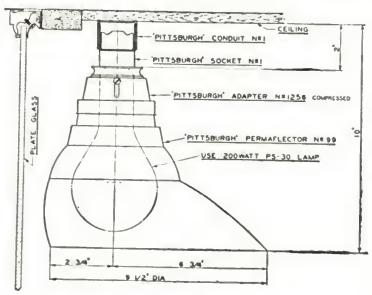




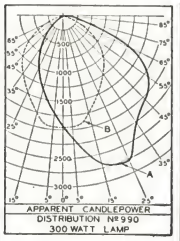

## PERMAFLECTOR NO. 99

**Application:** Illuminates full height of background without sharp cut-off of more concentrating types. Also for indirect lighting from wall urns, coves, columns and indirect floor lamps.

**Spacing Recommended:** 12 in. on centers.
**Bottom Opening:** Circular, 9½ in. diameter.
**Lamp Size:**
200 watt PS-30, Adapter compressed.
**Mounting:** May be mounted on Conduit (Nos. 1, 61 or Knockout Strip KO-1) or Outlet Box Cover Assembly (Nos. B-1-3¼ or B-1-4).
**When Recessed:** *In plaster ceiling*—use Plaster Ring, No. 54 with Flush Mounting Ring, No. 54.
*In ceiling not plastered* —use Flush Mounting Ring, No. 54.
**Louvers:** *For External Mounting* — Nos. EM-54 or EM-99-CA.
*For Recessed Mounting* — Nos. FM-54 or FM-99-CA (use with Flush Mounting Ring, No. 54).




**No. 99 General Arrangement**
Minimum spacing 10½ in. on centers.

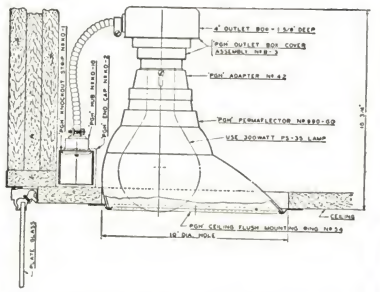





## PERMAFLECTOR NO. 990

**Application:** Illuminates full height of background without sharp cut-off of more concentrating types. Also for indirect lighting from wall urns, coves, columns and indirect floor lamps.

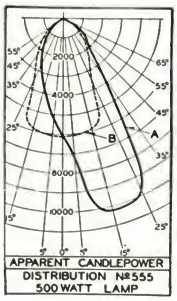
**Spacing Recommended:** 12 in. on centers.
**Bottom Opening:** Circular, 9½ in. diameter.
**Lamp Size:**
300 watt PS-35, any position.
500 watt PS-40, for indirect lighting, *base down only.*
**Mounting:** May be mounted on Conduit (No. 6) —in which case discard Outlet Box Cover.
**When Recessed:** *In plaster ceiling*—use Plaster Ring, No. 54 with Flush Mounting Ring, No. 54.
*In ceiling not plastered* —use Flush Mounting Ring, No. 54.
**Louvers:** *For External Mounting* — Nos. EM-54 or EM-99-CA.
*For Recessed Mounting* — Nos. FM-54 or FM-99-CA (use with Flush Mounting Ring, No. 54).




**No. 990 Flush Mounting Arrangement**
Minimum spacing 12 in. on centers.

# FOR SHOW WINDOW LIGHTING

## SHALLOW WINDOWS — 8 to 16' High





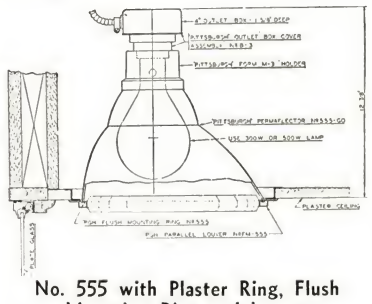

### PERMAFLECTOR NO. 555

**Application:** For shallow windows and island windows. Also serves the various applications of No. 55 and No. 54 where a higher wattage is required because of greater elevation.

**SELECTION DATA**

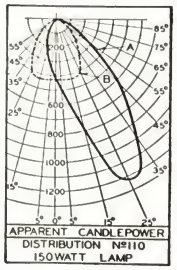
**Spacing Recommended:** 15 in. on centers.
**Bottom Opening:** Circular, 12½ in. diameter.
**Lamp Size:**
300 watt PS-35.
500 watt PS-40.
**Mounting:** May be mounted on Conduit (No 6) —in which case, discard Outlet Box Cover.
**When Recessed:** *In plaster ceiling*—use Plaster Ring, No. 555 with Flush Mounting Ring, No. 555.
*In ceiling not plastered* —use Flush Mounting Ring, No. 555.
**Louvers:** *For External Mounting* — Nos. EM-555 or EM-555-C.
*For Recessed Mounting* — Nos. FM-555 or FM-555-C (use with Flush Mounting Ring, No. 555).

**INSTALLATION DIAGRAM**



**No. 555 with Plaster Ring, Flush Mounting Ring and Louver**
Minimum spacing 15 in. on centers.

## 4 to 9' High

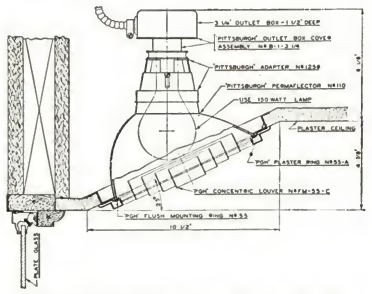





### PERMAFLECTOR NO. 110

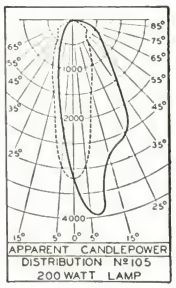
**Application:** For low, deep windows, in which trim is carried full height. For corner windows equipped with concentric louvers. Also for other display lighting, rug racks, interior wall displays and indirect cove lighting.

**Spacing Recommended:** 12 in. on centers.
**Bottom Opening:** Circular, 8½ in. diameter.
**Lamp Size:**
100 watt A-23, Adapter compressed.
150 watt A-25, Adapter extended.
**Mounting:** May be mounted on Conduit (Nos. 1, 61 or Knockout Strip KO-1) or Outlet Box Cover Assembly (Nos. B-1-3¼ or B-1-4).
**When Recessed:** *In plaster ceiling*—use Plaster Ring, No. 55-A with Flush Mounting Ring, No. 55.
*In ceiling not plastered* —use Flush Mounting Ring, No. 55.
**Louvers:** *For External Mounting* — Nos. EM-55 or EM-55-C.
*For Recessed Mounting* — Nos. FM-55 or FM-55-C (use with Flush Mounting Ring, No. 55).



**No. 110 with Plaster Ring, Flush Mounting Ring and Louver**
Minimum spacing 11 in. on centers.

## DEEP WINDOWS — 7 to 10' High

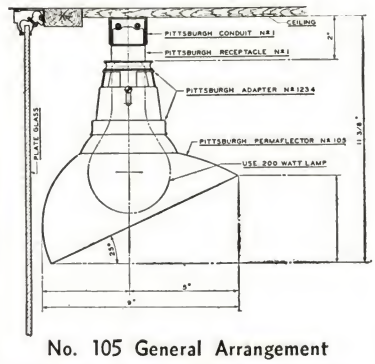





### PERMAFLECTOR NO. 105

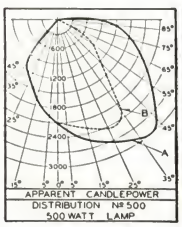
**Application:** For deep windows, in which trim is carried full height. For corner windows equipped with concentric louvers. Also for other display lighting, rug racks, interior wall displays and indirect cove lighting.

**Spacing Recommended:** 12 in. on centers.
**Bottom Opening:** Circular, 9½ in. diameter.
**Lamp Size:**
150 watt A-25, Adapter compressed.
200 watt PS-30, Adapter extended.
**Mounting:** May be mounted on Conduit (Nos. 1, 61 or Knockout Strip KO-1) or Outlet Box Cover Assembly (Nos. B-1-3¼ or B-1-4).
**When Recessed:** *In plaster ceiling*—use Plaster Ring, No. 54 with Flush Mounting Ring, No. 54.
*In ceiling not plastered* —use Flush Mounting Ring, No. 54.
**Louvers:** *For External Mounting* — Nos. EM-54 or EM-54-C.
*For Recessed Mounting* — Nos. FM-54 or FM-54-C (use with Flush Mounting Ring, No. 54).



**No. 105 General Arrangement**
Minimum spacing 10½ in. on centers.

## 9 to 16' High

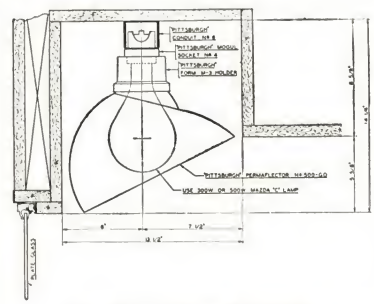





### PERMAFLECTOR NO. 500

**Application:** For deep windows in which trim is carried full height of window. Also for other display lighting and cove in large interiors.

**Spacing Recommended:** 15 in. on centers.
**Bottom Opening:** Width, 12 in.
**Lamp Size:**
300 watt PS-35.
500 watt PS-40.
**Mounting:** May be mounted on Conduit (No. 6) —in which case, discard Outlet Box Cover.
**When Recessed:** *In ceiling not plastered*—use Flush Mounting Ring, No. 500.
**Louvers:** *For External Mounting* — Nos. EM-555 or EM-555-C.



**No. 500 Trough Mounting**
Minimum spacing 14 in. on centers.

# PERMAFLECTOR INTERIOR FLOODS

FOR INTERIOR USE ONLY

The use of Interior Floods parallels the use of Interior Spots, but will be preferred where a somewhat broader beam of light with less intense beam center is desired.

Permaflector Interior Floods are similar in construction to Interior Spots, excepting they employ a flood type of Permaflector, the distribution of which is less concentrating.

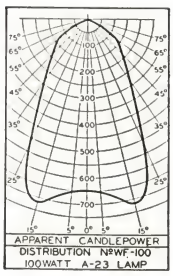
Furnished complete as shown, with socket, cord and plug. Color-Lites available for use with each Interior Flood.

The use of Interior Floods parallels the use of Interior Spots but will be preferred where a somewhat broader beam of light with less intense beam center is desired.

**Other Uses**—Supplementary illumination of automobile show rooms, where it is desired to flood the entire room in addition to the regular interior and window lighting; and for night lighting and emergency lighting service. A single Flood, placed at the front of a small store, usually over the entrance, will serve to flood the entire interior during the night as a protection against burglary.

**Spacing**—The number of Interior Floods to be installed in a window, the same as in the case of Spots, depends upon the psychological effect at which the display man is aiming. Usually two floods or spots should be provided in each window as an auxiliary to the window lighting. Extra convenience outlets should be provided in each window in order to properly serve these units.

There are many other special uses for Floods. Each lighting problem will require its own solution and we suggest that you consult our Engineering Department when you have a specific problem for solution.






INTERIOR FLOOD NO. WF-100

SELECTION DATA

**Bottom Opening:** Circular, 6¾ in. diameter.

**Height:** Overall including bracket, 10½ in.

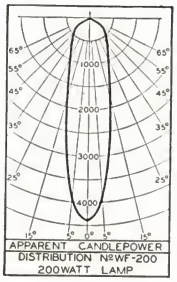
**Lamp Size:**
100 watt A-23.

**May Be Mounted on Knockout Strip:** No. KO-1 with Hub No. KO-10 and Flange No. KO-12.

**For Colored Lighting:** Use Color-Lite—No. 4-A or No. 4-ADB.

**For Louvered Lighting:** Use Parallel Louver—No. EM-77.

**Concentric Louver:** No. EM-77-C.






INTERIOR FLOOD NO. WF-200

**Bottom Opening:** Circular, 9⅞ in. diameter.

**Height:** Overall including bracket, 11¼ in.

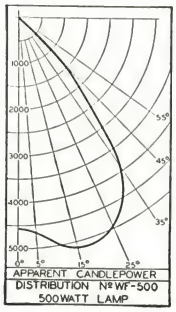
**Lamp Size:**
200 watt PS-30.

**May Be Mounted on Knockout Strip:** No. KO-1 with Hub No. KO-10 and Flange No. KO-12.

**For Colored Lighting:** Use Color-Lite—No. 2 or No. 2-DB.

**For Louvered Lighting:** Use Parallel Louver—No. EM-54.

**Concentric Louver:** No. EM-54-C.






INTERIOR FLOOD NO. WF-500

**Bottom Opening:** Circular, 11⅞ in. diameter.

**Height:** Overall including bracket, 18 in.

**Lamp Size:**
500 watt PS-40.
300 watt PS-35.

**May Be Mounted on Knockout Strip:** No. KO-1 with Hub No. KO-10 and Flange No. KO-12. (When ordering WF-500 for this service ask for small base plate).

**For Colored Lighting:** Use Color-Lite—No. 14-A.

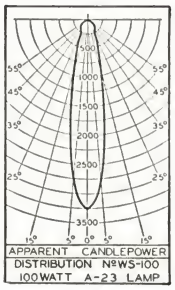
**For Louvered Lighting:** Use Parallel Louver—No. EME-500.

**Concentric Louver:** No. EME-500-C.

# PERMAFLECTOR INTERIOR SPOTS

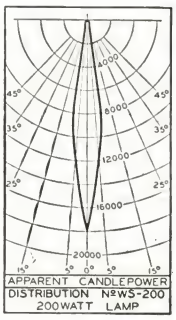
FOR INTERIOR USE ONLY

These provide an effective method of high lighting with clear or colored light, as for example, portions of window displays to which particular attention should be drawn.



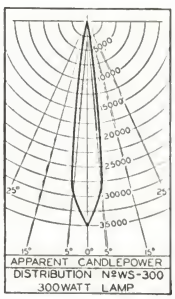



INTERIOR SPOT, NO. WS-100



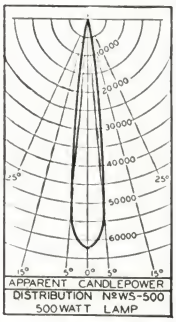



INTERIOR SPOT, NO. WS-200






INTERIOR SPOT, NO. WS-300






INTERIOR SPOT, NO. WS-500

## SELECTION DATA

**Bottom Opening:** Circular, 8⅛ in. diameter.
**Height:** Overall including bracket, 11 in.
**Lamp Size:**
100 watt A-23.
**May Be Mounted on Knockout Strip:** No. KO-1 with Hub No. KO-10 and Flange No. KO-12.
**For Colored Lighting:** Use Color-Lite—No. 6 or No. 6-DB.
**For Louvered Lighting:** Use Parallel Louver No. EM-55.
**Concentric Louver:** No. EM-55-C.
**For Spill Light Elimination:** Use Spill Shield No. SS-100.

**Bottom Opening:** Circular, 10 in. diameter.
**Height:** Overall including bracket, 13½ in.
**Lamp Size:**
200 watt PS-30.
**May Be Mounted on Knockout Strip:** No. KO-1 with Hub No. KO-10 and Flange No. KO-12.
**For Colored Lighting:** Use Color-Lite—No. 2 or No. 2-DB.
**For Louvered Lighting:** Use Parallel Louver No. EM-54.
**Concentric Louver:** No. EM-54-C.
**For Spill Light Elimination:** Use Spill Shield No. SS-200.

**Bottom Opening:** Circular 11½ in. diameter.
**Height:** Overall including bracket, 13¾ in.
**Lamp Size:**
300 watt PS-35.
**May Be Mounted on Knockout Strip:** No. KO-1 with Hub No. KO-10 and Flange No. KO-12.
**For Colored Lighting:** Use Color-Lite—No. 10 or No. 10-DB.
**For Louvered Lighting:** Use Parallel Louver No. EME-500.
**Concentric Louver:** No. EME-500-C.
**For Spill Light Elimination:** Use Spill Shield No. SS-300.

**Bottom Opening:** Circular, 13½ in. diameter.
**Height:** Overall including bracket, 18 in.
**Lamp Size:**
500 watt PS-40.
300 watt PS-35.
**May Be Mounted on Knockout Strip:** No. KO-1 with Hub No. KO-10 and Flange No. KO-12. (When ordering WS-500 for this service ask for small base plate).
**For Colored Lighting:** Use Color-Lite—No. 8 or No. 8-DB.
**For Louvered Lighting:** Use Parallel Louver No. EM-555.
**Concentric Louver:** No. EM-555-C.
**For Spill Light Elimination:** Use Spill Shield No. SS-500.

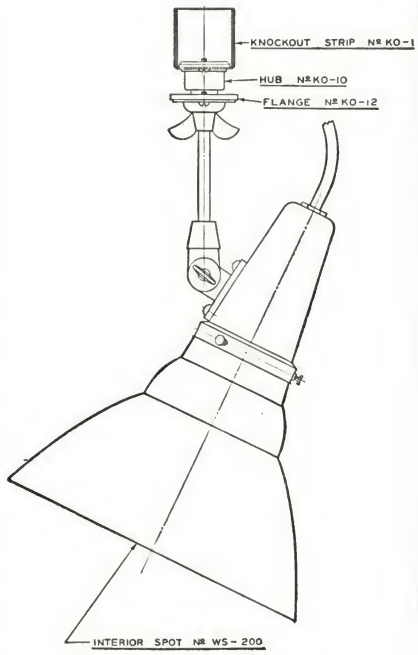
Permaflector Interior Spots are window lighting equipment consisting of an adjustable bracket with base for attaching to the ceiling, transom bar, etc.; spot type of Permaflector with exceedingly concentrating distribution; socket and husk. Furnished complete as shown, with cord and attachment plug.

They provide an effective method of high-lighting with clear or colored light, any portion of the window display on which the display man desires to focus the attention of the customers. Interior Spots are auxiliary window lighting equipment and are not intended as the sole source of illumination in a show window.

**Other Uses**—Reducing daylight reflections in a show window; for special lighting on stages; in automobile show rooms, to silhouette a car against a light background; dance halls for so-called "moonlight" dances; lighting of walls of art galleries and churches; skylights; church art glass windows and any other purpose where exceedingly concentrated illumination is desired.

**Spacing**—It is well to provide two in each window as auxiliary lighting. Extra convenience receptacles should be provided for same.

**Color Lighting**—Color-Lites are available for use with each size.

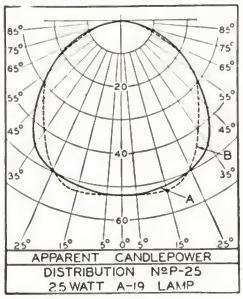



Interior Spot No. WS-200
Suspended from Knockout Strip

# REPRESENTATIVE PERMAFLECTORS

The P Type Permaflectors are designed for use with lamps in the horizontal position and find their greatest use lamps radiating horizontally from a center body carrying the sockets. They are excellent for lighting stock quo- is limited, rug racks, etc.

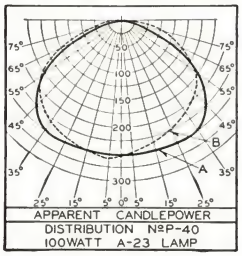
## APPLICATION

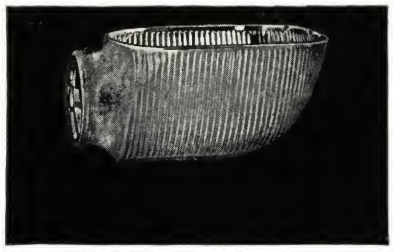





### PERMAFLECTOR NO. P-25

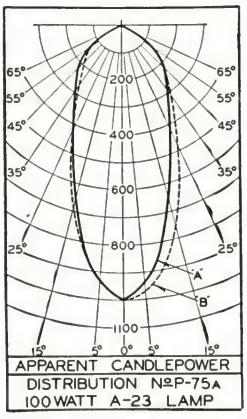
For cove lighting, wall cases, bank cages, etc. Also for multi- unit, low wattage indirect fixtures. Broad distribution.

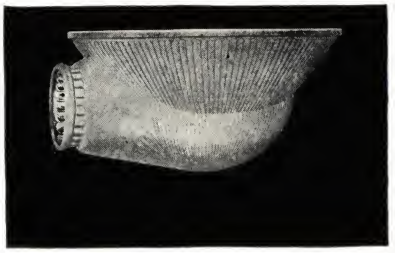


### PERMAFLECTOR NO. P-40

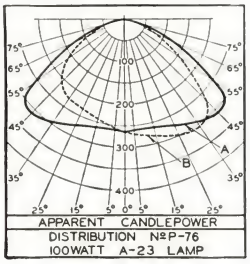
For indirect lighting from coves. Broad distribution. Also for lighting wall cases, bank cages, indirect lighting fixtures, art galleries, etc.



### PERMAFLECTOR NO. P-75-A

For cove lighting where a concentrated distribution is required; also for stock quotation boards, art galleries, indirect lighting fixtures.






### PERMAFLECTOR NO. P-76

For indirect lighting from coves. Very broad distribution. Also for indirect lighting fixtures in special applications where spacing is limited.

## SELECTION DATA

**Minimum Spacing:** 6 in. on centers.
**Dimensions:** Opening, $3\frac{13}{16}$ in. diameter; Height, 3¼ in.; Length, $4\frac{13}{32}$ in.
**Lamp Size:**
25 watt A-19.
40 watt A-19.
**Holder:** With Conduit No. 2-A or Outlet Box Cover Assemblies No. B-2-3¼ or B-2-4, use 2¼ in. Form "S" holder for 25 watt A-19 lamp; 2¼ in. Form "SL" holder for 40 watt A-19 lamp, attached directly to socket.
**May Be Installed With Outlet Box Cover Assembly:** No. B-2-3¼ or B-2-4 with 2¼ in. Form "S" or "SL" holders.
**May Be Mounted On Conduit:** No. 2-A with 2¼" Form "S" or "SL" holders.

**Minimum Spacing:** 7¾ in. on centers.
**Dimensions:** Height, 2¾ in.; Width, 4¼ in.; Length, 5½ in.
**Lamp Size:**
60 watt A-21.
75 watt A-21.
100 watt A-23.
**Holder:** With Conduit No. 2-A or Outlet Box Cover Assemblies No. B-2-3¼ or B-2-4, use 2¼ in. Form "S" holder for 60 watt A-21 lamp; 2¼ in. Form "SL" holder for 75 watt A-21 lamp; 2¼" Form "L" holder for 100 watt A-23 lamp, attached directly to socket.
**May Be Installed With Outlet Box Cover Assembly:** No. B-2-3¼ or B-2-4 with 2¼ in. Form "S", "SL" or "L" holders.
**May Be Mounted On Conduit:** No. 2-A with 2¼" Form "S", "SL" or "L" holders.

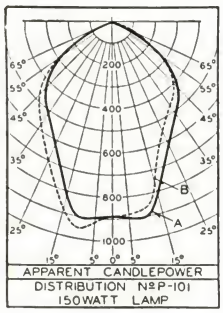
**Minimum Spacing:** 7¾" on centers.
**Dimensions:** Opening, 6¾ in. diameter; Height, 3⅝ in.; Length, 7 in.
**Lamp Size:**
100 watt A-23.
**Holder:** With Conduit No. 2-A or Outlet Box Cover Assemblies No. B-2-3¼ or B-2-4, use 2¼ in. Form "S" holder attached directly to socket.
**May Be Installed With Outlet Box Cover Assembly:** No. B-2-3¼ or B-2-4 with 2¼ in. Form "S" holder.
**May Be Mounted on Conduit:** No. 2-A with 2¼ in. Form "S" holders.
**For Colored Lighting:** Use Color-Lite—No. 4-A or No. 4-ADB.

**Minimum Spacing:** 7½ in. on centers.
**Dimensions:** Opening 4¾ in. diameter; Height, 3 in.; Length, $5\frac{3}{16}$ in.
**Lamp Size:**
60 watt A-21.
75 watt A-21.
100 watt A-23
**Holder:** With Conduit No. 2-A, or Outlet Box Cover Assemblies No. B-2-3¼ or B-2-4, use 2¼ in. Form "S" holder for 60 watt A-21 lamp; 2½ in. Form "SL" holder for 75 watt A-21 lamp; 2¼ in. Form "L" holder for 100 watt A-23 lamp, attached directly to socket.
**May Be Installed With Outlet Box Cover Assembly:** No. B-2-3¼ or B-2-4 with 2¼ in. Form "S", "SL" or "L" holders.
**May Be Mounted On Conduit:** No. 2-A with 2¼ in. Form "S", "SL" or "L" holders.
**For Colored Lighting:** Use Color-Lite—No. 12-A or No. 12-ADB.

# FOR COVE LIGHTING (INDIRECT)

for indirect lighting from coves. They are also used in shallow indirect lighting bowls employing a number of tation boards, wall cases, bank cages, art galleries and museums, small show windows where overhead room

| APPLICATION | SELECTION DATA |
|---|---|






**PERMAFLECTOR NO. P-101**

For cove lighting, particularly where large areas are to be lighted; also for indirect lighting fixtures for special applications requiring high wattage within limited space. Broad distribution.

**Minimum Spacing:** 9 in. on centers.

**Dimensions:** Opening, 6¾ in. diameter; Height, 3⅞ in.; Length, 7¾ in.

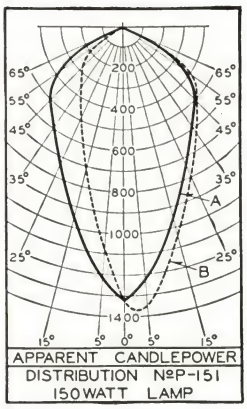
**Lamp Size:**
150 watt A-25.

**Holder:** With Conduit No. 2-A or Outlet Box Cover Assemblies No. B-2-3¼ or B-2-4, use 2¼ in. Form "S" holder attached directly to socket.

**May Be Installed With Outlet Box Cover Assembly:** No. B-2-3¼ or B-2-4 with 2¼ in. Form "S" holder.

**May Be Mounted On Conduit:** No. 2-A with 2¼" Form "S" holders.

**For Colored Lighting:** Use Color-Lite—No. 4-A or No. 4-ADB.






**PERMAFLECTOR NO. P-151**

For indirect lighting from coves where concentrated distribution is required. Also for indirect lighting fixtures, rug racks, stock quotation boards, art galleries, and small shallow show windows.

**Minimum Spacing:** 8¼ in. on centers.

**Dimensions:** Opening, 6¾ in. diameter; Height, 3⅞ in.; Length, 7 11/16 in.

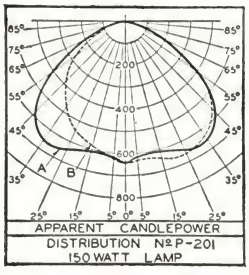
**Lamp Size:**
150 watt A-25.

**Holder:** With Conduit No. 2-A or Outlet Box Cover Assemblies No. B-2-3¼ or B-2-4, use 2¼ in. Form "S" holder attached dierctly to socket.

**May Be Installed With Outlet Box Cover Assembly:** No. B-2-3¼ or B-2-4 with 2¼ in. Form "S" holder.

**May Be Mounted On Conduit:** No. 2-A with 2¼" Form "S" Holders.

**For Colored Lighting:** Use Color-Lite—No. 4-A or No. 4-ADB.






**PERMAFLECTOR NO. P-201**

For cove lighting and multi-unit shallow bowl indirect or luminous bowl fixtures. Broad distribution.

**Minimum Spacing:** 9½ in. on centers.

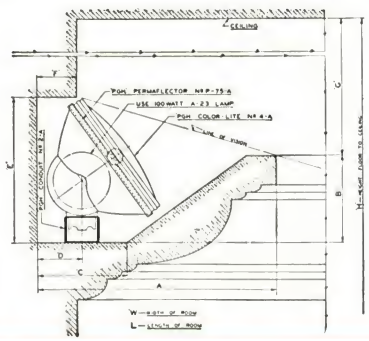
**Dimensions:** Opening, 6¾ in. diameter; Height, 4⅜ in.; Length, 7¾ in.

**Lamp Size:**
150 watt A-25.
200 watt PS-30.

**Holder:** With Outlet Box Cover Assemblies No. B-2-3¼ or B-2-4, use 2¼ in. Form "S" holder for 150 watt A-25 lamp; 2¼ in. Form "L" holder for 200 watt PS-30 lamp, attached directly to socket.

**May Be Installed With Outlet Box Cover Assembly:** No. B-2-3¼ or B-2-4 with 2¼ in. Form "S" or "L" holders.

**For Colored Lighting:** Use Color-Lite—No. 4-A or No. 4-ADB.



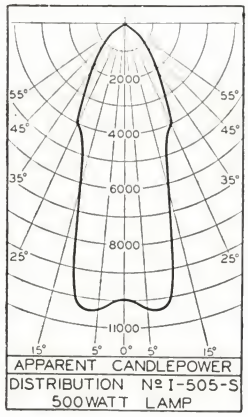
## Cove Lighting Design

In the left hand sketch the essential dimensions to be supplied to our engineering department when requesting a recommendation are indicated by the letters, A, B, C, D, E, F, G, H, L, W. Although a flat ceiling is shown, it is to be understood that an arched ceiling may be treated in a similar manner, in fact can be more easily handled in most cases.

The Color-Lite No. 4-A is employed, where changing color illumination is desired. It is also used for white lighting (fitted with colorless, inside stippled glass roundel) acting as the means of keeping dust off the Permaflector P-75-A. Its use facilitates maintenance as it is quicker to clean a convex glass roundel than a concave reflector surface.

# PERMAFLECTOR INDUSTRIAL LIGHTING EQUIPMENT

**Application:** For high bay industrial lighting where the lighting equipment is located 25 ft. or more above the floor and exceptional concentration is required. The spacing between Permaflectors should not exceed their height above the work plane.



APPARENT CANDLEPOWER
DISTRIBUTION Nº I-505-S
500 WATT LAMP


NO. I-505-S

## SELECTION DATA

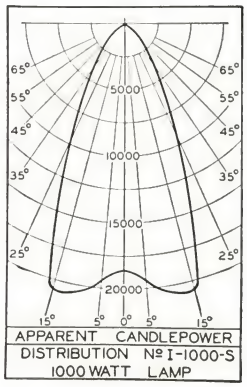
### PERMAFLECTOR NO. I-505-S

**Description:** Permaflector No. I-050-GO enclosed in aluminum housing. Attaches to any ½ inch conduit hanger.
**Application:** Same as Permaflector No. I-505. Used where protection to silvered glass reflector is desirable.
**Dimensions:** Diameter, 16½ in.; Height, overall, 16½ in.
**Lamp Size:** 500 watt PS-40; 300 watt PS-35.


NO. I-505-RS

### PERMAFLECTOR NO. I-505-RS

**Description:** Same as I-505-S but equipped with hinged door carrying heat resisting stippled glass roundel.
**Application:** Same as I-505-S.
**Dimensions:** Diameter, 17 in.; Height, overall, 19 in.
**Lamp Size:**
500 watt PS-40.
300 watt PS-35.



APPARENT CANDLEPOWER
DISTRIBUTION Nº I-1000-S
1000 WATT LAMP


NO. I-1000-S

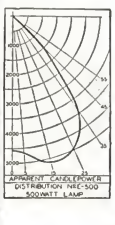
### PERMAFLECTOR NO. I-1000-S

**Description:** Permaflector No. I-505-GO enclosed in aluminum housing complete with mogul socket and arranged to attach to any ½ inch conduit hanger. Permaflector removable.
**Application:** Same as Permaflector No. I-1001. Used where protection to silvered glass reflector is desirable.
**Dimensions:** Diameter, 16½ in.; Height, overall, 18½ in.
**Lamp Size:**
1000-750 watt PS-52.


NO. I-1000-RS

### PERMAFLECTOR NO. I-1000-RS

**Description:** Same as I-1000-S but equipped with hinged door carrying heat resisting strippled glass roundel.
**Application:** Same as I-1000-S.
**Dimensions:** Diameter, 17 in.; Height, overall, 21 in.
**Lamp Size:**
1000-750 watt PS-52.



NO. E-500-S

### PERMAFLECTOR NO. E-500-S

**Application:** A reflector of wide utility. It is enclosed in aluminum housing for industrial and public space illumination. Excellent for use above skylights.
**Lamp Size:**
500 watt PS-40.
300 watt PS-35.
**Description:** Permaflector No. E-500-S employs Permaflector No. E-500-GO enclosed in aluminum housing. Permaflector readily removable. Furnished complete with socket. Attaches to any standard ½ in. conduit hanger.
**Dimensions:** Diameter, 12½ in.; height, overall, 15¼ in.


NO. C-1000-S

### PERMAFLECTOR NO. C-1000-S

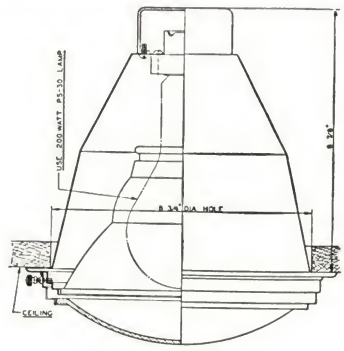
**Description:** A super high bay industrial lighting unit. Consists of Permaflector No. F-1001 enclosed in aluminum housing with hinged door containing 15¾ inch dia. inside stippled heat resisting glass roundel, making it dust tight. Attaches to any standard ½ inch conduit hanger.
**Application:** For high industrial interiors, gymnasiums, auditoriums, boxing arenas, etc. Has 40-degree beam. At 25-foot mounting height, covers an area on the floor of 18.2 foot diameter; at 100-foot mounting, covers 72.8-foot diameter.
Beam lumens approx. 7500. Total output lumens approx. 16,000 in overall angle of 100 degrees.
**Dimensions:** Diameter, 17 in.; Height, overall, 21 in.
**Lamp Size:** 1000-750 watt PS-52.


NO. PE-100-1A

### PERMAFLECTOR NO. PE-100-1A

**Description:** No. PE-100-1A consists of spun aluminum shell containing medium base porcelain socket and Permaflector No. E-100, equipped with Hinged Ceiling Roundel No. 1-A, fabricated of sheet steel. Equipped with ½ inch female cap at top, which attaches to any standard ½ inch conduit hanger.
**Finish:** Etched aluminum for the shell and sprayed baked aluminum for the Hinged Ceiling Roundel No. 1-A.
**Application:** An excellent direct lighting unit for illumination of rugs displayed on the floor and any similar use. A good industrial lighting unit.
**Lamp Size:** 200 watt PS-30.

# PERMAFLECTOR BUILT-IN DIRECT LIGHTING UNITS



NO. FC-101-1A

## SELECTION DATA

### PERMAFLECTOR NO. FC-101-1A

**Description:** No. FC-101-1A consists of spun aluminum housing, 3¼ inch outlet box, socket No. 1 Hinged Ceiling Roundel No. 1-A and Permaflector No. C-101.

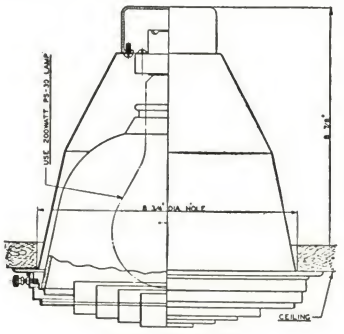
**Application:** A variety of uses will suggest themselves. One important application is for lighting jewelry stores with the unit arranged in rows over the counters, or cases, spaced three to six feet on centers. The result is a high intensity of illumination on the counters or cases with diminished intensities in the aisles. Whether or not general indirect illumination should be employed will depend upon conditions.

**Lamp Size:**

200 watt PS-30.

**When Recessed in Plaster Ceiling:** Use Plaster Ring—No. 1-A.

**No. FC-101-C:** Same as FC-101-1A except with Hinged Concentric Louver No. 1-A.



NO. FE-100-C

### PERMAFLECTOR NO. FE-100-C

**Description:** No. FE-100-C consists of sheet aluminum housing, containing 3¼ inch outlet box, socket, Permaflector No. E-100 and Hinged Concentric Louver No. 1-A. Also available with Egg Crate louvers on special order.

**Application:** These units are exceptionally good for locations having low ceiling heights, as for instance in areas below mezzanine floors.

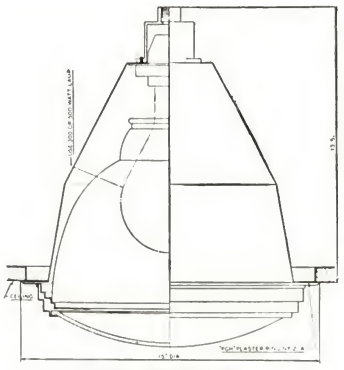
These units should be spaced on centers not exceeding the height of the ceiling. The louvers when viewed from a distance give the illusion of luminous glass.

**Lamp Size:**

200 watt PS-30.

**When Recessed in Plaster Ceiling:** Use Plaster Ring—No. 1-A.

**No. FE-101-1A:** Same as FE-100-C except with Hinged Ceiling Roundel No. 1-A.



NO. FE-500-2A

### PERMAFLECTOR NO. FE-500-2A

**Description:** No. FE-500-2A consists of spun aluminum housing, Box No. KO-11, Mogul Socket No. 4, Hinged Ceiling Roundel No. 2-A and Permaflector No. E-500-GO.

**Application:** Recessed lighting is gaining popularity for store interiors. FE-500-2A is excellent for medium height ceilings. Also a good gymnasium and auditorium lighting unit.

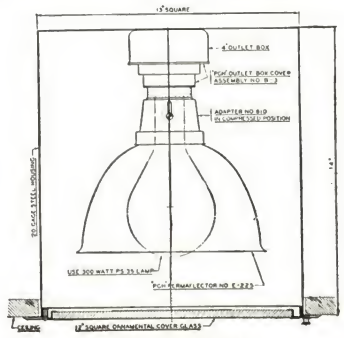
These units should be spaced on centers not exceeding the height of the ceiling.

**Lamp Size:**

500 watt PS-40.
300 watt PS-35.

**When Recessed in Plaster Ceiling:** Use Plaster Ring—No. 2-A.

**No. FE-500-C:** Same as No. FE-500-2A. Instead of a roundel it is equipped with concentric louver. Louvers are luminous by reflected light and from a distance give the illusion of luminous glass.



NO. GR-30012

### PERMAFLECTOR NO. GR-30012

**Description:** No. GR-30012 consists of 20-gauge steel box to be set flush in ceiling; frame and hinged door containing 12 inch square ornamental white glass plate; outlet box, mogul socket, holder and Permaflector No. E-225-GO.

**Finish:** Sprayed and baked aluminum.

**Application:** An excellent unit for recessed lighting installations. The glass panel is ornamental as well as an effective means of concealing the Permaflector which controls and redirects the light. A broadly distributing unit. Maximum spacing one and one-half times mounting height.

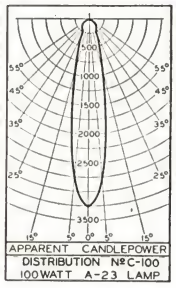
**Ceiling Space Required:** Requires a clear space of 14 inches above ceiling line and a 13 inch square opening in ceiling.

**Lamp Size:**

300 watt PS-35.

**No. GR-20012:** Same as No. GR-30012 except for use with 200 watt PS-30 lamp.
**Ceiling Space Required:** Requires a clear space of 11 inches above ceiling line and a 13 inch square opening in ceiling.

# PERMAFLECTOR LIGHTING





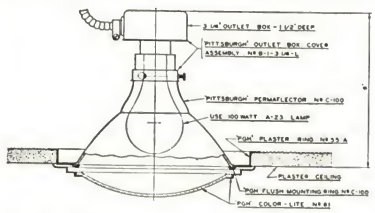

## PERMAFLECTOR NO. C-100

**Application:** This is Permaflector used with Spot WS-100. May be set flush in ceiling and louvered for spot lighting effects. A good cove lighting reflector where narrow concentrated beam of light for long throw is required.

### SELECTION DATA

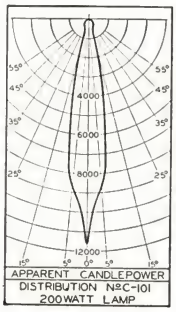
**Spacing Recommended:** 12 in. on centers.
**Bottom Opening:** Circular, 8⅛ in. diameter.
**Lamp Size:**
60 watt A-21.
75 watt A-21.
100 watt A-23.
150 watt A-25.
**Mounting:** May be mounted on Conduit (Nos. 1, 61 or Knockout Strip KO-1) or Outlet Box Cover Assembly (Nos. B-1-3¼ or B-1-4). Use with 2¼ in. Holder, Form "S", "SL", "L" or "LCA".
**When Recessed:** *In plaster ceiling*—use Plaster Ring, No. 55-A with Flush Mounting Ring, No. C-100; or Plaster Ring, No. 1-A, with Hinged Ceiling Roundel, No. 1-A; or Hinged Concentric Louver, No. 1-A.
*In ceiling not plastered*—use Flush Mounting Ring, No. C-100; or Hinged Ceiling Roundel No. 1-A; or Hinged Concentric Louver, No. 1-A.
**Louvers:** *For External Mounting*—Nos. EM-55 or EM-55-C.

### INSTALLATION DATA



No. C-100 Recessed in Plaster Ceiling and Color-Lite

*For Recessed Mounting*—Nos. FM-55, FM-55-C, FEC-100 (use with Flush Mounting Ring, No. C-100); or Hinged Concentric Louver, No. 1-A.

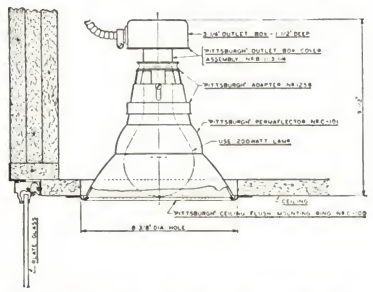




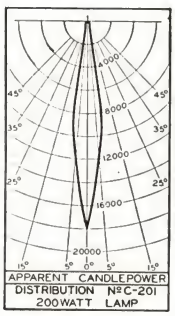

## PERMAFLECTOR NO. C-101-A

**Application:** May be used for same purposes as C-100, where 200 watt lamp size is required.

**Spacing Recommended:** 12 in. on centers.
**Bottom Opening:** Circular, 8⅛ in. diameter.
**Lamp Size:**
150 watt A-25, Adapter compressed.
200 watt PS-30, Adapter extended.
**Mounting:** May be mounted on Conduit (Nos. 1, 61 or Knockout Strip No. KO-1) or Outlet Box Cover Assembly (Nos. B-1-3¼ or B-1-4).
**When Recessed:** *In plaster ceiling*—use Plaster Ring, No. 55-A with Flush Mounting Ring, No. C-100; or Plaster Ring No. 1-A with Hinged Ceiling Roundel No. 1-A or Hinged Concentric Louver No. 1-A.
*In ceiling not plastered*—use Flush Mounting Ring No. C-100; or Hinged Ceiling Roundel No. 1-A; or Hinged Concentric Louver No. 1-A.
**Louvers:** *For External Mounting*—Nos. EM-55 or EM-55-C.
*For Recessed Mounting*—Nos. FM-55, FM-55-C, FEC-100 (use with Flush Mounting Ring No. C-100); or Hinged Concentric Louver, No. 1-A.



No. C-101-A Flush Mounting Arrangement
Minimum spacing 10½" on centers.

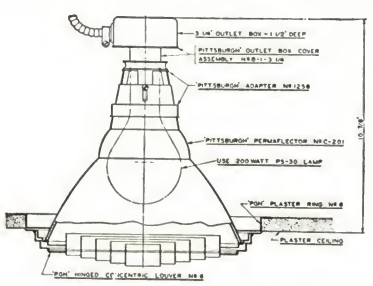




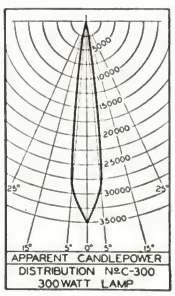

## PERMAFLECTOR NO. C-201-A

**Application:** This is Permaflector used with Spot WS-200. May be set flush in ceiling and louvered for spot lighting effects. A good cove lighting reflector where narrow concentrated beam of light for long throw is required.

**Spacing Recommended:** 12 in. on centers.
**Bottom Opening:** Circular, 10 in. diameter.
**Lamp Size:**
150 watt A-25, Adapter compressed.
200 watt PS-30, Adapter extended.
**Mounting:** May be mounted on Conduit (Nos. 1, 61 or Knockout Strip No. KO-1) or Outlet Box Cover Assembly (Nos. B-1-3¼ or B-1-4).
**When Recessed:** *In plaster ceiling*—use Plaster Ring, No. 54 with Flush Mounting Ring, No. C-201; or Plaster Ring No. 6 with Hinged Ceiling Roundel No. 6 or Hinged Concentric Louver No. 6.
*In ceiling not plastered*—use Flush Mounting Ring No. C-201; or Hinged Ceiling Roundel No. 6; or Hinged Concentric Louver No. 6.
**Louvers:** *For External Mounting*—Nos. EM-54 or EM-54-C.
*For Recessed Mounting*—Nos. FM-54, FM-54-C, FEC-200 (use with Flush Mounting Ring No. C-201); or Hinged Concentric Louver, No. **6.**



No. C-201-A Recessed in Ceiling, with Hinged Concentric Louver

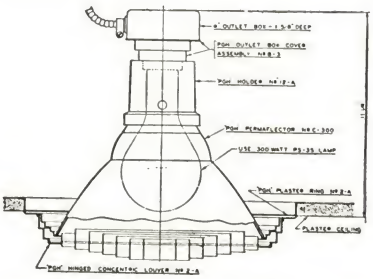





## PERMAFLECTOR NO. C-300-A

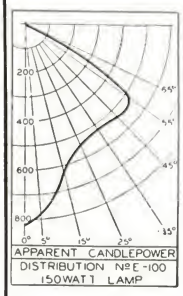
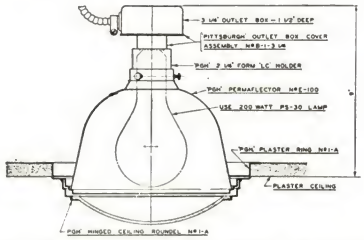
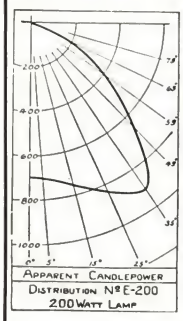
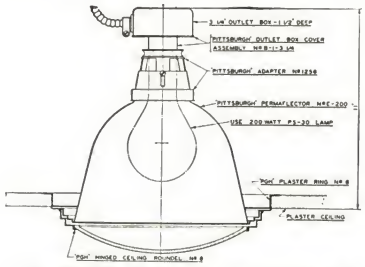
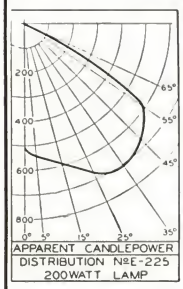
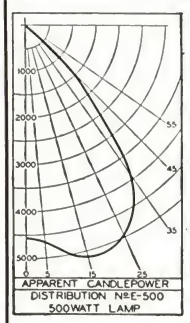
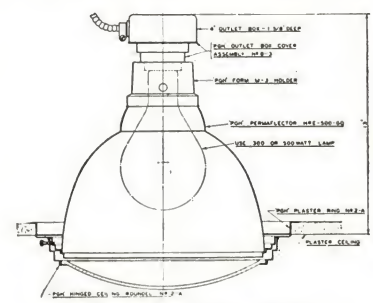
**Application:** This is Permaflector used with Spot WS-300. Recommended for recessing in the ceiling with flush mounting ring and concentric louver or hinged ceiling roundel. Delivers intense illumination over limited area.

**Bottom Opening:** Circular, 11½ in. diameter.
**Lamp Size:**
300 watt PS-35.
**Mounting:** May be mounted on Conduit (No. 6) —in which case discard Outlet Box Cover.
**When Recessed:** *In plaster ceiling*—use Plaster Ring No. 555 with Flush Mounting Ring No. C-300; or Plaster Ring No. 2-A with Hinged Ceiling Roundel No. 2-A or Hinged Concentric Louver No. 2-A.
*In ceiling not plastered*—use Flush Mounting Ring No. C-300; or Hinged Ceiling Roundel No. 2-A; or Hinged Concentric Louver No. 2-A.
**Louvers:** *For External Mounting* — Nos. EME-500 or EME-500-C.
*For Recessed Mounting*—Nos. FME-500, FME-500-C, FEC-300 (use with Flush Mounting Ring, No. C-300); or Hinged Concentric Louver, No. 2-A.

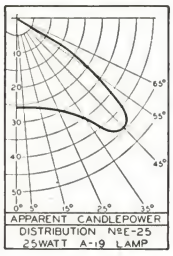


No. C-300-A Recessed in Ceiling with Hinged Concentric Louver

# EQUIPMENT WITH WIDE VARIETY OF APPLICATION

| | SELECTION DATA | INSTALLATION DATA |
|---|---|---|
|   **PERMAFLECTOR NO. E-100**<br>**Application:** A broadly distributing reflector for direct lighting service. Used exposed in factories or recessed as in gymnasiums, below mezzanine floors and other locations with low head room. | **Bottom Opening:** Circular, 8½ in. diameter.<br>**Lamp Size:**<br>100 watt A-23<br>150 watt A-25<br>200 watt PS-30<br>**Mounting:** May be mounted on Conduit (Nos. 1, 61 or Knockout Strip KO-1) or Outlet Box Cover Assembly (Nos. B-1-3¼ or B-1-4). Use with 2¼ in. Holder, Form "S", "L", or "LC".<br>**When Recessed:** *In plaster ceiling*—use Plaster Ring No. 55-A with Flush Mounting Ring, No. 55; or Plaster Ring, No. 1-A with Hinged Ceiling Roundel, No. 1-A or Hinged Concentric Louver No. 1-A.<br>*In ceiling not plastered*—use Flush Mounting Ring, No 55; or Hinged Ceiling Roundel No. 1-A; or Hinged Concentric Louver No. 1-A.<br>**Louvers:** *For External Mounting*—Nos. EM-55 or EM-55-C. |  **No. E-100 with Hinged Ceiling Roundel**<br>*For Recessed Mounting*—Nos. FM-55, FM-55-C, FEC-100 (use with Flush Mounting Ring, No. 55); or Hinged Concentric Louver No. 1-A. |
|   **PERMAFLECTOR NO. E-200**<br>**Application:** A broadly distributing reflector for same service as E-100. Other uses include recessed lighting of areas below canopies of gasoline service stations, theatres, etc. | **Bottom Opening:** Circular, 9½ in. diameter.<br>**Lamp Size:**<br>150 watt A-25, Adapter compressed.<br>200 watt PS-30, Adapter extended.<br>**Mounting:** May be mounted on Conduit (Nos. 1, 61 or Knockout Strip KO-1) or Outlet Box Cover Assembly (Nos. B-1-3¼ or B-1-4).<br>**When Recessed:** *In plaster ceiling*—use Plaster Ring, No. 54 with Flush Mounting Ring No. 54; or Plaster Ring, No. 6 with Hinged Ceiling Roundel No. 6 or Hinged Concentric Louver No. 6.<br>*In ceiling not plastered*—use Flush Mounting Ring, No. 54; or Hinged Ceiling Roundel No. 6; or Hinged Concentric Louver No. 6.<br>**Louvers:** *For External Mounting*—Nos. EM-54 or EM-54-C.<br>*For Recessed Mounting*—Nos. FM-54, FM-54-C, FEC-200 (use with Flush Mounting Ring, No. 54); or Hinged Concentric Louver, No. 6. |  **No. E-200, Recessed in Ceiling and Equipped with Hinged Ceiling Roundel No 6** |
|   **PERMAFLECTOR NO. E-225**<br>**Application:** For uses similar to E-100 and E-200, where an extremely broad distribution is desired. Also a good reflector for indirect lighting applications. | **Bottom Opening:** Circular, 9½ in. diameter.<br>**Lamp Size:**<br>150 watt A-25, Adapter compressed.<br>200 watt PS-30, Adapter extended.<br>**Mounting:** May be mounted on Conduit (Nos. 1, 61 or Knockout Strip KO-1) or Outlet Box Cover Assembly (Nos. B-1-3¼ or B-1-4).<br>**When Recessed:** *In plaster ceiling*—use Plaster Ring, No. 54 with Flush Mounting Ring, No. 54; or Plaster Ring, No. 6 with Hinged Ceiling Roundel No. 6; or Hinged Concentric Louver No. 6.<br>*In ceiling not plastered*—use Flush Mounting Ring, No. 54; or Hinged Ceiling Roundel No. 6; or Hinged Concentric Louver, No. 6.<br>**Louvers:** *For External Mounting*—Nos. EM-54 or EM-54-C.<br>*For Recessed Mounting*—Nos. FM-54, FM-54-C, FEC-200 (use with Flush Mounting Ring, No. 54); or Hinged Concentric Louver, No. 6. | **Recessed Lighting**<br>Many merchants favor a clear space free from suspended lighting fixtures. Indirect lighting equipment concealed in or mounted on the store furniture accomplishes this object. Where indirect illumination is not applicable, Permaflectors recessed in the cealing concealed by glass or louvers are becoming very popular. |
|   **PERMAFLECTOR NO. E-500**<br>**Application:** A reflector of wide utility. It is used exposed or enclosed in metallic housing for industrial and public space illumination. May be recessed in the ceiling. Excellent for use above skylights. | **Bottom Opening:** Circular, 11⅞ in. diameter.<br>**Lamp Size:**<br>300 watt PS-35.<br>500 watt PS-40.<br>**Mounting:** May be mounted on Conduit (No. 6, in which case discard Outlet Box Cover).<br>**When Recessed:** *In plaster ceiling*—use Plaster Ring, No. 555 with Flush Mounting Ring, No. E-500; or Plaster Ring, No. 2-A with Hinged Ceiling Roundel No. 2-A; or Hinged Concentric Louver No. 2-A.<br>*In ceiling not plastered*—use Flush Mounting Ring, No. E-500; or Hinged Ceiling Roundel No. 2-A; or Hinged Concentric Louver No. 2-A.<br>**Louvers:** *For External Mounting*—Nos. EME-500 or EME-500-C.<br>*For Recessed Mounting*—Nos. FME-500 or FME-500-C, FEC-300 (use with Flush Mounting Ring, No. C-300); or Hinged Concentric louver, No. 2-A. |  **No. E-500 with Hinged Ceiling Roundel No. 2-A** |

# PERMAFLECTOR LIGHTING







## PERMAFLECTOR NO. E-25-A

**Application:** Distributing type for local lighting purposes.

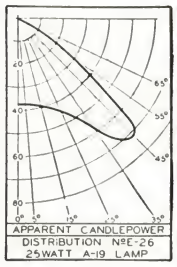
### SELECTION DATA

**Dimensions:** Opening, 4½ in. diameter; Height, 3½ in.
**Lamp Size:**
25 watt A-19.
50-60 watt A-21.
**Mounting:** May be mounted on Conduit (Nos. 1, 61 or Knockout Strip No. KO-1) or Outlet Box Cover Assembly (Nos. B-1-3¼ or B-1-4). Use with 2¼ in. Holder, Form "S", or "L".
**When Recessed:** *In ceiling not plastered*—use Flush Mounting Ring No. I-25; or Hinged Ceiling Roundel No. 5.

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**Dimensions:** Opening, 5⅝ in. diameter; Height, $3\frac{7}{16}$ in.
**Lamp Size:**
25 watt A-19.
50-60 watt A-21.
**Mounting:** May be mounted on Conduit (Nos. 1, 61 or Knockout Strip No. KO-1) or Outlet Box Cover Assembly (No. B-1-3¼ or B-1-4). Use with 2¼ in. Holder, Form "S" or "L".
**When Recessed:** *In plaster ceiling*—use Plaster Ring, No. 28 with Flush Mounting Ring, No. 28.
*In ceiling not plastered*—use Flush Mounting Ring No. 28.
**Louvers:** *For Recessed Mounting*—Nos. FM-28-C (use with Flush Mounting Ring No. 28).

### INSTALLATION DATA

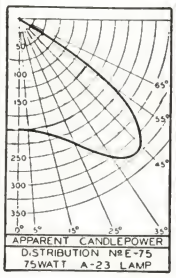






## PERMAFLECTOR NO. E-26

**Application:** A semi-distributing type for local lighting purposes.

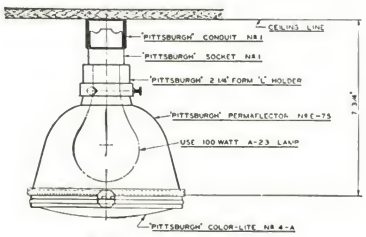





## PERMAFLECTOR NO. E-75

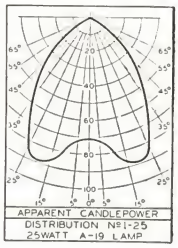
**Application:** A broadly distributing reflector for direct lighting service, where a close spacing of low wattage lamps is employed for relatively low mounting. May also be recessed in ceiling.

**Dimensions:** Opening, 6¾ in. diameter; Height, 4¾ in.
**Lamp Size:**
60 watt A-21.
75 watt A-21.
100 watt A-23.
**Mounting:** May be mounted on Conduit (Nos. 1, 61 or Knockout Strip No. KO-1) or Outlet Box Cover Assembly (Nos. B-1-3¼ or B-1-4). Use with 2¼ in. Holder, Form "S", "SL", or "L".
**When Recessed:** *In plaster ceiling*—use Plaster Ring, No. 77 with Flush Mounting Ring, No. 73; or Plaster Ring, No. 4 with Hinged Ceiling Roundel No. 4; or Hinged Concentric Louver No. 4.
*In ceiling not plastered*—use Flush Mounting Ring, No. 73; or Hinged Ceiling Roundel No. 4; or Hinged Concentric Louver No. 4.
**Louvers:** *For External Mounting*—Nos. EM-77 or EM-77-C.
*For Recessed Mounting*—Nos. FM-77, FM-77-C (use with Flush Mounting Ring No. 73); or Hinged Concentric Louver No. 4.




E-75 General Arrangement.

No. E-75 General Arrangement with Color-Lite No. 4-A



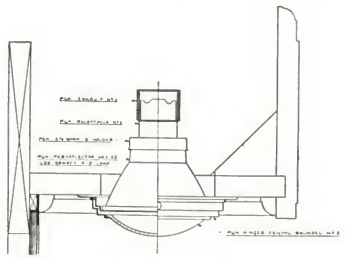




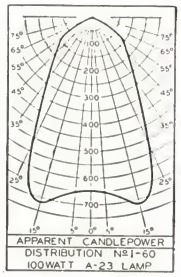
## PERMAFLECTOR NO. I-25

**Application:** A good indirect cove lighting reflector. May be recessed in ceiling for lighting of backbar in restaurants or beer parlors.

**Dimensions:** Opening, 4½ in. diameter; Height, 3 in.
**Lamp Size:**
25 watt A-19.
40 watt A-19.
**Mounting:** May be mounted on Conduit (Nos. 1, 61 or Knockout Strip No. KO-1) or Outlet Box Cover Assembly (Nos. B-1-3¼ or B-1-4). Use with 2¼ in. Holder, Form "S" or "SL".
**When Recessed:** *In ceiling not plastered*—use Flush Mounting Ring, No. I-25; or Hinged Ceiling Roundel No. 5.



No. I-25 General Arrangement For Soda Fountain Back Bar



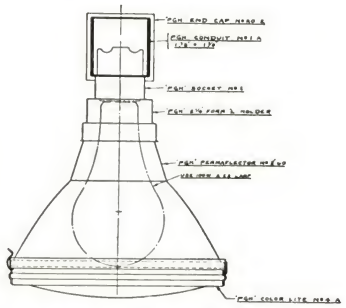




## PERMAFLECTOR NO. I-60

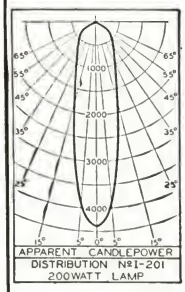
**Application:** A good indirect cove lighting reflector. Also may be recessed in ceiling. It is supplied with WF-100 interior Flood.

**Dimensions:** Opening, 6¾ in. diameter; Height, $4\frac{7}{16}$ in.
**Lamp Size:**
60 watt A-21.
75 watt A-21.
100 watt A-23.
**Mounting:** May be mounted on Conduit (Nos. 1, 61 or Knockout Strip No. KO-1) or Outlet Box Cover Assembly (Nos. B-1-3¼ or B-1-4). Use with 2¼ in. Holder, Form "S", "L", or "SL".
**When Recessed:** *In plaster ceiling*—use Plaster Ring, No. 77 with Flush Mounting Ring, No. 73; or Plaster Ring, No. 4 with Hinged Ceiling Roundel No. 4; or Hinged Concentric Louver No. 4.
*In ceiling not plastered*—use Flush Mounting Ring, No. 73; or Hinged Ceiling Roundel No. 4; or Hinged Concentric Louver No. 4.
**Louvers** *For External Mounting*—Nos. EM-77 or EM-77-C.
*For Recessed Mounting*—Nos. FM-77, FM-77-C, (use with Flush Mounting Ring, No. 73); or Hinged Concentric Louver, No. 4.



No. I-60 General Arrangement with Color-Lite No. 4-A

# EQUIPMENT WITH WIDE VARIETY OF APPLICATION






## PERMAFLECTOR NO. I-201-A

**Application:** Excellent for recessing in ceiling, equipped with flush mounting ring and concentric louver or hinged ceiling roundel. Provides high intensity of illumination over restricted area.

### SELECTION DATA

**Bottom Opening:** Circular, 9⅞ in. diameter.

**Lamp Sizes:**
150 watt A-25, Adapter compressed.
200 watt PS-30, Adapter extended.

**Mounting:** May be mounted on Conduit (Nos. 1, 61, or Knockout Strip KO-1) or Outlet Box Cover Assembly (Nos. B-1-3¼ or B-1-4).

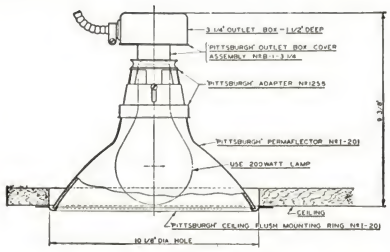
**When Recessed:** *In plaster ceiling*—use Plaster Ring, No. 54 with Flush Mounting Ring, No. I-201; or Plaster Ring No. 6 with Hinged Ceiling Roundel No. 6 or Hinged Concentric Louver No. 6.

*In ceiling not plastered*—use Flush Mounting Ring No. I-201; or Hinged Ceiling Roundel No. 6; or Hinged Concentric Louver No. 6.

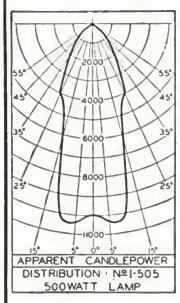
**Louvers:** *For External Mounting*—Nos. EM-54 or EM-54-C.

*For Recessed Mounting*—Nos. FM-54, FM-54-C, FEC-200 (use with Flush Mounting Ring, No. I-201); or Hinged Concentric Louver, No. 6.

### INSTALLATION DATA



No. I-201-A Recessed in Plaster Ceiling






## PERMAFLECTOR NO. I-505

**Application:** For high bay industrial lighting where the lighting equipment is located 25 ft. or more above the floor and exceptional concentration is required. Very effective for lighting through skylights.

**Spacing Recommended:** Should not exceed Height above the work plane.

**Bottom Opening:** Circular, 16 in. diameter.

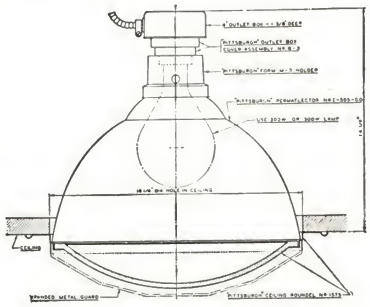
**Lamp Size:**
300 watt PS-35.
500 watt PS-40.

**Mounting:** May be mounted on Conduit (No. 6), in which case, discard Outlet Box Cover.

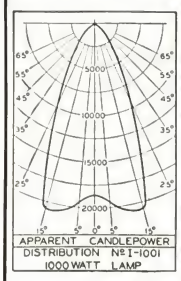
**When Recessed:** *In plaster ceiling*—use Plaster Ring, No. 3 with Flush Mounting Ring No. I-1000, Hinged Ceiling Roundel No. 3, Hinged Concentric Louver No. 3, Ceiling Roundel No. 1575 or Concentric Louver No. FM-1575-C.

*In ceiling not plastered*—use Flush Mounting Ring No. I-1000 or Ceiling Roundel No. 1575; or Hinged Ceiling Roundel No. 3; or Hinged Concentric Louver No. 3.

**Louvers:** *For Recessed Mounting*—Nos. FM-1575-C or Hinged Concentric Louver No. 3.



No. I-505 Recessed in Ceiling with Ceiling Roundel No. 1575 and Guard






## PERMAFLECTOR NO. I-1001

**Application:** Same as I-505. To be used where higher intensity is required. See also I-1000-S and I-1000-RS.

**Bottom Opening:** Circular, 16 in. diameter.

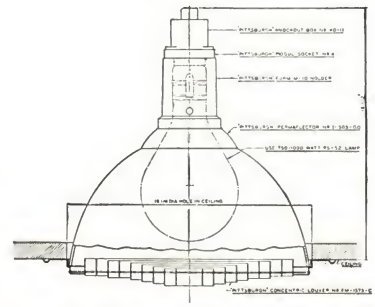
**Lamp Size:**
750-1000 watt PS-52.

**Mounting:** May be mounted on Conduit (No. 6), in which case, discard Outlet Box Cover.

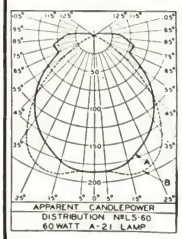
**When Recessed:** *In plaster ceiling*—use Plaster Ring, No. 3 with Flush Mounting Ring No. I-1000, Hinged Ceiling Roundel No. 3, Hinged Concentric Louver No. 3, Ceiling Roundel No. 1575 or Concentric Louver No FM-1575-C.

*In ceiling not plastered*—use Flush Mounting Ring, No. I-1000; or Ceiling Roundel, No. 1575, or Hinged Ceiling Roundel No. 3; or Hinged Concentric Louver No. 3.

**Louvers:** *For Recessed Mounting* — Nos. FM-1575-C or Hinged Concentric Louver No. 3.



No. I-1001-B Recessed in Ceiling with Louver No. FM-1575-C






## PERMAFLECTOR NO. LS-60

**Application:** For illuminating book stacks of a public library. The reflector opening is elliptical in shape. The long diameter of the ellipse runs crosswise of the aisles between the stacks.

**Spacing Recommended:** 6 ft. on centers, maximum.

**Dimensions:** Height, 3 7/16 in.; Long Diameter, 7¼ in.; Short Diameter, 5⅜ in.

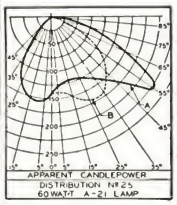
**Lamp Size:**
25 watt A-19.
40 watt A-19.
50-60 watt A-21.

**Mounting:** May be mounted on Conduit (Nos. 1, 61 or Knockout Strip KO-1) or Outlet Box Cover Assembly (Nos. B-1-3¼ or B-1-4). Use with 2¼ in. Holder, Form "S", "SL" or "L".

## Library Stack Lighting

Most library stack rooms are poorly illuminated with bare lamps spaced at intervals between stacks. The shelving usually runs to the seven foot ceiling. Bare lamps illuminate the upper shelves satisfactorily but fail to provide the necessary illumination to the bottom shelves. An intensive downwardly reflected light is essential to get good illumination on the lowest row of books. However, a portion of the reflector must transmit light through the sides so as to illuminate the uppermost books. In addition, the distribution lengthwise of the stacks must be broader, than crosswise, to permit a spacing of four to six feet between reflectors. Permaflector LS-60 performs all these functions effectively and efficiently.

# PERMAFLECTOR LIGHTING







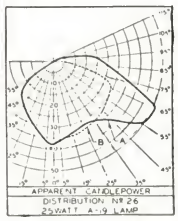
## PERMAFLECTOR NO. 25

**Application:** Very useful for cove lighting; light distribution throws out a maximum at 55° below the zenith, which permits placing cove close to ceiling.

### SELECTION DATA

**Dimensions:** Height, 4¼ in.; Width, 4¼ in.; Front to back, 4⅞ in.
**Lamp Size:**
25 watt A-19.
40 watt A-19.
50-60 watt A-21.
**Mounting:** May be mounted on Conduit (Nos. 1, 61 or Knockout Strip No. KO-1) or Outlet Box Cover Assembly (Nos. B-1-3¼ or B-1-4). Use with 2¼ in. Holder, Form "S", "SL", or "L".

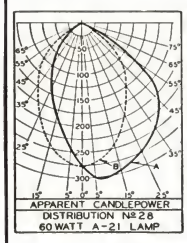
### INSTALLATION DATA






## PERMAFLECTOR NO. 26

**Application:** A show case reflector. Also, for small coves, as in residences.

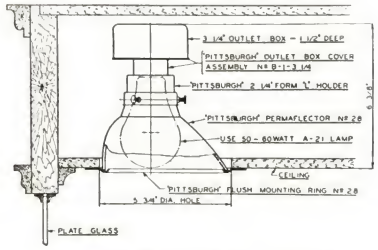




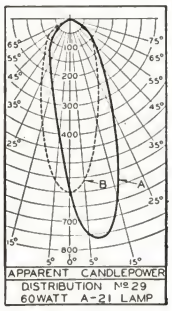

## PERMAFLECTOR NO. 28

**Application:** For tall and shallow wall display cases. It is concentrating asymmetric in distribution; maximum candle-power occurs at 10°. Also useful for lighting bank cages.

**Dimensions:** Height, 3 7/16 in.; Opening, 5½ in. diameter.
**Lamp Size:**
25 watt A-19.
40 watt A-19.
50-60 watt A-21.
**Mounting:** May be mounted on Conduit (Nos. 1, 61 or Knockout Strip No. KO-1) or Outlet Box Cover Assembly (Nos. B-1-3¼ or B-1-4). Use with 2¼ in. Holder, Form "S", "SL", or "L".
**When Recessed:** *In plaster ceiling*—use Plaster Ring, No. 28 with Flush Mounting Ring, No. 28.
*In ceiling not plastered*—use Flush Mounting Ring, No. 28.
**Louvers:** *For Recessed Mounting* — Nos. FM-28-C (use with Flush Mounting Ring, No. 28).




No. 28 Recessed in Ceiling

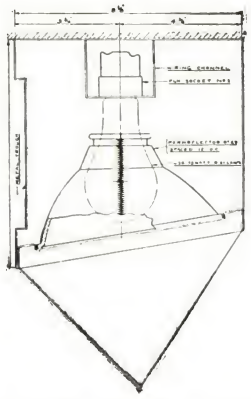




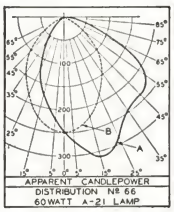

## PERMAFLECTOR NO. 29

**Application:** Primarily for tall and shallow wall display cases. Concentrating asymmetric distribution; with maximum candlepower at 15°. Also useful for stock shelves, cove lighting, etc.

**Dimensions:** Openings 6¾ in. diameter; Height, 3⅞ in.
**Lamp Size:**
25 watt A-19.
40 watt A-19.
50-60 watt A-21.
**Mounting:** May be mounted on Conduit (Nos. 1, 61 or Knockout Strip No. KO-1) or Outlet Box Cover Assembly (Nos. B-1-3¼ or B-1-4). Use with 2¼ in. Holder, Form "S", "SL", or "L".
**When Recessed:** *In plaster ceiling*—use Plaster Ring, No. 77 with Flush Mounting Ring, No. 73 or Plaster Ring, No. 4 with Hinged Ceiling Roundel No. 4; or Hinged Concentric Louver No. 4.
*In ceiling not plastered*—use Flush mounting Ring, No. 73; or Hinged Ceiling Roundel No. 4; or Hinged Concentric Louver, No. 4.
**Louvers:** *For External Mounting*—Nos. EM-77 or EM-77-C.
*For Recessed Mounting*—Nos. FM-77, FM-77-C (use with Flush Mounting Ring, No. 73); or Hinged Concentric Louver, No. 4.



Permaflector No. 29 Built-In Continuous Metal Trough

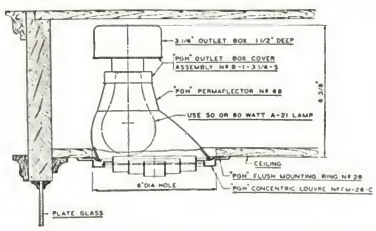





## PERMAFLECTOR NO. 66

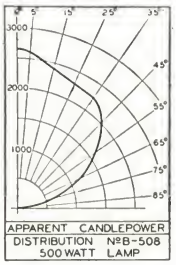
**Application:** For indirect wall urn and cove lighting. Also a case lighting reflector which may be recessed in a flat ceiling and light up the full height of background. Especially good for lighting walls of a gasoline service station from reflectors recessed in overhanging cornice.

**Dimensions:** Opening, 5½ in. diameter; Height, 4½ in.
**Lamp Size:**
50-60 watt A-21.
**Mounting:** May be mounted on Conduit (Nos. 1, 61 or Knockout Strip No. KO-1) or Outlet Box Cover Assembly (Nos. B-1-3¼ or B-1-4). Use with 2¼ in. Holder, Form "S".
**When Recessed:** *In plaster ceiling*—use Plaster Ring, No. 28 with Flush Mounting Ring, No. 28.
*In ceiling not plastered*—use Flush Mounting Ring, No. 28.
**Louvers:** *For Recessed Mounting*—No. FM-28-C (use with Flush Mounting Ring, No. 28).




No. 66 Recessed in Ceiling and Equipped with Louver

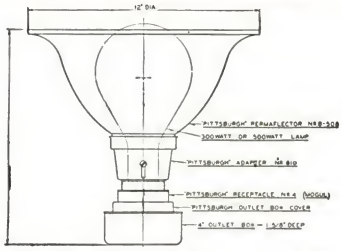
# EQUIPMENT WITH WIDE VARIETY OF APPLICATION



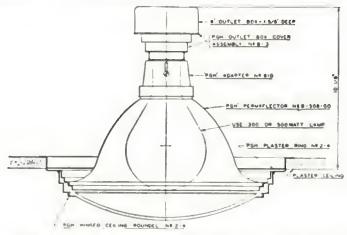



PERMAFLECTOR NO. B-508

**Application:** An excellent reflector for indirect lighting applications from equipment concealed in urns, boxes, or built in the furniture itself. Likewise a good direct lighting reflector set flush in ceiling.



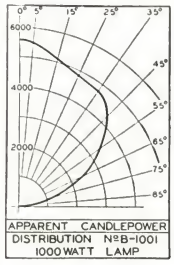
No. B-508 General Arrangement for Indirect Lighting



No. B-508 Recessed in Plaster Ceiling with Hinged Ceiling Roundel No. 2-A

SELECTION DATA

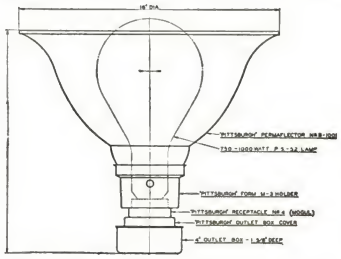
**Dimensions:** Diameter, 12 in.; Height, overall, 11¼ in.
**Lamp Size:**
300 watt PS-35.
500 watt PS-40.
**Direct Mounting Service:**
**When Recessed:** *In plaster ceiling*—use Plaster Ring, No. 555 with Flush Mounting Ring, No. E-500; Plaster Ring, No. 2-A with Hinged Ceiling Roundel No. 2-A or Hinged Concentric Louver No. 2-A.
*In ceiling not plastered*—use Flush Mounting Ring No. E-500; or Hinged Ceiling Roundel No. 2-A; or Hinged Concentric Louver No. 2-A.
**Louvers:** *For Recessed Mounting*—Hinged Concentric Louver, No. 2-A.



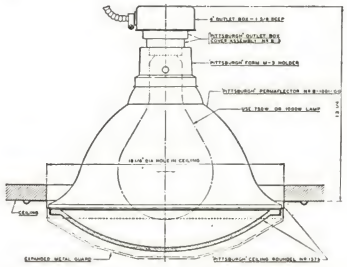



PERMAFLECTOR NO. B-1001

**Application:** An excellent reflector for indirect lighting applications from equipment concealed in urns, boxes, or built in the furniture itself. Likewise a good direct lighting reflector set flush in ceiling.



No. B-1001 General Arrangement For Indirect Lighting



No. B-1001 Direct Lighting, Recessed in Ceiling, Accessible from Above

SELECTION DATA

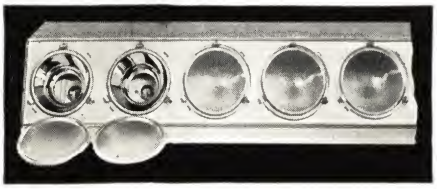
**Dimensions:** Diameter, 16 in.; Height, overall, 13⅝ in.
**Lamp Size:**
750-1000 watt PS-52.
**Direct Mounting Service:**
**When Recessed:** *In plaster ceiling*—use Plaster Ring, No. 3 with Flush Mounting Ring, No. I-1000; or with Hinged Ceiling Roundel No. 3, or Ceiling Roundel, No. 1575.
*In ceiling not plastered*—use Flush Mounting Ring No. I-1000; or Hinged Ceiling Roundel No. 3, or Ceiling Roundel, No. 1575.



EFFECTIVE PERMAFLECTOR INSTALLATIONS

*Left:* People's Natural Gas Company, Pittsburgh. Luminaires No. B-561 and Built-In Units No. FE-100-C set flush in ceiling. *Center:* Marshall Field and Company, Chicago. Note absence of visible fixtures and soft diffusion of light. *Right:* Jerome Wolk and Brothers, Pittsburgh. Modern Permaflector lighting fixtures beautify this modern fur store.

# PERMAFLECTOR THEATRE LIGHTING EQUIPMENT



## FOOT LIGHT NO. 5-A

Pittsburgh Foot Light No. 5-A is completely enclosed, self-contained, dust-tight. The convex glass roundels are easily removed to renew lamps. Front plate containing roundels is hinged in sections to get at the wiring.

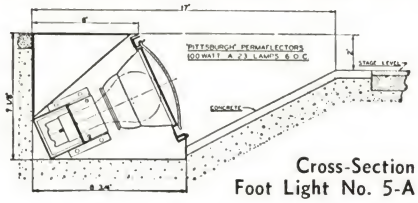
When specifying No. 5-A Pittsburgh Foot Light, architects should detail as indicated, thus requiring the general contractor to build the stage so that the Pittsburgh Foot Light will accurately fit into place.

Sold complete with Permaflectors No. C-60 spaced 6 inches on centers and one F-7 Color-Lite for each outlet (Not Wired). Color-Lite No. F-7 available in red, blue, green, amber, moonlight or uncolored stippled.

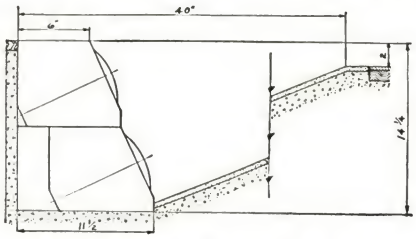
### SELECTION DATA

**Lamp Size:**
Use 100 watt A-23.

**Note:** As many 10′ 0″ lengths are bolted together as may be required. When total required length is not evenly divisible by 10″ 0′, one section is made of special length.

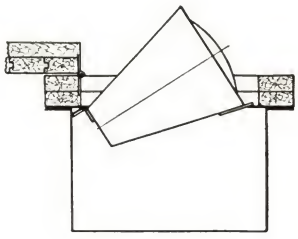



Cross-Section
Foot Light No. 5-A

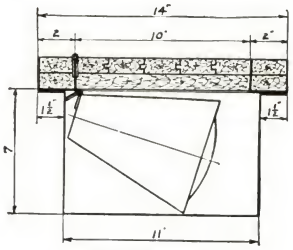



## Double Row of Foot Lights No. 5-A

Top row bolted to bottom row internally at intervals.



Open Position



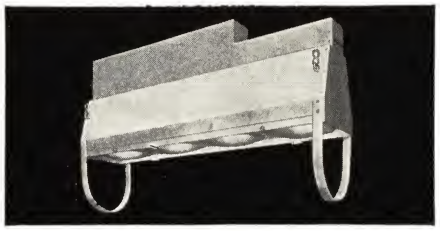

Closed Position

## DISAPPEARING FOOT LIGHT NO. 9

A complete self contained foot light, ready to be set in floor of stage and connected up. Made up in 5 ft. x 14 in. standard size. Each foot light contains 9 Permaflectors C-60 spaced 6 in. on centers, equipped with 9 Color-Lite No. F-7, three red, three blue and three uncolored stippled. Mercury switches in each of three circuits extinguish lights when foot light is closed. Wired with three circuits; red, blue and uncolored.

### SELECTION DATA

**Lamp Size:**
Use 100 watt A-23.



## BORDER LIGHT NO. 6

A completely enclosed, self-contained unit, built of 20 gauge galvanized iron, aluminum finish. Permaflector C-101 snugly set in metal bottom plate on 9″ centers. Glass Color-Lites No. F-2 set in hinged metal plate for easy access to lamps.

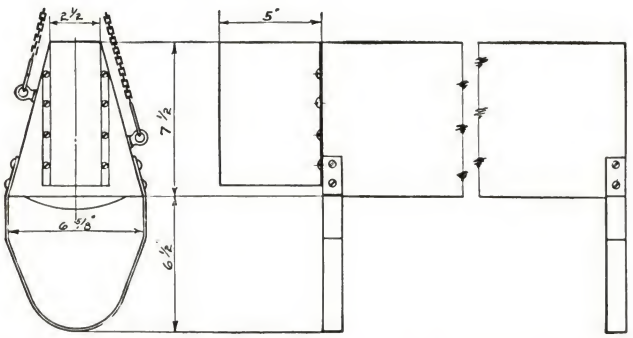
Made in standard lengths of 9 feet with 12 outlets 9″ on centers. Strap steel guards 36″ on centers. Wiring box installed at center or either end as specified. Terminal connection block furnished in wiring box for convenience of installation and maintenance.

Furnished complete as shown, unwired, but equipped with chain for attaching to pipe batten. Chains spaced 36″ on centers.

We do not furnish pipe batten, strain insulator, flexible border light cable, lamps or rigging of any kind.

### SELECTION DATA

**Lamp Size:**
Use 200 watt PS-30.
**Note:** As many standard 9 feet lengths are bolted together as may be required. When total length is not evenly divisible by 9 feet, one section is made special to required dimension.




## BORDER LIGHT NO. 7

A completely enclosed, self-contained unit, built of 20 gauge galvanized iron, aluminum external finish. Permaflector No. C-60 snugly set in hinged bottom plate. Glass Color-Lites No. F-7 snap into clips which are tightly compressed by a hinged keeper ring.

Made in standard lengths of 7′ 6″ with 15 outlets spaced 6″ on centers. Wiring box installed at center or either end, as specified. Terminal connection block furnished in wiring box for convenience of installation and maintenance.

Furnished complete as shown, unwired, but equipped with chain for attaching to pipe batten. Chains spaced 36″ on centers.

We do not furnish pipe batten, strain insulator, flexible border light cable, lamps or rigging of any kind.

### SELECTION DATA

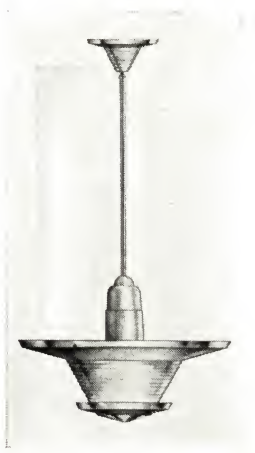
**Lamp Size:**
Use 100 watt A-23.

**Note:** As many standard 7′ 6″ lengths are bolted together as may be required. When total length is not evenly divisible by 7′ 6″, one section is made special to required dimension.

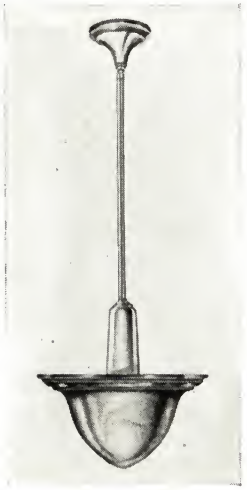
# PERMAFLECTOR LUSTROLIERS AND LUMINAIRES DIRECT — INDIRECT



A-581 B-581



R-581 N-581



B-11 B-21 B-51

## SELECTION DATA

### TOTALLY INDIRECT

**Luminaire No. A-581**—The Bipost (1000 Watt T-24)
**Luminaire No. B-581**—The General Service (PS Type)

### INDIRECT — ILLUMINATED BOWL

**Lustrolier No. R-581**—The Bipost 1000 Watt T-24)
**Lustrolier No. N-581**—The General Service (PS Type)

Both designs are distinctive and exemplify the vogue of the shallow bowl.

Contain full size Permaflector with maximum pick-up of light and hence best control and efficiency.

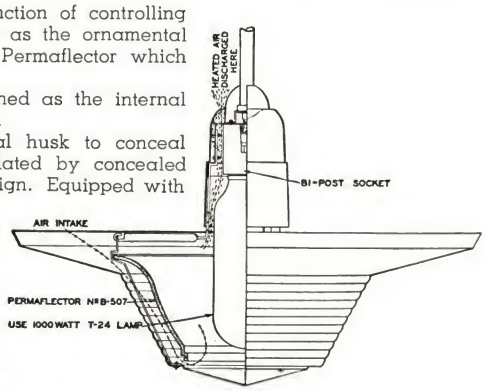
No reliance on bowl to perform the function of controlling light by reflection. The bowl serves only as the ornamental enclosure for the Permaflector. It is the Permaflector which controls the light.

Efficiency of the lighting easily maintained as the internal surface of the Permaflector is smooth glass.

A-581 and R-581 equipped with a dual husk to conceal socket and lamp neck, ingeniously ventilated by concealed means. No exposed vents to mar husk design. Equipped with stem hanger only.

A-581 and R-581 equipped with stranded nickel fixture wire with 40 mil wall asbestos insulation, additionally insulated by refractory tubing at socket, where heat naturally is greatest.

B-581 and N-581 equipped with standard chain hanger, or stem hanger for use with the general service 300-500 watt PS Type inside frosted lamp.




**Specifications**

| Type of Lamp | 1000 Watt T-24 Bipost | | 300-500 Watt PS Type I.F. | |
|---|---|---|---|---|
| Luminaire or Lustrolier | A-581 | R-581 | B-581 | N-581 |
| Bowl, diameter | 21″ | 21″ | 21″ | 21″ |
| Standard Suspension: | | | | |
| Top of Bowl to Ceiling | 36″ | 36″ | 30″ | 30″ |
| Overall Length | 43″ | 44″ | 37″ | 38″ |
| Permaflector No. | B-507 | B-507 | B-507 | B-507 |
| *Standard Finish | Roman Silver | Roman Silver | Roman Silver | Roman Silver |

*On special order may be had finished in sprayed and baked ivory, seafoam green, azure blue or dove gray (husk finished in polished aluminum).
On special order may be had finished in Lustrotex gun metal, antique bronze or light bronze (husk finished in polished aluminum).

### TOTALLY INDIRECT

**Luminaire Nos. B-21, B-51 and B-11**

Inexpensive but of excellent design. The small diameter of these Luminaires makes them excellent for general office lighting, where many units are used in a large space. This is the fastest seller in the Permaflector line of Luminaires.

An efficient Permaflector provides the light control. Standard suspension is the chain hanger, but these Luminaires may also be had with the stem hanger, as illustrated.

**Specifications**

| Standard Lamps, Size | 200 Watt | 300-500 Watt | 750-1000 Watt |
|---|---|---|---|
| Luminaire No. | B-21 | B-51 | B-11 |
| Diameter of Bowl | 12″ | 14⅝″ | 19⅜″ |
| Standard Suspension: | | | |
| Top of Bowl to Ceiling | 30″ | 30″ | 36″ |
| Overall Length | 36¼″ | 37½″ | 46″ |
| Permaflector No. | B-200 | B-501 | B-1000 |
| *Standard Finish | Roman Silver | Roman Silver | Roman Silver |

We recommend the use of inside frosted lamps.
*On special order may be had finished in sprayed and baked ivory, seafoam green, azure blue or dove gray (husk finished in polished aluminum).
On special order may be had finished in Lustrotex gun metal, antique bronze or light bronze (husk finished in polished aluminum).

# PERMAFLECTOR LUSTROLIERS



Luminaire Nos. B-521 and B-1021

## SELECTION DATA

### TOTALLY INDIRECT

An indirect Luminaire of large diameter and shallow lines. The decorative bowl appeals to those desiring an ornamental totally indirect Luminaire. When furnished with polished rings it is striking. An efficient Permaflector provides the light control.

Standard suspension is the chain hanger, but these Luminaires may also be had with the stem hanger, as illustrated.

**Specifications**

| Standard Lamps, Size | 300-500 Watt | 750-1000 Watt |
|---|---|---|
| Luminaire No. | B-521 | B-1021 |
| Diameter of Bowl | 21″ | 28″ |
| Standard Suspension: | | |
| Top of Bowl to Ceiling | 30″ | 36″ |
| Overall Length | 38½″ | 47¼″ |
| Permaflector No. | B-501 | B-1000 |
| *Standard Finish | Roman Silver | Roman Silver |

We recommend the use of inside frosted lamps.

*On special order may be had finished in sprayed and baked ivory, seafoam green, azure blue or dove gray (husk finished in polished aluminum).

On special order may be had finished in Lustrotex gun metal, antique bronze or light bronze (husk finished in polished aluminum).

On special order, available with polished husk and polished rim and rings on canopy and bowl.

B-521 is available for use with 1000 watt Bipost T-24 lamp. When ordering, call for B-521 ***Bipost.***



Luminaire No. B-531

### TOTALLY INDIRECT

Designed for those installations where a shallow luminaire is desired, to harmonize with modern interior decorations and furnishings.

Hitherto shallow luminaires meant inefficient lighting because no reflectors were used. Now Permaflectors enclosed in shallow bowls give efficiency combined therewith.

Standard suspension is the chain hanger, but this Luminaire may also be had with the stem hanger, as illustrated.

**Specifications**

| Standard Lamps, Size | 300-500 Watt |
|---|---|
| Luminaire No. | B-531 |
| Diameter of Bowl | 25½″ |
| Standard Suspension: | |
| Top of Bowl to Ceiling | 30″ |
| Overall Length | 37¾″ |
| Permaflector No. | B-501 |
| *Standard Finish | Roman Silver |

We recommend the use of inside frosted lamps.

*On special order may be had finished in sprayed and baked ivory, seafoam green, azure blue or dove gray (husk finished in polished aluminum).

On special order may be had finished in Lustrotex gun metal, antique bronze or light bronze (husk finished in polished aluminum).

B-531 is available for use with 1000 watt Bipost T-24 lamp. When ordering, call for B-531 ***Bipost.***



Luminaires Nos. B-561 and B-1061

### TOTALLY INDIRECT

Designed for those installations where a shallow luminaire is desired, to harmonize with modern interior decorations and furnishings.

Hitherto shallow luminaires meant inefficient lighting because no reflectors were used. Now Permaflectors enclosed in shallow bowls give efficiency combined therewith.

Standard suspension is the chain hanger, but these Luminaires may also be had with the stem hanger, as illustrated.

**Specifications**

| Standard Lamps, Size | 300-500 Watt | 750-1000 Watt |
|---|---|---|
| Luminaire No. | B-561 | B-1061 |
| Diameter of Bowl | 21″ | 28″ |
| Standard Suspension: | | |
| Top of Bowl to Ceiling | 30″ | 36″ |
| Overall Length | 37″ | 45″ |
| Permaflector No. | B-501 | B-1000 |
| *Standard Finish | Roman Silver | Roman Silver |

We recommend the use of inside frosted lamps.

*On special order may be had finished in sprayed and baked ivory, seafoam green, azure blue or dove gray (husk finished in polished aluminum).

On special order may be had finished in Lustrotex gun metal, antique bronze or light bronze (husk finished in polished aluminum).

B-561 is available for use with 1000 watt Bipost T-24 lamp. When ordering, call for B-561 ***Bipost.***

# AND LUMINAIRES DIRECT — INDIRECT



Lustrolier Nos. N-22 and N-52

## SELECTION DATA

### INDIRECT LIGHTING WITH DIRECT COMPONENT
**Illuminated Bowl**

For private office lighting. Predominantly indirect but a minor portion of the light is directed downward through an etched glass disc. This builds up a very high intensity over the limited area of a desk placed below the Lustrolier, without glare. This direct component may be given a daylight value through the use of the daylight Color-Lite.

An efficient Permaflector provides the light control.

Standard suspension is the chain hanger, as illustrated, but these Lustroliers may also be had with the stem hanger.

**Specifications**

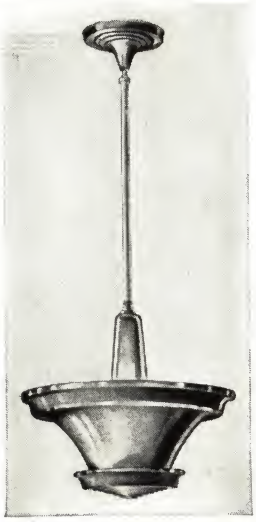
| Standard Lamps, Size | 200 Watt | 300-500 Watt |
|---|---|---|
| Lustrolier No. | N-22 | N-52 |
| Direct component transmitted through | Etched Glass Disc | Etched Glass Disc |
| Diameter of Bowl | 15″ | 18″ |
| Standard Suspension: | | |
| Top of Bowl to Ceiling | 30″ | 30″ |
| Overall Length | 36½″ | 38″ |
| Permaflector No. | B-207 | B-507 |
| *Standard Finish | Roman Silver | Roman Silver |
| Daylight Lighting For Direct Component | | |
| Use Color-Lite (optional) No. | F-12 DB | F-7 DB |

We recommend the use of inside frosted lamps

*On special order may be had finished in sprayed and baked ivory, seafoam green, azure blue or dove gray (husk finished in polished aluminum).

On special order may be had finished in Lustrotex gun metal, antique bronze or light bronze (husk finished in polished aluminum).

N-52 is available for use with 1000 watt Bipost T-24 lamp. When ordering, call for N-52 ***Bipost.***



Lustrolier Nos. N-22-C, N-52-C and N-12-C

### INDIRECT LIGHTING WITH DIRECT COMPONENT
**Illuminated Bowl**

For store lighting. Predominantly indirect but a minor portion of the light is directed downward through the louvered bottom member. Thus in a ladies' garment salesroom a satisfactory intensity of indirect illumination may be generally distributed. However, for examining dark clothes, the customer may stand below a Lustrolier where an increased intensity is available without glare.

An efficient Permaflector provides the light control.

Standard suspension is the chain hanger, but these Lustroliers may also be had with the stem hanger, as illustrated.

**Specifications**

| Standard Lamps, Size | 200 Watt | 300-500 Watt | 750-1000 Watt |
|---|---|---|---|
| Lustrolier No. | N-22-C | N-52-C | N-12-C |
| Direct Component Transmitted Through | Concentric Louvers | Concentric Louvers | Concentric Louvers |
| Diameter of Upper Bowl | 15″ | 18″ | 24″ |
| Standard Suspension: | | | |
| Top of Bowl to Ceiling | 30″ | 30″ | 36″ |
| Overall Length | 37″ | 39″ | 47″ |
| Permaflector No. | B-207 | B-507 | B-1007 |
| *Standard Finish | Roman Silver | Roman Silver | Roman Silver |
| Daylight Lighting for Direct Component | | | |
| Use Color-Lite (optional) No. | F-12 DB | F-7 DB | F-8 DB |

We recommend the use of inside frosted lamps.

*On special order may be had finished in sprayed and baked ivory, seafoam green, azure blue or dove gray (husk finished in polished aluminum).

On special order may be had finished in Lustrotex gun metal, antique bronze or light bronze (husk finished in polished aluminum).



Lustrolier Nos. N-521 and N-1021

**Illuminated Bowl**

A very attractive Lustrolier for interiors requiring decorative lighting equipment. The illumination of the bowl may be made to harmonize with the color tone of the room by selecting a color lens to accomplish the desired effect.

An efficient Permaflector provides the light control.

Standard suspension is the chain hanger, as illustrated, but these Lustroliers may also be had with the stem hanger.

**Specifications**

| Standard Lamps, Size | 300-500 Watt | 750-1000 Watt |
|---|---|---|
| Lustrolier No. | N-521 | N-1021 |
| Diameter of Bowl | 21″ | 28″ |
| Standard Suspension: | | |
| Top of Bowl to Ceiling | 30″ | 36″ |
| Overall Length | 38½″ | 47¼″ |
| Permaflector No. | B-507 | B-1007 |
| *Standard Finish | Roman Silver | Roman Silver |
| Color-Lite (optional) No. | F-7 | F-8 |

We recommend the use of inside frosted lamps.

*On special order may be had finished in sprayed and baked ivory, seafoam green, azure blue or dove gray (husk finished in polished aluminum).

On special order may be had finished in Lustrotex gun metal, antique bronze or light bronze (husk finished in polished aluminum).

On special order, available with polished husk and polished rim and rings on canopy and bowl.

N-521 is available for use with 1000 watt Bipost T-24 lamp. When ordering, call for N-521 ***Bipost.***

# PERMAFLECTOR LUSTROLIERS



Lustrolier Nos. N-561 and N-1061

## SELECTION DATA

### Illuminated Bowl

An exceptionally beautiful shallow bowl Lustrolier of the luminous type. Very striking, especially when color lens is used to "color light" the bowl.

These shallow lines usually are available only in luminaires not equipped with reflectors. Now efficient Permaflectors are made available with shallow bowls.

Standard suspension is the chain hanger, but these Lustroliers may also be had with the stem hanger, as illustrated.

**Specifications**

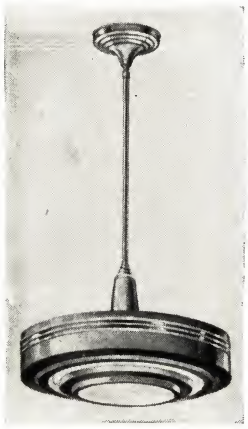
| Standard Lamps, Size | 300-500 Watt | 750-1000 Watt |
|---|---|---|
| Lustrolier No. | N-561 | N-1061 |
| Diameter of Bowl | 21″ | 28″ |
| Standard Suspension: | | |
| Top of Bowl to Ceiling | 30″ | 36″ |
| Overall Length | 37″ | 45″ |
| Permaflector No. | B-507 | B-1007 |
| *Standard Finish | Roman Silver | Roman Silver |
| Color-Lite (optional) No. (Red, Amber, Green, Light Blue, Royal Blue) | F-7 | F-8 |

We recommend the use of inside frosted lamps.

*On special order may be had finished in sprayed and baked ivory, seafoam green, azure blue or dove gray (husk finished in polished aluminum).

On special order may be had finished in Lustrotex gun metal, antique bronze or light bronze (husk finished in polished aluminum).

N-561 is available for use with 1000 watt Bipost T-24 lamp. When ordering, call for N-561 ***Bipost.***



Lustrolier Nos. N-562 and N-1062

## INDIRECT LIGHTING WITH DIRECT COMPONENT

### Illuminated Bowl

An excellent store lighting Lustrolier. The direct lighting component adds materially to the effective illumination on the merchandise **without glare.** Weiboldt's, River Forest, Illinois, have five hundred of these in service. McCreerys, Pittsburgh, have two hundred in use.

An efficient Permaflector in the upper bowl provides the light control.

Standard suspension is the chain hanger, but these Lustroliers may also be had with the stem hanger, as illustrated.

**Specifications**

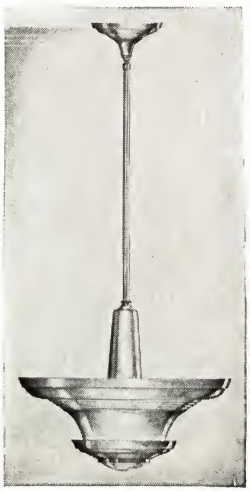
| Standard Lamps, Size | 300-500 Watt | 750-1000 Watt |
|---|---|---|
| Lustrolier No. | N-562 | N-1062 |
| Direct Component Transmitted Through | Etched Glass Disc | Etched Glass Disc |
| Diameter of Bowl | 21″ | 28″ |
| Standard Suspension: | | |
| Top of Bowl to Ceiling | 30″ | 36″ |
| Overall Length | 37″ | 45″ |
| Permaflector No. | B-507 | B-1007 |
| *Standard Finish | Roman Silver | Roman Silver |
| Daylight Lighting For Direct Component Use Color-Lite (optional) No. | F-7 DB | F-8 DB |

We recommend the use of inside frosted lamps.

*On special order may be had finished in sprayed and baked ivory, seafoam green, azure blue or dove gray (husk finished in polished aluminum).

On special order may be had finished in Lustrotex gun metal, antique bronze or light bronze (husk finished in polished aluminum).

N-562 is available for use with 1000 watt Bipost T-24 lamp. When ordering, call for N-562 ***Bipost.***



Lustrolier No. N-571

## INDIRECT LIGHTING WITH DIRECT COMPONENT

### Illuminated Bowl

### Indirect Lighting

Modern in design but not ultra. The black striping on Roman Silver gives it unrivaled charm. Color lighting the bowl adds variety because the entire aspect of a room illuminated with Lustroliers No. N-571 may be changed by a change in Color-Lite.

An efficient Permaflector provides the light control.

Standard suspension is the chain hanger, but these Lustroliers may also be had with the stem hanger, as illustrated.

**Specifications**

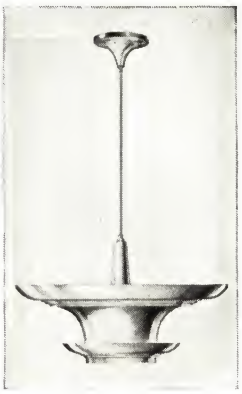
| Standard Lamps, Size | 300-500 Watt |
|---|---|
| Lustrolier No. | N-571 |
| Direct Component Transmitted Through | Etched Glass Roundel |
| Diameter of Bowl | 18″ |
| Standard Suspension: | |
| Top of Bowl to Ceiling | 30″ |
| Overall Length | 38″ |
| Permaflector No. | B-507 |
| *Standard Finish | Roman Silver |
| Daylight Lighting For Direct Component Use Color-Lite (optional) No. | F-7 DB |

We recommend the use of inside frosted lamps.

*On special order may be had finished in sprayed and baked ivory, seafoam green, azure blue or dove gray (husk finished in polished aluminum).

On special order may be had finished in Lustrotex gun metal, antique bronze or light bronze (husk finished in polished aluminum).

# AND LUMINAIRES DIRECT — INDIRECT



Lustrolier Nos. 5100 and 5110

## Selection Data

### INDIRECT LIGHTING WITH DIRECT COMPONENT
**Illuminated Bowl**

Designed particularly for the lighting of the department store, especially the main floor having a high ceiling. Suitable for installation at the center of a 20 to 24 ft. size of bay.

Has a low direct lighting component transmitted through the 12 in. dia. inverted etched stippled heat-resisting roundel of the bottom member of No. 5100.

No. 5110 is equipped with concentric louver instead of roundel.

An efficient Permaflector controls the light.

Standard suspension is the chain hanger; may also be had with the stem hanger.

**Specifications**

| Standard Lamps, Size | 750-1000 Watt | 750-1000 Watt |
|---|---|---|
| Lustrolier No. | 5100 | 5110 |
| Direct Component Transmitted Through | Etched Glass Roundel | Concentric Louver |
| Diameter of Bowl | 34″ | 34″ |
| Standard Suspension: | | |
| Top of Bowl to Ceiling | 48″ | 48″ |
| Overall Length | 60″ | 61″ |
| Permaflector No. | B-1007 | B-1007 |
| Standard Finish | Roman Silver | Roman Silver |
| Daylight Lighting For Direct Component Use Color-Lite (optional) No. | F-8 DB | F-8 DB |

We recommend the use of inside frosted lamps.

*On special order may be had finished in sprayed and baked ivory, seafoam green, azure blue or dove gray (husk finished in polished aluminum).

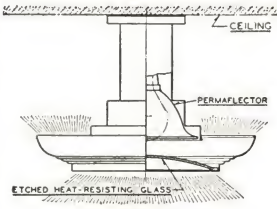
On special order may be had finished in Lustrotex gun metal, antique bronze or light bronze (husk finished in polished aluminum).



Luminaire Nos. 5000 and 5010

### MINOR INDIRECT COMPONENT
**Illumination Preponderantly Direct**

A new, distinctive and utterly different luminaire for the lighting of department stores. It is predominantly a direct lighting fixture, but it also has an indirect lighting component. With an overall depth of 18 in. it takes away very little from clearance overhead and avoids the oppressiveness of low hanging fixtures.




No. 5000 is equipped with 16¾ in. heat resisting roundel, installed convex upward as shown.

No. 5010 is equipped with concentric louver where roundel is shown in the sketch.

An efficient Permaflector controls the light.

**Specifications**

| Standard Lamps, Size | 300-500 Watt | 300-500 Watt |
|---|---|---|
| Luminaire No. | 5000 | 5010 |
| Direct Lighting Transmitted Through | Etched Glass Roundel | Concentric Louvers |
| Diameter of Bowl | 24″ | 24″ |
| Suspension: | | |
| Top of Bowl to Ceiling | 14″ | 14″ |
| Overall Length | 18″ | 19″ |
| Permaflector No. | B-508-GO | B-508-GO |
| Standard Finish | Roman Silver | Roman Silver |

We recommend the use of inside frosted lamps.



Luminaire Nos. 5025 and 5026

### ILLUMINATED UPPER BOWLS
**Direct Illumination—Louvered**

Direct lighting well controlled and glareless, is excellent for high interiors such as the main floor of a department store, an auditorium, or convention exhibit hall. This design is for surface mounting. A small portion of the light is used for illuminating the several elements of the fixture.

Concentric louvers mask the reflector and lamp from normal line of sight. At acute angles the louvers have the appearance of luminous glass.

An efficient Permaflector provides the necessary control of light.

**Specifications**

| Standard Lamps, Size | 300-500 Watt | 750-1000 Watt* |
|---|---|---|
| Luminaire No. | 5025 | 5026 |
| Dimensions: | | |
| Overall Depth | 19″ | 19″ |
| Maximum Diameter | 28″ | 28″ |
| Permaflector No. | I-505-GO | B-1001-GO |
| Standard Finish | Ivory | Ivory |

We recommend the use of inside frosted lamps.

*If 300 or 500 watt PS-Type Lamp is desired use a mogul to mogul socket extension.

# PERMAFLECTOR COLOR-LITES FOR USE IN SHOW WINDOW LIGHTING COVE LIGHTING OTHER INTERIOR SERVICES

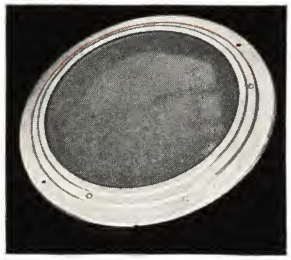
The use of Permaflector Color-Lites has been found to be very satisfactory as an aid in attracting attention as well as creating a pleasing effect for auditorium usage. The Color-Lites shown below are available in a wide range of colors as shown in the tables and may be attached to most types of Permaflectors. They find wide application in Foot and Border Lights as well as for general auditorium lighting. Color-Lites are particularly well adapted for use with Interior Floods or Interior Spots. For additional data on Permaflector Color-Lites write direct to the Pittsburgh Reflector Company.

## Glass Color-Lites (For External Mounting)



Consists of retainer frame with coiled springs and one pressed glass roundel in any of the colors listed. A permanent color filter not subject to the faults of gelatines which fade, shrink and wrinkle. To attach merely hook the springs in holes of adapter or holder; to remove, unhook. Neither lamp nor Permaflector need be removed.

## Color-Lite No. 21 (For Flush Mounting)



Consists of frame which may be attached to flush mounting ring by means of knurled head screws, and one pressed glass roundel in any of the colors listed. These Color-Lites equipped with uncolored stippled roundel, used with flush mounted reflectors, makes an inexpensive substitute for hinged ceiling roundels.

## Color-Lite No. 4-A (Glass)



An improved design of Color-Lite. For use with Permaflectors Nos. 29, 73, P-75-A, P-151, P-101, P-201, E-75, I-60, Interior Flood No. WF-100. It consists of a split ring which closely fits around the rim of Permaflector. The colored glass roundel sets in frame hinged to the aforementioned split ring. A spring clasp holds the cover closed. Colored roundel is fastened in cover ring by a split wire ring which fits in a groove in the color rim. Diameter 6¾ in.

## Color-Lite No. 4-ADB (Glass)

Same as Color-Lite No. 4-A except it is equipped with inside stippled daylight glass roundel.

## Color-Lite F Series



Pressed glass roundels for use with floodlights, Lustroliers, Color-Lite frames and other colored lighting applications. When used in floodlight, roundel shall be installed inside under protection of heat resisting glass cover.

### Glass Color-Lites (For External Mounting)

| Color-Lite No. | Diameter of frame in. | Diameter of Roundel only in. | Color |
|---|---|---|---|
| 2<br>6<br>16 | 10⅛<br>8⅝<br>7¼ | 9 7/16<br>8<br>6½ | Red Green<br>Blue Moonlight<br>Amber Uncolored Stippled |
| 2-DB<br>6-DB<br>10-DB<br>12-ADB<br>16-DB | 10⅛<br>8⅝<br>11¾<br>4¾<br>7¼ | 9 7/16<br>8<br>10¾<br>4 3/16<br>6½ | Daylight |
| 8<br>10<br>12-A<br>14-A | 13⅝<br>11¾<br>4¾<br>12¾ | 13<br>10¾<br>4 3/16<br>11¼ | Red Green<br>Blue Amber<br>Uncolored Stippled |

### Glass Color-Lites (For Flush Mounting)

| | | | |
|---|---|---|---|
| 21<br>61 | 11⅞<br>10⅜ | 9 7/16<br>8 | Red Amber<br>Blue Moonlight<br>Green Uncolored Stippled |
| 21-DB<br>61-DB | 11⅞<br>10⅜ | 9 7/16<br>8 | Daylight |

### Color-Lites F Series

| Color-Lite No. | Diameter in. | Color |
|---|---|---|
| F-1<br>F-10<br>F-11<br>F-12<br>F-13 | 10⅜<br>10¾<br>11¼<br>4 3/16<br>13 | Red Green<br>Blue Amber |
| F-2<br>F-4<br>F-5<br>F-7<br>F-8 | 8<br>9 7/16<br>12<br>5½<br>6½ | Red Green<br>Blue Amber<br>Moonlight |
| F-9 | 8⅜ | Red Green<br>Blue Amber<br>Light Blue |
| F-2DB<br>F4DB<br>F-8DB<br>F-10DB<br>F-12DB | 8<br>9 7/16<br>6½<br>10¾<br>4 3/16 | Daylight |

# PERMAFLECTOR ACCESSORIES FOR RECESSED INSTALLATIONS

## Completing the Permaflector Line

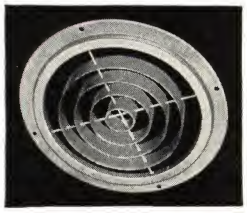
On this and the following pages will be found most of the available fittings and accessories to round out the Permaflector line of lighting equipment. All of the variations and available models are not shown, but you will find that Permaflector offers the most flexible line with which to handle every form of recessed or conventional installation. Additional data on any or all of the accessories shown here may be obtained by writing direct to the Pittsburgh Reflector Company, or to any of our factory representatives (see back cover).



Parallel



Egg Crate



Concentric



Eccentric



Hinged Ceiling Roundel



Ceiling Roundel No. 1575

## Permaflector Louvers

**For Flush Mounting Service**—These louvers are used for concealing reflectors and lamps of recessed equipment. They attach to flush mounting ring. Under each reflector we advise what louvers may be used therewith.

**For External Mounting Service**—These louvers are used for concealing reflecting surfaces and lamps of exposed equipment. They attach by means of coiled springs similar to color-lites.

**For Flush Mounting**

| CONCENTRIC | | |
|---|---|---|
| Louver No. | Frame Dia. | For use With Flush Ring No. |
| FM-28-C | 7¼″ | 28 |
| FM-54-C | 11¾″ | 54, C-201 |
| | | I-201 |
| FM-55-C | 10¼″ | 55, C-100 |
| FM-77-C | 9″ | 73 |
| FM-555-C | 14¼″ | 555 |
| FM-1575-C | 19½″ | None Required |
| FME-500-C | 14¼″ | E-500, C-300 |
| **ECCENTRIC** | | |
| FM-77-CA | 9″ | 73 |
| FM-88-CA | 10¼″ | 55 |
| FM-99-CA | 11¾″ | 54 |
| **PARALLEL** | | |
| FM-54 | 11¾″ | 54, C-201 |
| | | I-201 |
| FM-55 | 10¼″ | 55, C-100 |
| FM-77 | 9″ | 73 |
| FM-555 | 14¼″ | 555 |
| FME-500 | 14¼″ | E-500, C-300 |
| **EGG CRATE** | | |
| FEC-100 | 10¼″ | 55, C-100 |
| FEC-200 | 11¾″ | 54, C-201 |
| | | I-201 |
| FEC-300 | 14¼″ | E-500, C-300 |

**For External Mounting**

| CONCENTRIC | |
|---|---|
| Louver No. | Frame Dia. |
| EM-54-C | 10¼″ |
| EM-55-C | 8¾″ |
| EM-77-C | 7¼″ |
| EM-555-C | 13¾″ |
| EME-500-C | 12⅛″ |
| **ECCENTRIC** | |
| EM-77-CA | 7¼″ |
| EM-88-CA | 8¾″ |
| EM-99-CA | 10¼″ |
| **PARALLEL** | |
| EM-54 | 10¼″ |
| EM-55 | 8¾″ |
| EM-77 | 7¼″ |
| EM-555 | 13¾″ |
| EME-500 | 12⅛″ |



Hinged Concentric Louver

| Hinged Concentric Louver No. | Overall Frame Dia. |
|---|---|
| 1-A | 10½″ |
| 2-A | 15″ |
| 3 | 19½″ |
| 4 | 9″ |
| 6 | 12″ |

**Hinged Concentric Louvers**—These are the same and serve the same purpose as hinged ceiling roundels. In place of stippled glass roundel, they are equipped with concentric louvers set in the hinged member. The louvers are luminous by reflected light and are frequently preferred over other types.

## Roundels

**Hinged Ceiling Roundels**—Used for recessed lighting equipment, where it is desired to completely conceal the reflector and lamp. Hinged member contains stippled colorless roundel, which effectively conceals lamp and reflector, but does not materially alter the character of the light distribution from the reflector. The ceiling flange may be attached directly to the ceiling or to the plaster ring in the case of plastered ceilings. For gymnasium lighting, handball courts, etc., Hinged Ceiling Roundels No. 1-A, 2-A, 3 and 6 are available equipped with heavy wire guard.

**Ceiling Roundel No. 1575**—Where lighting is accessible for maintenance from space above ceiling, Permaflectors may be recessed by means of ceiling roundels, not hinged. Ceiling Roundel No. 1575 consists of spun metal rim in which heat resisting colorless stippled roundel is set. For gymnasium use, may be equipped with wire guard as shown. Finished in sprayed and baked aluminum.

## Permaflector Flush Mounting Rings and Plaster Rings

When flush mounting Permaflectors it is necessary that the opening in the ceiling be cut to the proper size. Flush mounting rings, either circular or non-circular may be used to simplify the installation. When Permaflectors are to be set flush in a plastered ceiling, our plaster rings are a great convenience. They make possible a perfectly round finished opening and provide the means of conveniently attaching the flush mounting ring, hinged ceiling roundel, louvers or built-in units.

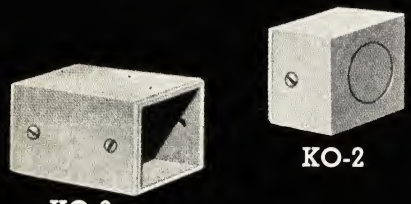
# ACCESSORIES AND FITTINGS FOR



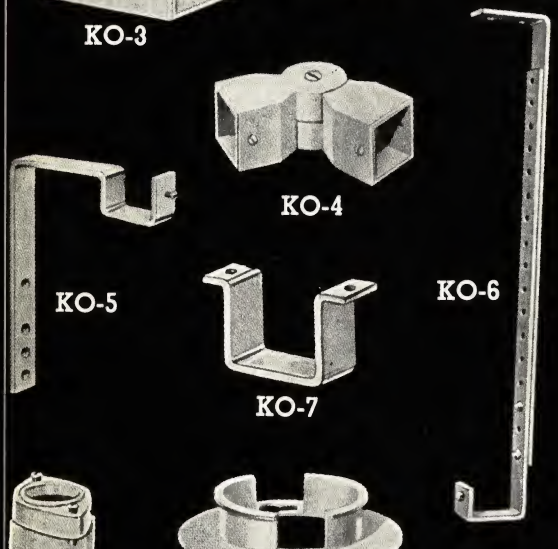
No. SS-200



KO-1



KO-2 KO-3



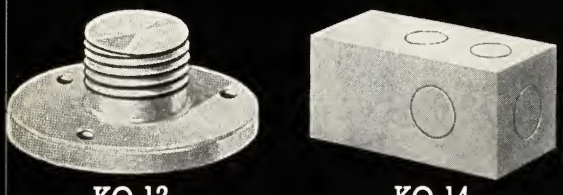
KO-4 KO-5 KO-6 KO-7



KO-8 KO-9



KO-10 KO-11



KO-12 KO-14

## Spill Shields for Use with Interior Spots

For the purpose of eliminating the spill light of the Spot Light Reflectors, without interference with the light beam, Spill Shields are used. No. SS-200 illustrated consists of spun metal ring and metal cup supported on tripod as shown. Suspended by means of springs same as Color-Lites. Color-Lite Roundels may also be used.

No. SS-990 consists of spun ring in which is carried a spherical segment which intercepts direct light from the lamp which would otherwise illuminate the wall. Used for cove and wall urn lighting where light on wall is not desired. Does not interfere with reflected light over ceiling.

## Knockout Strip and Fittings

**Knockout Strips No. KO-1**—Furnished only in 10-ft. lengths with Knockouts 3 in. on centers.

**End No. KO-2**—Permaflector Knockout End is used at the ends of Knockout Strip.

**Coupling No. KO-3**—Permaflector Knockout Coupling is used for joining together lengths of Knockout Strip.

**Joint No. KO-4**—Permits any angle to be made between adjacent sections of Knockout Strip from 65 to 180 degrees.

**Bracket No. KO-5**—Permaflector Knockout Bracket is designed for supporting Knockout Strip from the transom bar, or other vertical surface.

**Hanger No. KO-6**—Permaflector Knockout Hanger is used for supporting Knockout Strip at a distance below the ceiling. It is adjustable from 20 to 37 in.

**U-Strap No. KO-7**—Permaflector Knockout U-Strap is designed for surface mounting of Knockout Strip.

**Socket No. KO-8**—A porcelain medium screw socket especially designed for Knockout Strip.

**Fitter No. KO-9**—Provides shade holder groove for attaching any standard holder.

**Hub No. KO-10**—Fits into Knockout in face of Strip and is fixed in position by two screws. Permits attachment of 500 watt reflector equipment supported on ½ in. conduit stems.

**Box No. KO-11**—Accommodates Mogul Socket No. 4 and Holders, as used with Permaflectors Nos. 500, 555, E-500, I-505, I-1001, B-508 and B-1001.

**Flange No. KO-12**—Screws into Hub No. KO-10. Flange provides base for support of Permaflector Interior Spots and Floods.

**Splice Box No. KO-14**—Permaflector Knockout Splice Box is used at the end of Knockout Strip instead of End KO-2, where it is desired to enter with more than one conduit or armored cable. It has removable cover for access to box when splicing wires; has ¾ in. Knockout in bottom and two ½ in. Knockouts in each side.

# USE WITH PERMAFLECTORS

## "Easy-to-Install" Conduit

**"Easy-to-Install" Conduit No. 1**—"Easy-to-Install" Conduit No. 1, in combination with Permaflectors constitutes "a lighting system". Conduit, receptacles, holders and Permaflectors, all harmonize in silver coated satin finish. "Easy-to-Install" Conduit avoids necessity of cutting through ceilings or walls for each receptacle and makes it possible to space lamps properly to get even light distribution. **Made to order to fit each job.** Consists of 20-gauge galvanized steel channel fitted with the necessary porcelain receptacles not wired and with or without necessary holders for Permaflectors.

**"Easy-to-Install" Conduit No. 2A**—Same as No. 1 except equipped with Angle Socket No. 3 and 2½ in. Form "S", "SL" or "L" holder for use with "P" Type Permaflectors.

**"Easy-to-Install" Conduit No. 6**—Consists of 20-gauge galvanized steel channel, punched to accommodate Mogul Socket No. 4 or 3-Light Mogul Socket No. 5, not wired. For use with Permaflectors Nos. 500, 555, C-300, C-500, I-505 and E-500.

## Conduit Fittings

**Bracket No. BR-1**—For use with Conduit Nos. 1, and 2A; Standard size has vertical member 10 in. long and holds conduit 5½ in. from face of transom bar to center line of conduit.

**Ceiling Hangar No. CH-1**—For use with Conduit Nos. 1 and 2A; Standard lengths of 6, 8, 10, 12, 14, 16, 18 and 20 in. with special lengths available on order.

**Flexible Joints**—No. FJ-1 for use with Conduit No. 1 and 2A; No. FJ-6 for use with Conduit No. 6.

**U-Straps**—No. U-1 for use with Conduit No. 1 and 2A; No. U-6 for use with Conduit No. 6.

**End Caps**—Free with Conduit.

## Adapters and Holders

**Adapters No. 1234 and 1256**—Designed to be supported from 2¼ in. Form "OB" or "OP" holders, or attached directly without the use of shade holders, to Permaflector "Easy-to-Install" Conduit No. 1, Box Cover Assembly No. B-1-3¼ or B-1-4, or Knockout Strip. The use of the wrong adapter changes the focal center of the lamp in its relation to the reflector, hence alters the distribution of the lighting and lessens the lighting effectiveness. The adapter is part of the reflector and must be used therewith.

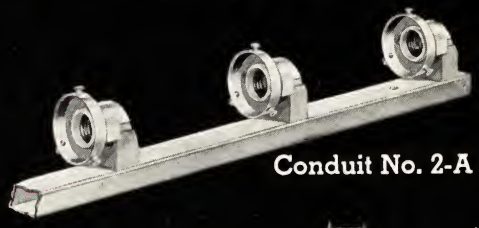
## Outlet Box Cover Assemblies

**Series B-1**—Consists of a 3¼ in. or 4 in. Outlet Box Cover, equipped with "Pittsburgh" Porcelain Socket No. 1 arranged to accommodate "Pittsburgh" Adapters. Fits any standard 3¼ in. or 4 in. Outlet Box having depth of 1½ in. May be used with Adapters Nos. 1234 and 1256, Form "S", "SL", "L", "LC" or "LCA" holders and any of the Permaflectors they are used with.

**Series B-2**—For jobs where the cove is a circle or elipse with short radius. In such coves it is not practicable to use "Pittsburgh" Conduit because of the curvature. The Assembly No. B-2-3¼-S and B-2-3¼-L of Outlet Box Cover, Angle Socket and Shade Holder illustrated herewith makes it convenient to use the reflectors No. P-25, P-40, P-75-A, P-76, P-101, P-151, and P-201, in cove lighting work.

It does not matter in what position the Outlet Box is installed, since by means of the slotted center piece the socket may be rotated into alignment with the cove.


Conduit No. 1


Conduit No. 2-A


Bracket


Ceiling Hanger


Easy to Wire and Install


Flexible Joint


No. 1234

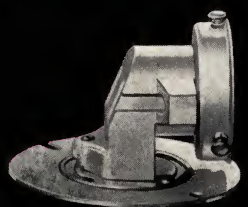

Compressed

Extended


No. 1256


Compressed

Extended


No. B-2-3¾-S


No. B-1-3¼-L




# SALES REPRESENTATIVES

## BRANCH OFFICES

CHICAGO, ILL.,
R. O. Williams, Mgr., 1158 Merchandise Mart. (Superior 0970).
NEW YORK, N. Y.,
Chas. H. Goddard, Mgr., 1775 Broadway (Circle 7-7055).
SAN FRANCISCO, CALIF.,
H. A. Gardner, Mgr., 807 Flatiron Bldg. (Garfield 1885).

## FACTORY REPRESENTATIVES

ATLANTA, GA.,
M. L. Whitman, Bona Allen Building (Walnut 0978).
BALTIMORE, MD.,
W. B. Masland Co., 621 W. North Ave. (La Fayette 4544).
BOSTON, MASS.
Detweiler-Bell Co., 25 South St. (Hancock 6191).
BUFFALO, N. Y.,
H. H. Mallon, 140 Elmwood Ave. (Lincoln 8954).
CLEVELAND, OHIO,
Handel-Davies Co., 202 Chester-Twelfth Bldg. (Main 2684).
DALLAS, TEXAS,
Geo. E. Anderson Co., Sante Fe Bldg. (7-4013).
DENVER, COLORADO,
Mark G. Mueller, 1700—16th St. (Main 1281).
DETROIT, MICHIGAN,
J. Morris Jones, 8531 Orangelawn Ave. (Hogarth 5156).
INDIANAPOLIS, IND.,
Scott-Jaqua Co., Indiana Terminal Warehouse (Riley 7825).
KANSAS CITY, MO.,
Mervin Simons, 613 Manufacturers Exchange Bldg. (Harrison 2768).
LOS ANGELES, CALIF.,
Frank E. Hastings, 810 Transportation Bldg. (Trinity 9801).
MIAMI, FLA.,
Chalmers M. White, Ingraham Bldg. (2-6771).
MINNEAPOLIS, MINN.,
Balch-Kenney Co., 1201 Third St., S. (Atlantic 4484).
NEW ORLEANS, LA.,
Southern Sellers, 918 Union St. (Raymond 1944).
PHILADELPHIA, PA.,
Hopkin Bros., Inc., 116 N. 7th St. (Lombard 8368).
RUTHERFORD, N. J.,
H. G. Otis, 131 Woodward Ave. (Rutherford 2-5767J).
SALT LAKE CITY, UTAH,
Raymond Ackerman, 318 Dooly Block (Wasatch 7282).
SEATTLE, WASH.,
Lyman D. Morgan, 239 Securities Bldg. (Elliott 7500).
ST. LOUIS, MO.,
Wood & Anderson Co., 915 Olive St. (Garfield 2233).
WASHINGTON, D. C.,
Sam Masland, 410 Bond Building (National 3934).

**PITTSBURGH REFLECTOR COMPANY**

**Oliver Building — PITTSBURGH, PA.**

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ESTABLISHED 1908

# THE HERWIG COMPANY, INC.

Manufacturers of Exterior Lighting Fixtures in Cast Iron, Bronze and Aluminum

OFFICE AND FACTORY
1755 Sedgwick Street
CHICAGO, ILL.

TELEPHONE
Lincoln 5935

### Products and Service

Over 300 different designs of OUTDOOR LIGHTING FIXTURES.

We have been engaged in the manufacture of outdoor lighting fixtures for the last 30 years. Our modern factory, combined with the large number of patterns we have, enable us to produce work quickly either in cast iron, solid bronze or aluminum.

### Construction and Design

HERWIG fixtures are of good sound construction, pleasing design and moderate cost. Suitable for apartment buildings, residences, country clubs, public buildings, schools and garages, and whenever outdoor lighting is required. A good many of the leading oil companies use HERWIG Fixtures as standard lighting for their service stations and garages.

### Demand

HERWIG fixtures are now specified by the United States Government and leading architects, and are sold in many foreign countries.

### Catalogue

On account of the great number of attractive designs shown in our new Catalogue No. 40 (a copy of which will be sent on request) many architects have found these stock fixtures suitable for their various buildings, thus saving the cost of making up special patterns.

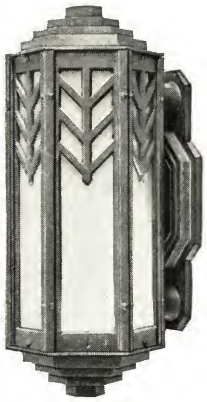
A few of our designs are shown below.



No. 127-B
**Ceiling Light**
10-in. holder
No. 127-A 8-in. holder



No. 454
**Lantern Bracket**
Length over all, 14½ in.
Wall to center, 7½ in.



No. 544
**Lantern Bracket**
Length over all, 17 in.
Wall to center, 5 in.
No. 544-A
Length over all, 26 in.



No. 520-D.W.
**Wall Pocket Lantern**
6x16½-in. half cylinder
Length over all, 22 in.
520 D.W.-A, 13½ in. over all
149J



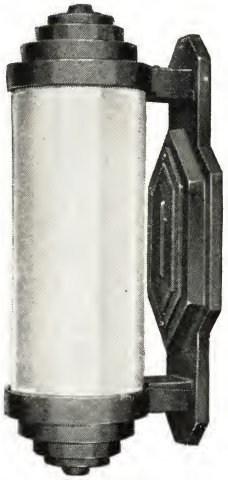
No. 126-M.S.
**Wrought Iron Scroll**
1¼x¼ in.



No. 531-A
Height over all 6 ft. 10 in.
Column, 3¼x4¼ in.
Lantern, 9x28 in.
Hex base, 14½ in.
No. 531-B, 8 ft. 4 in.



No. 192-G
**Lantern Bracket**
Length over all, 21 in.
Wall to center, 7 in.



No. 520-A
**Modernistic Lantern Bracket**
Length over all, 13½ in.
Wall to center, 4 in.
Also made in 6 and 8-in. cylinders up to 22 in. in length

ESTABLISHED 1840

# SMYSER-ROYER COMPANY

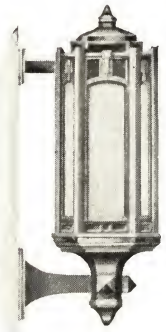
MAIN OFFICE AND WORKS
YORK, PA.
PHILADELPHIA, PA., Sales Office, Architects Building
For Verandas and Railings, see File Index

## Specialists in Cast Iron, Bronze and Aluminum Exterior Lighting Fixtures and Spiral Stairs

*Write for Catalog "K" illustrating nearly 400 different designs of lamp standards, lanterns and brackets. Among its designs will be found those for every conceivable use.*



MELLOR, MEIGS & HOWE, Architects
(Design No. 72)



**No. 412**
4′ 6″ high over all
Extreme projection, 2′ 0″
Upper wall plate, 6″ square
Lower wall plate, 12″ square
Also made 2′ 11½″, 2′ 0″ and 5′ 3″ over all



**No. 447**
6′ 2¼″ high over all



**No. 189**
7′ 1″ high up to 10′ 0″ high to bottom of globe
Base, octagonal, 1′ 6½″ diameter



**No. 252**
8′ 0″ high to bottom of globe
Base, 11″, round or square



**No. 198**
3′ 7″ high to bottom of globe
Wall plate, 11″ diameter

**No. 198-A**
2′ 8″ high to bottom of globe
Wall plate, 8″ diameter with projecting lugs for bolts with 9″ over all diameter



**No. 320**
5′ 9″ high over all
Body, hexagonal, 1′ 2¼″ diameter
Projection from wall to center line, 12¼″
Wall plate, 9¼″x15¾″



**No. 277**
4′ 0½″ high over all
Extreme projection, 2′ 1″
Body octagonal, 10″ diameter
Wall plate, 2′ 0¼″x7½″



**No. 285**
1′ 4¾″ high over all
Projection to center of lantern, 1′ 0″



**No. 284**
1′ 9¾″ high over all
Projection to center of lantern, 1′ 0″



**No. 346**
Extreme projection, 3′ 0″



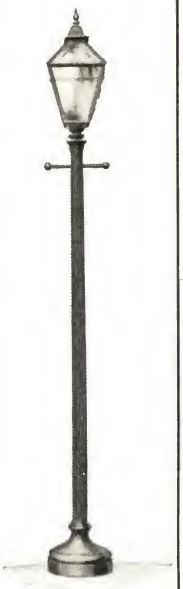
**No. 375**
Scale, 1″ = 1′ 0″
3′ 7⅜″ high over all
Lantern, octagonal
Base, 2′ 10¾″ on diagonal



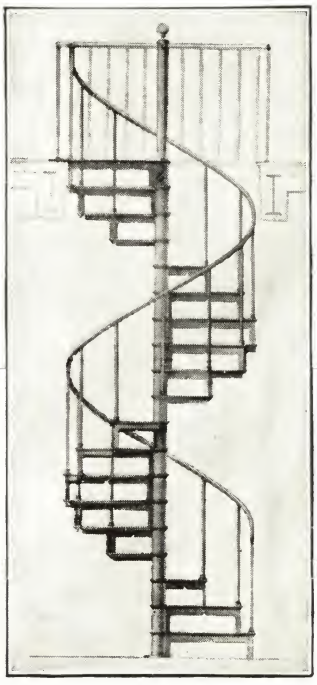
**No. 322**
7′ 9″ high to bottom of upper globe
Base, 2′ 8″ square



**No. 323**
11′ 7½″ high over all
Lantern, round, 10½″ diameter
Base, round, 10″ diameter



**No. 419**
12′ 0″ high over all
Base, 1′ 5″ diameter



Write for our booklet on spiral stairs giving complete information.



**No. 120**
4′ 0″ up to 10′ 0″ to bottom of globe
Base, 12″ or 16″ square



**No. 303**
9′ 7″ high up to 12′ 8″ high over all
Lantern, octagonal, 10″ diameter
Base, octagonal, 1′ 6⅜″ diameter



**No. 308**
6′ 6¼″ high to bottom of globe
Base, 2′ 4″x2′ 4″

# COMMUNICATION — SECTION — 25

Section Number 1 / 5 Catalog Number

# CATALOGS 1 to 14

## MANUFACTURERS

**THIS INDEX INCLUDES ONLY MANUFACTURERS WHOSE CATALOGS ARE FILED IN THIS SECTION**


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American District Telegraph Co. ..... 25/1
Bell Telephone System ..... 25/11
Capehart, Inc. ..... 25/13
Connecticut Telephone & Electric Corp. ..... 25/10
Edwards and Co., Inc. ..... 25/2
International Business Machines Corp., International Time Recording Div. ..... 25/3
Operadio Mfg. Co. ..... 25/12
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Signal Engineering & Mfg. Co. ..... 25/6
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Thomas, Seth, Clocks Div. General Time Instruments Corp. 25/7
Warren Telechron Co. ..... 25/8
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## PRODUCTS

**THIS INDEX INCLUDES ADDITIONAL INFORMATION WHICH IS FILED IN OTHER SECTIONS**

**Products described or illustrated in manufacturers' catalogs are indexed by section and catalog numbers. All names are listed alphabetically under each product heading.**


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**American District Telegraph Co.** 25/1
**Bankers Electric Protective Assn.** ..... 21/40
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ADT ..... 25/1
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**American Automatic Electric Sales Co.** ..... 25/9
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**Tank—High or Low Water**
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(Including: Microphones, Amplifiers, Loudspeakers, etc.)
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**Bankers Electric Protective Assn.** 21/40
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### Signal System Combination

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## VAULT

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### Protection Alarms

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### Telephone—Planning for

See Telephone—Service—Public

MEMORANDA

# AMERICAN DISTRICT TELEGRAPH COMPANY

## Electric Protection Services Against Fire, Burglary and Holdup

155 Sixth Avenue, NEW YORK, N. Y.

A.D.T. Central Stations are located in all principal cities of the U. S. They operate under the name "American District Telegraph Company," with the following exceptions:

CHICAGO AND ELSEWHERE IN ILLINOIS, Illinois District Telegraph Co.
DETROIT, MICH., The American Still Alarm
CINCINNATI, OHIO, Ohio Messenger & Telegraph Co.
PHILADELPHIA, PA., Philadelphia Local Telegraph Co.
CITIES IN NEW JERSEY, American District Telegraph & Messenger Co.
CITIES IN KENTUCKY, American Protection Co.

The AMERICAN DISTRICT TELEGRAPH COMPANY, founded in 1873, is a nation-wide organization whose sole business is the manufacture, installation, maintenance and operation of Protection Systems against Fire, Burglary and Holdup. The services offered are of three basic types, described below.

### Central Station Service

The protection system at the subscriber's premises is electrically connected to the A.D.T. Central Station where the signals are immediately acted upon by emergency patrol forces, with police and fire department co-operation when necessary. This service provides continuous electrical supervision and complete maintenance of all systems. Available in more than 350 cities.

### Proprietary Systems

The proprietary system provides for owner operation and maintenance. The protection equipment is connected to a local central station within the protected premises, where operators are on duty to take action when signals are received. Proprietary installations are available anywhere in the United States, but are recommended chiefly for large establishments in locations where Central Station service is not available.

### Local Alarm Systems

Equipment is furnished for local systems, which give warnings of fire, burglary and other emergency conditions by means of audible signals. Available anywhere in the United States.

## A.D.T. PROTECTION SYSTEMS INCLUDE THE FOLLOWING:

**Watchman Supervisory System**—The unique A.D.T. Watchman's "Compulsory Tour" System compels the watchman to follow a prescribed sequence of stations on his tour and to signal periodically from transmitting stations electrically connected to the Central Station. The transmitting stations can be actuated only by setting up the watchman's register (key) in a series of preliminary stations. Any failure of the watchman to signal the Central Station results in an immediate investigation.



Preliminary Station

**Manual Fire Alarm System**—Fire alarm boxes for manual operation are installed at convenient points throughout the premises. Operation of any box sends a coded signal to the Central Station and the fire department, indicating the exact location from which the alarm was sent.

When desired, Central Station Manual Fire Alarm systems may be combined with the local Interior Fire Alarm system described on this page. Under this arrangement, a single pulling of the fire alarm lever will summon the fire department and at the same time sound the alarm on a system of audible signal devices within the premises.



Fire Alarm Box
Flush Type

**Aero Automatic Fire Alarm System**—Assures the fastest possible detection of fire. Aero is a combined pneumatic and electrical system which operates on the rate of temperature rise. The pneumatic part of the system consists of inconspicuous copper tubing, .08 in. in diameter, run in loops or circuits along the ceilings or roof. Both ends of each tube circuit terminate in small metal chambers formed by expansible metal diaphragms of the aneroid barometer type. The rapid rise in temperature caused by a fire condition results in increased pressure within the tubing, which bulges the diaphragms, thereby making electrical contacts which actuate the alarm equipment. An annunciator designates the floor or section of the building where the alarm originated.

**Sprinkler Supervisory and Waterflow Alarm System**—Makes the sprinkler system function as an automatic fire alarm. Waterflow, whether caused by the opening of a sprinkler head or by a dangerous leak, automatically transmits a fire alarm signal to the Central Station. The service also maintains a continuous, electrical watch over all vital parts of the sprinkler system. Any trouble condition which might impair the supply of water or its proper and effective distribution, is automatically detected and reported to the Central Station, which takes immediate corrective action.

**Local Interior Fire Alarm Systems**—Usually installed for the purpose of warning occupants when fire breaks out, and to summon a local fire brigade.

The equipment includes manual fire alarm boxes, with or without Central Station connection, which, when operated, sound a coded alarm on a system of local gongs or other audible signal devices. The systems are of two types: General Alarm type, which sounds all the gongs simultaneously; and the Pre-Signal type, which first sounds the alarm on a system of pilot gongs audible only in certain locations.


A.D.T. Single Stroke Gong

**Burglary and Holdup Alarm Systems**—Include electrical protection equipment for all types of mercantile, industrial and banking premises so that immediate warning is given to the Central Station and police in case of burglary or holdup. Available in both Central Station and local types. Underwriters' "Grade A" Certificates furnished.

### Approval

All A.D.T. equipment is inspected and listed as standard by the Underwriters' Laboratories. The systems meet all requirements of insurance underwriters and other authorities having jurisdiction.

### Specifications

Detailed descriptions and specifications of any A.D.T. system will be furnished upon request. Without obligation A.D.T. will furnish drawings and complete engineering advice regarding any type of installation. Write to the nearest office, or A.D.T. headquarters, 155 Sixth Avenue, New York, N .Y.

# EDWARDS AND COMPANY, INC.

Electrical Signaling Apparatus

NORWALK, CONN.

OFFICES IN PRINCIPAL CITIES OF UNITED STATES AND CANADA

## *The new* LOKATOR

A simple, efficient, fully automatic system, for instantly locating people within any building—at less lost time than paging systems heretofore available.

A two-wire circuit containing any variety of signals runs throughout the premises from the Lokator at the telephone switchboard.




Standard 20-call Lokator

The Lokator system is on low voltage reduced from the light circuit by a standardized power unit. The system is limitless and may be easily extended.

### Lokator Specifications

Install a complete Lokator system as follows: At the switchboard install a ([20]—[40]—[60] call) Lokator. Equip it with necessary power units and with signal units of type and at locations as shown on plans (see note).

(Complete data on request.)

*Note: Chime Signal*—Popular in stores, offices, etc. Pleasant tone.
*Bells*—All sizes from 3 to 12 in. The 4-in. size about equal in sound volume to chime; 6-in. used in most factories.
*Horns*—Used where a loud machinery noise exists.
*Screech Horns*—Much louder than the ordinary horns. For lumber mills, etc.
*Light Signal*—For restaurants, etc., where no noise is desired.
*Quiet Signal*—For directors' rooms, etc. Quiet "ding" audible in direct vicinity.

### Musical Chimes

For better class residences. Deep mellow, musical notes for front and rear door signals, etc. Operation of one push button circuit causes a single note to sound and operation of another push button circuit sounds one note and then another lower note in a slow succession of perfect harmony. Harmony succession usually used for front entrance, single note for rear entrance. Usually installed in front entrance hall, often placed in architectural recess. Transformer operated. Overall dimensions—3½ in. deep, 9 in. wide, 50 in. long. Standard finish of shield is rich, dull bronze with embossed musical motif and tubes in brush brass. At slight advance in cost, a beautiful, cast Directoire type shield is available. Lends itself to all type finishes with background and tubes one finish and relief in contrast, or with background one finish and tubes and relief in contrast. Specify Edwards Standard No. 570 or Edwards De Luxe No. 570 with finish desired.

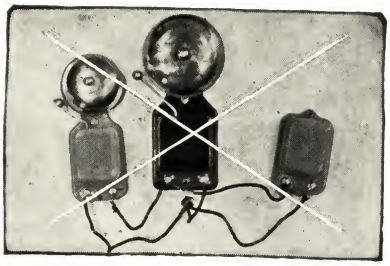


Standard Chime

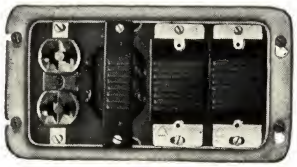


Directoire Shield

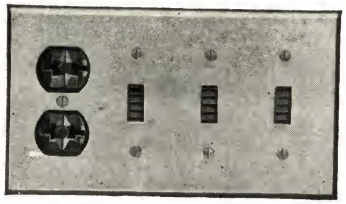
## *The* FLUSHCALL *Line*



Unsightly—inefficient—dirt catching—old-fashioned—surface bells and buzzers are now replaced by . . .



. . . a complete Flushcall installation of flush signaling devices and transformer combined in same wall box with 110-volt convenience outlet . . .



. . . covered with standard plate of type and finish desired

A flush, modernized line of calling devices for all places where old-fashioned, surface bells, buzzers, and transformers were heretofore used. A Flushcall installation centralizes the complete call system and costs no more than old-fashioned surface devices. They offer distinctive signals with a loud ring sound for front entrance (the Ringcall), a loud buzz sound for rear entrance (the Buzacall), a soft, mellow, momentary ring sound for dining room-to-kitchen call (the Melocall). Fitting standard boxes and taking standard plates, they can be combined together or combined with light switches, receptacles, etc. Being no contact devices, they never need adjustment and radio interruption is eliminated. Flushcall type installation is Underwriters' approved.

### Specifications for Residences

Entrance and dining room call systems shall be Edwards Flushcall type combining all Flushcall signal devices and Powacall transformer in same wall box with 110-volt convenience outlet. Entrance pushes shall be Edwards No. 650 forged brass pushes, finish to be selected by architect. Dining room push shall be Edwards No. 235-290 plug and floor tread.

### Specifications for Apartments

*Instead of placing large transformer in basement on owner's meter, specify for each suite as in residences. Eliminates wires from basement through entire building. Localizes call system of each suite with small Powacall transformer on tenant's meter.*

### Send for Complete Catalog

It contains latest complete, detailed information on Hospital Signaling, Telephones, Fire Alarms, Burglar and Hold-Up Alarms, Annunciators, Bells, Buzzers, Transformers, etc. Sixty-five years' experience in signaling assures utmost quality, efficiency, and reliability. Complete Edwards Systems are guaranteed without time limit.

# INTERNATIONAL BUSINESS MACHINES CORPORATION

INTERNATIONAL TIME RECORDING DIVISION

## Manufacturers of Electric Time, Signal Program, Telephone, Fire Alarm and Central Control Sound Systems

GENERAL OFFICES
590 Madison Avenue, NEW YORK, N. Y.

CANADIAN DIVISION: 300 Campbell Avenue, TORONTO, ONTARIO

BRANCH OFFICES AND SERVICE STATIONS IN THE FOLLOWING CITIES

AKRON, OHIO
ALBANY, N. Y.
ATLANTA, GA.
BALTIMORE, MD.
BIRMINGHAM, ALA.
BOSTON, MASS.
BUFFALO, N. Y.
CHATTANOOGA, TENN.
CHICAGO, ILL.
CINCINNATI, OHIO
CLEVELAND, OHIO
COLUMBIA, S. C.
COLUMBUS, OHIO
DALLAS, TEX.
DAYTON, OHIO
DENVER, COLO.
DES MOINES, IOWA
DETROIT, MICH.
EL PASO, TEX.
ENDICOTT, N. Y.
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FLINT, MICH.
GRAND RAPIDS, MICH.
GREENSBORO, N. C.
HARRISBURG, PA.
HARTFORD, CONN.
HOUSTON, TEX.
HUNTINGTON, W. VA.
INDIANAPOLIS, IND.
JACKSON, MISS.
JACKSONVILLE, FLA.
JERSEY CITY, N. J.
KANSAS CITY, MO.
LOS ANGELES, CALIF.
LOUISVILLE, KY.
MEMPHIS, TENN.
MILWAUKEE, WIS.
MINNEAPOLIS, MINN.
NEWARK, N. J.
NEW ORLEANS, LA.
NEW YORK, N. Y.
OAKLAND, CALIF.
OKLAHOMA CITY, OKLA.
OMAHA, NEB.
OSHKOSH, WIS.
PEORIA, ILL.
PHILADELPHIA, PA.
PITTSBURGH, PA.
PORTLAND, ME.
PORTLAND, ORE.
PROVIDENCE, R. I.
READING, PA.
RICHMOND, VA.
ROCHESTER, N. Y.
ROCKFORD, ILL.
ST. LOUIS, MO.
SALT LAKE CITY, UTAH
SAN ANTONIO, TEX.
SAN FRANCISCO, CALIF.
SCRANTON, PA.
SEATTLE, WASH.
SHREVEPORT, LA.
SOUTH BEND, IND.
SPOKANE, WASH.
SPRINGFIELD, MASS.
SYRACUSE, N. Y.
TOLEDO, OHIO
TULSA, OKLA.
WASHINGTON, D. C.
WHEELING, W. VA.
WICHITA, KAN.
WINSTON-SALEM, N. C.
YOUNGSTOWN, OHIO

## ELECTRIC TIME AND PROGRAM EQUIPMENT



Metal Case Secondary Clock

International manufactures hundreds of different types of time recording, indicating and signaling devices. Most of these are furnished for operation individually or as secondary units in a master clock controlled system. In the latter case, any building or group of buildings is furnished with completely automatic and dependable electric time service. Attendance time recorders, job time recorders, wall clocks and time stamps operate in exact unison.

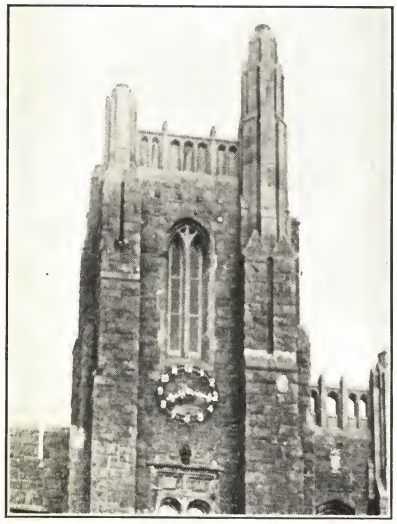



International Master Clock with Mercurial Pendulum



Marble Dial Secondary Clock

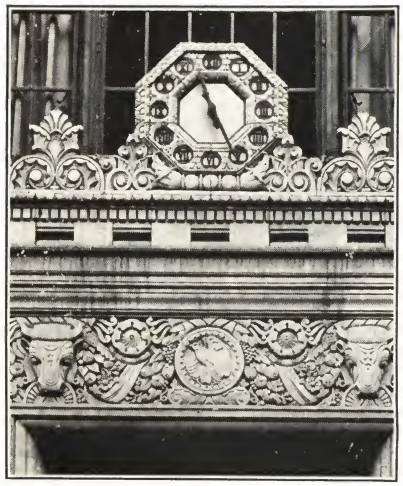
This Clock System, of the electric impulse type, features automatic, electric regulation. Once each hour all units are simultaneously supervised. That is, they are checked or aligned for continuous agreement with their master time source. Practically all maintenance is thus eliminated. This system ordinarily operates from the commercial lighting circuit, but battery operation is furnished when necessary.



A Typical Tower Clock Built to Meet the Architect's Special Requirements

Program equipment, operated as part of the International Self-regulating Electric Time Systems, makes it impossible for clocks or bells to contradict each other. Through its use, classes are moved, work periods are designated or phases of process work are marked by audible signals — exactly as scheduled.

All International equipment is furnished according to architects' specifications — designs, styles, etc., to meet individual requirements, architectural or decorative schemes. Consult representatives for full details.



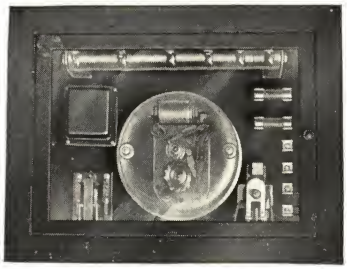
A Typical Outside Clock Designed Specially to Conform with Architect's Plan

## FIRE ALARM EQUIPMENT



Fire Alarm Gong

International Fire Alarm Systems offer the most up-to-date equipment for the protection of property and life. Only the latest engineering features and approved circuits are included in each installation. Expert workmanship and rugged construction assure highest quality at minimum cost. Systems for any requirement built to specification.



Fire Alarm Control Panel

All International equipment, including Fire Alarm Systems, has been approved by the National Board of Fire Underwriters.




Break Glass Station

Data sheets are available in all International offices covering the complete range of equipment from the simplest non-code to the most elaborately supervised and coded systems. To meet every individual need, a wide variety of bells, horns, sirens and other alarm sounding devices has been provided.

## INTER-ROOM TELEPHONE SYSTEMS



Cradle Type & Telephone

INTERNATIONAL Telephone Systems are specifically designed only for interior communication in schools, business organizations, apartment houses, residences, etc. Several types are available to meet specified requirements.

All equipment is specially designed for the greatest convenience, ruggedly constructed to furnish the highest quality service at minimum cost. Operation of all types is extremely simple. Either direct or alternating current may be employed as desired. Many types of telephone instruments in both pedestal and wall models are available.

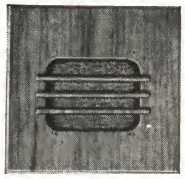


Telephone Push-Button Mat



Flush Wall Telephone

## CENTRAL CONTROL RADIO, MUSIC AND SPEECH SYSTEMS



Surface Wall Type Sound Reproducer

For those places where sound must be amplified to reach large audiences and for institutions where it is desirable to distribute sound programs simultaneously throughout a number of different rooms in any one or more buildings, International provides an unusual Central Control Radio, Music and Speech System. It permits the flexible use of radio, phonograph or microphone programs through one instrument that is as simple to operate as the ordinary home type radio.



Single-Channel Sound Control Cabinet

A unit plan of construction is employed to permit purchase in sections. As the demand grows or as funds become available, extra sections may be added. Such additions do not make the original equipment obsolete, nor take up extra floor space.



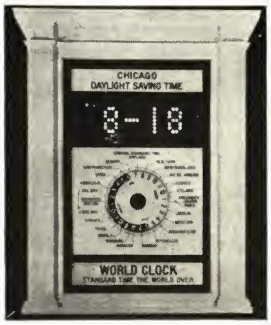
Sound Reproducer and Clock Combined in One Unit

The loudspeakers, which assure faithful, life-like reproduction, are provided in a wide range of models including both permanent field and dynamic types to meet every possible acoustic or decorative requirement. Directional horn speakers are provided for athletic fields and other outdoor uses.

## WORLD CLOCKS, TIME FLASHERS AND OTHER EQUIPMENT

For use in locations where it is necessary or desirable to know the correct time in other parts of the world, International manufactures a world clock . . . a device that indicates correct standard time in all the more important time zones. It is ordinarily built to specification and is available in a variety of models.

International also manufactures another special type of clock known as a time flasher . . . indicates the correct time each minute by means of illuminated bulls eyes. Ideal for lobbies and other public places. Both of these special clocks are illustrated, at left, combined in one unit.




Combined World and Flasher Clock

The INTERNATIONAL line also includes many specialties and accessory devices, including: Doctors' paging systems, watchmen's clocks, recording door locks, chimes, etc.

Additional information or complete specification data will be furnished on request at any of the offices of the INTERNATIONAL BUSINESS MACHINES CORPORATION listed above.

# PARTRICK & WILKINS CO.

## Manufacturers of Electrical Signaling Devices Since 1867

51 North 7th Street, PHILADELPHIA, PA.

### Products

P. & W. Annunciators: Fully Automatic Reset (surface and flush); Electric-Manual Reset (surface and flush); Low Voltage Lamp (wall and desk); Return Call Annunciator Systems.

### Products

P. & W. Electric Signaling Devices: Audible Signals, Contact Devices, Transformers, Telephones, Relays, Letter Boxes, etc.

Burglar Alarm and School House Systems.

## P. & W. ANNUNCIATORS

P. & W. Annunciators have no complicated mechanisms. They depend only on the magnetic electrical impulse to produce, by means of deflection of the indicating arrow—the clearest form of indication possible. There is no possibility of registering a call falsely through excessive jarring, or by any other means than electrically.

## FULLY AUTOMATIC RESET ANNUNCIATORS

### Features

P. & W. Fully Automatic Reset Annunciators solve the difficulties experienced with ordinary hand or electric reset annunciators, which require resetting after every call.

**A Time Saver** — Requires no attention other than observing the call when made; resetting is done automatically by each new call. Annunciator can be placed at any convenient location. Indications are visible 25 ft. or more.

**Simplicity of Operation**—With the P. & W. Automatic Reset Annunciator there is no possible confusion, for only one, and that the last call, remains when signal sounds.

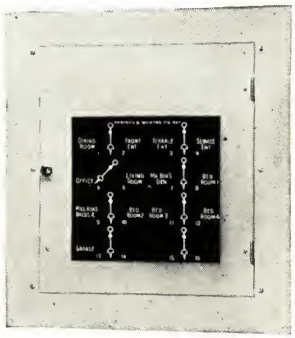
**Multiple Operation** — Where residences have one or two attendants, multiple operation of Automatic Annunciators is often desirable, as annunciators may be placed in convenient locations so that calls may receive attention wherever attendant may be. Large residences having servants' quarters can be equipped with three or four P. & W. Automatic Reset Annunciators, operating in multiple.

**Up-to-Date Service**—Furnished in metal or wood cases, surface or flush type, and cost but a trifle more than the less efficient hand reset types.

**Pays for Itself**—In long life and highly satisfactory service. Requires less voltage, a.c. or d.c., than competitive types.




No. 3000
Guarantee Automatic
Surface



No. 2700
Automatic Flush

### No. 3000 "Guarantee" Surface Type

Especially recommended for residence work. Recommended for multiple operation, as two annunciators connected in this manner will operate as efficiently as one. Has an all-metal case and a concealed bell or buzzer. (Bell furnished unless otherwise specified.) See table below.

**Operating Voltage**—Battery: 6 to 9 volts d.c. Transformer: 8 to 12 volts a.c.

**Standard Finish**—Ivory White. Special finishes to order.

### No. 2700 JW Standard Flush Type

Recommended for highest grade installations. Fully automatic. Front of flush case is hinged, making all terminals and operating apparatus easily accessible. May be fitted with additional bell for extra call. Specified by leading architects and installed in the finest homes in America. Mechanism is fully enclosed and protected from plaster—separate wall box is unnecessary. Flange or trim extends 1¼-in. beyond the wall box all around. See table below.

**Operating Voltage**—Battery: 6 to 8 volts d-c. Transformer: 8 to 16 volts a-c.

**Standard Finish**—*Metal Front*—White. *Wood Front*—Light Oak. Commercial bronze and brass fronts to order.

## ELECTRIC—MANUAL RESET ANNUNCIATORS

### Flush and Surface Types

Fitted with both electric and manual reset mechanism so arranged that by pressing the reset button (remote control and located where desired), any indications showing are electrically reset to normal. Manual reset remains for emergency. Two annunciators may be connected in multiple. Electric reset button will restore both simultaneously.

**No. 3600 "Flush" Type**—New Type Metal Wall Box furnished separately if desired. Flange or trim extends ½ in. beyond wall box all around.

**Operating Voltage**—Battery: 6 to 8 volts d-c. Transformer: 8 to 12 volts a-c.

**Standard Finish**—Metal Front: White. Wood Front: Light Oak. Commercial Bronze and Brass Front to order.

**No. 1100 "Surface" Type**—Metal case is dustproof and removable, making wiring connections and bell mechanisms accessible. Backboard is grooved, allowing ample space for wiring. Concealed bell or buzzer. (Bell furnished unless otherwise specified.)

**Operating Voltage**—Battery: 6 to 8 volts d-c. Transformer: 8 to 12 volts a-c.

**Standard Finish**—Rubberized Black. Special finishes to order.

**ARRANGEMENT AND DIMENSIONS**

| No. of Points | Arrangement | | No. 3000 Automatic Reset, Surface Type, and No. 1100 Electric, Manual Reset, Surface Type | | | No. 2700 Automatic Reset, Flush Type Wall Box Size | | | No. 3600 Electric, Manual Reset, Flush Type, Wall Box Size | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Down | Across | Dimensions, in. | | | Dimensions, in. | | | Dimensions, in. | | |
| | | | H. | W. | D. | H. | W. | D. | H. | W. | D. |
| 4 | 2 | 2 | 10½ | 6⅝ | 2⅝ | 14½ | 10¼ | 4 | 11 | 7 | 3 |
| 6 | 3 | 2 | 10½ | 6⅝ | 2⅝ | 14½ | 10¼ | 4 | 11 | 7 | 3 |
| 8 | 4 | 2 | 14½ | 6⅝ | 2⅝ | 18½ | 10¼ | 4 | 15 | 7 | 3 |
| 10 | 5 | 2 | 14½ | 6⅝ | 2⅝ | 18½ | 10¼ | 4 | 15 | 7 | 3 |
| 12 | 3 | 4 | 10½ | 10⅝ | 2⅝ | 14½ | 14¼ | 4 | 11 | 11 | 3 |
| 16 | 4 | 4 | 12½ | 10⅝ | 2⅝ | 15½ | 14¼ | 4 | 13 | 11 | 3 |
| 20 | 5 | 4 | 14½ | 10⅝ | 2⅝ | 18½ | 14¼ | 4 | 15 | 11 | 3 |

Over 20 points to order; indications may be lettered (names) if specified.

## LOW VOLTAGE LAMP ANNUNCIATORS

### No. 1 Wall Annunciator



Wall Annunciator
Flush

Surface or Flush Types with any number of indications and arrangements. Metal cases. 7/8-in. numerals visible only when lamps are lighted. 16 or 18 volt lamps readily removable. A locking relay for each indication must be furnished if plain push buttons are used. These relays are mounted in separate surface or flush hinged door metal cabinets.

Indicators may be reset individually, or in groups. Reset push buttons can be placed on Annunciator Case or at any point desired. If however, locking toggle switches are used, relays are not necessary. Indications however, must be reset from point of origin in this case.

Buzzers for audible signal furnished unless otherwise specified.

### No. 2 Desk Annunciator

Same method of operation as described for No. 1 type. Metal top plate supplied in any standard finish to match surroundings. Cards easily removable. Wood base is angle type and can be supplied in finish to match desk. This type Annunciator makes a very fine appearance and is an adjunct to any piece of exclusive furniture.

*Special Lamp Annunciators furnished to order only.*



No. 2 Desk Annunciator

## RETURN CALL ANNUNCIATOR SYSTEMS

### No. 5000 Return Call Annunciator



No. 5000 Return Call

Hand or electric reset. Surface or flush cases (metal or wood fronts). Our Return Call System includes an Annunciator in the office, P. & W. Surface or Flush Combination Return Call Buzzers in the rooms.

Should attendant wish to call any room, he may push the corresponding button on the Annunciator Return Call board. The party receiving the call would then push the button in the room and this would register at the Annunciator. The reverse operation would take place if the room desires to call the office.

**Operating Voltage**—*Battery*—6 to 8 volts d-c. *Transformer*—8 to 16 volts a-c.

### No. 41 Flush Type Combination Buzzer



Flush No. 41

Suitable for use in connection with any P. & W. Return Call Annunciator and is completely wired, ready for installation. Top plate is same size as standard switch plate and is perforated for emission of sound. Durable type R. C. button. Can be mounted on standard outlet box and has oval mounting holes to permit alignment on sub-plate. Top plate, Brush Brass finish. Bakelite Plates to order.

**Operating Voltage**—*Battery*—6 to 8 volts d-c. *Transformer*—12 to 16 volts a-c.

## P. & W. ELECTRIC SIGNALING DEVICES



No. 500
Bell

### Small Bells and Buzzers

The No. 500 new non-adjustable bells and buzzers have large double magnets, fully enclosed mechanisms, binding posts and gongs. Transformer and battery operation. Specially recommended for residence work.

**Standard Finish**—Satin Cadmium.

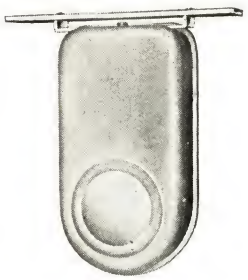
### Par-Wil Musical Chimes

**Bar Type Chimes**—For apartments, homes, offices, hospitals, etc., where a mellow, single-stroke chime is wanted. Supplied in high or low note. Fully insulated for mounting on metal. Transformer or battery operation.

**Finish**—Ivory or green.

**Tubular Type Chimes**—For better grade homes. The double-tube type consists of two different length tubes giving three signals. The three-tube chimes give four signals. Transformer and battery operation.

**Finish**—Tubes: satin Cadmium; mechanism covers: ivory. Other combinations to order.



Bar Type
No. 5500 Chime—Low Note
No. 5502 Chime—High Note

## BURGLAR ALARM ACCESSORIES

### No. 777 Electric Matting

We are the exclusive manufacturers of Electric Matting. For low voltage open circuit use only. Usually placed under rugs or other floor covering and when trodden upon, closes the circuit for ringing an alarm bell. Made in rolls 10 ft. long x 2 ft. wide from which any length may be cut, but the width cannot be altered.




No. 777 Electric Matting

### Other Accessories

Our complete Burglar Alarm line includes the following:

No. 742 Open Circuit Window Spring
No. 719 Open Circuit Door Spring
No. 722 Open Circuit Make and Break Door Spring
No. 723 Transom Spring
No. 726 Door Trip
No. 727 Trap Spring
No. 743 Closed Circuit Window Spring
No. 724 Closed Circuit Door Spring
No. 729 Window Foil
No. 701 Key Alarm Switch
No. 706 Round Wood Base Switch
No. 707 Keystone Base Switch
No. 716 Alarm Foot Push
Hold-up Foot Signals

**For complete burglar and hold-up alarm systems, consult our engineering department for details.**

*Complete catalog of all equipment will be furnished on request. Consult our Engineering Department.*

# THE STANDARD ELECTRIC TIME COMPANY

ESTABLISHED 1884 — SPRINGFIELD, MASS. — INCORPORATED 1888

BRANCH OFFICES

ATLANTA, GA., 903 Williams Mill Rd., N. E.
BALTIMORE, MD., Central Savings Bank Bldg.
BIRMINGHAM, ALA., 2920 7th Ave., So.
BOSTON, MASS., 10 High St.
BUFFALO, N. Y., Jackson Bldg.
CHICAGO, ILL., Monadnock Bldg.
COLUMBUS, OHIO, 83 So. High St.
DALLAS, TEX., 5252 Vanderbilt St.
DENVER, COLO., 562 Penn St.
DETROIT, MICH.
KANSAS CITY, MO., Mutual Bldg.
MINNEAPOLIS, MINN., 703 Pence Bldg.
NEW ORLEANS, LA., 203 Natchez Bldg.
NEW YORK, N. Y., 50 Church St.
PHILADELPHIA, PA., Architects' Bldg.
PITTSBURGH, PA., Bessemer Bldg.
SCRANTON, PA., 148 Adams Ave.
ST. LOUIS, MO., 206 Olivia Bldg.
TAMPA, FLA., 5505 Central Ave.

## THE STANDARD ELECTRIC TIME COMPANY OF CALIFORNIA

SAN FRANCISCO, CAL., 268 Market St. — LOS ANGELES, CAL., 1417 W. 91st Place

## THE STANDARD ELECTRIC TIME COMPANY OF CANADA, LTD.

MONTREAL, QUE., 726 St. Felix St.

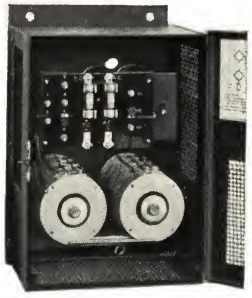
### Products

ELECTRIC TIME SYSTEMS including Outside and Tower Clocks.
ELECTRIC STOP CLOCKS.
FIRE ALARM SYSTEMS.
SCIENCE LABORATORY EQUIPMENT.
HOSPITAL SIGNALING SYSTEMS.
TELEPHONE EQUIPMENT.

### "Standard" Electric Time System

This is a central control system with secondary clocks synchronized from a master clock on minute or half-minute impulses.

The entire equipment is operated from 110 a-c. through dry plate, stable voltage rectifiers and is arranged so that all clocks are automatically corrected hourly by the master clock in case of current interruption or other irregularity. This correction covers a total span of 25 minutes either fast or slow in one hour.



**Dry Plate Stable Voltage Rectifier for Operation of Clocks, Bells and Fire Alarm Systems**

Similar rectifier furnished with filters for telephone equipment

### "Standard" Master Clock

These clocks are regularly made in 60-beat size, designed for wall mounting. They are kept fully wound automatically each minute and will run for from one to several hours with operating current interrupted.

Contacts are self-cleaning type of iridium platinum.

Pendulums—metal ball type, regulate within 30 seconds per month; mercurial or Invar steel, 10 seconds per month.

Weight-driven master clocks, operating several hours without current can be furnished, also special case designs such as flush type, Grandfather cases, etc., as required.



**List No. 12, 60-Beat Master Clock with Tape Program Clock in Same Case**

Dial, 12 in.; height, 65 in.; width, 22¾ in.; depth, 9¾ in.

### "Standard" Program Clock

These units are furnished in either the tape or metal disc form, in sizes to take care of all necessary school or industrial program schedules. They can be installed either in the same master clock case or a separate case, as desired, and are equipped with automatic calendar silencing control, necessary relays, switches, and buttons for manual operation.



**Automatic Reset Metal Program Clock Movement**



**Underdome Type Bell**

### Program Signals

For school classrooms and similar locations, buzzers or 3-in. bells can be furnished, mounted in secondary clocks. For corridors or gymnasiums and noisy shops, 6-in. gongs are most effective. Outside gongs in 8, 10 or 12-in. sizes with housing and screen can be supplied, of weatherproof construction, Standard all metal bells are of improved, underdome construction, of sturdy, simple design, insuring reliable, long service—operating from A-C without contacts. D-C bells can also be furnished in all essential sizes. These bells have "improved type," long wearing contacts of iridium platinum.



**Buzzer Signal Unit for Flush Wall Mounting**

### Secondary Clocks

Standard school and general utility types are shown below. In addition to the types shown, round wood case clocks in surface or flush pattern can be furnished, also special clocks to meet architects' specifications.



**Square Wood Case Secondary Clock**

| List No. | Dial, in. | Dimen. sq. in. | Depth, in. |
|---|---|---|---|
| S-8 | 8 | 12 | 3⅜ |
| S-10 | 10 | 14 | 3½ |
| S-12 | 12 | 15½ | 3¾ |
| S-14 | 14 | 19¾ | 3⅞ |
| S-18 | 18 | 23 | 4¾ |
| S-24 | 24 | 29 | 4¾ |



**Round Metal Case Secondary Clock**

Made in surface and semi-flush types (Special outlet box required for latter)

| List No. | Dial, in. | Outside diam., in. | Depth, in. |
|---|---|---|---|
| RM-8 | 8 | 10⅜ | 3⅛ |
| RM-12 | 12 | 14⅜ | 3⅛ |



### Ceiling or Side Wall Mounting Double Dial Metal Bracket Clock

| Size of Secondary | Height, in. | Width, in. | Overall diam., in. | Base length, in. | Base width, in. | Ceiling center, in. |
|---|---|---|---|---|---|---|
| 12 | 19⅜ | 9 | 15 9/16 | 11 | 5 | 11⅝ |
| 14 | 21 3/16 | 9 | 17⅜ | 11 | 5 | 12½ |
| 18 | 26¾ | 9¼ | 21½ | 15 | 5½ | 16 |
| 24 | 34⅜ | 9¼ | 27⅜ | 19 | 6½ | 20¾ |



**Round, Flush Metal Clock**

Raised black numerals, convex glass



**Hexagon Metal Case Clock**

# "STANDARD" EXPERIMENTAL LABORATORY PANELS FOR SCHOOLS AND COLLEGES

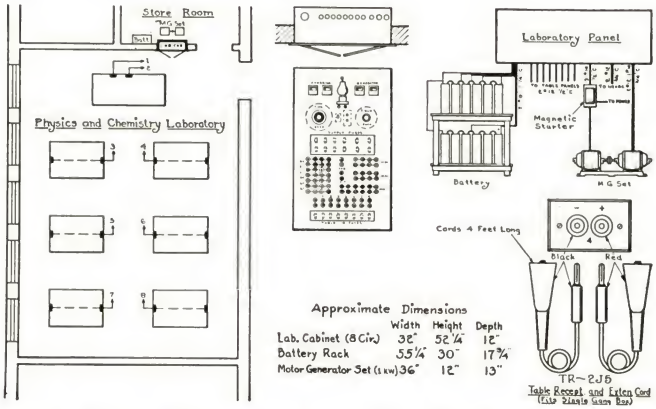
*(Listed by Underwriters' Laboratories)*

## The Equipment and Its Uses

"Standard" Laboratory Experimental Equipment is furnished for physics, chemistry, general science and electrical laboratories, and any other place where various voltages, A-C and D-C are required. "Standard" panels are very rugged in construction, simple and safe in operation, and are entirely dead front, presenting a clean, neat appearance, with all jacks and equipment clearly marked or colored for easy identification.

The equipment, in general, consists of:

(1) Control and distribution panel.
(2) Storage battery.
(3) Motor Generator.
(4) Table receptacles.




**Typical Voltage Distribution System for Combination Physics and Chemistry Laboratory in Small High Schools**

Voltages available: 2 to 24 d-c.—110 d-c.—110 a-c.

## Specifications

**General**—Furnish and install all conduit, wiring and equipment for laboratory voltage distribution system as shown on plans and mentioned herewith. Equipment shall be as made and furnished by THE STANDARD ELECTRIC TIME COMPANY, or approved equal in writing by the architect. Items of equipment as follows:

(1) Distribution and control panel
(12) Cells of storage battery and rack
(1) Motor generator set
(14) Receptacles and cords

**Distribution and Control Panel**—Distribution panel shall consist of single-pole, dead front jacks with suitable plugging cords so arranged that from 2 to 24-volt d-c. from battery, 110-volt d-c. from motor generator set, and 110-volt a-c. are available to (8) table circuits as shown. Jacks and plugs shall be male and female so that short-circuiting of board is impossible by improper plugging. There shall be jacks for 7 taps from storage battery with 4 jacks on each tap, 4 pairs of 110-volt d-c. and 4 pairs of 110-volt a-c. jacks, as well as one multiple group. Each branch circuit shall have 2 jacks and fused with plug fuses mounted in fuse cabinet below the jacks. Jacks shall be dead front with different colored moulded bakelite caps for distinguishing different classes of services. All current supply feed lines shall be fused in a separate cabinet above the jacks. Provide 16 plugging cords of No. 10 Tirex wire.

Control panel shall have battery charging equipment consisting of a 6-amp. rectifier, ammeter, voltmeter, sectional charging rheostat, switches and fuses. The motor generator control shall include field rheostat, voltmeter, ammeter, and start and stop push button switch. Meters to be flush square type.

Panels shall be made of ⅛-in. thick stretcher leveled steel, sandblasted and finished in aluminum [black lacquer], enclosed in steel cabinet with plate glass paneled door on front and removable cover plate on back, as all connections must be accessible from the rear and without removing panels from cabinet. Provide a suitable compartment for the storage of cords.

All jacks, instruments and other equipment shall have black bakelite name plates with engraved letters, polarity symbols, etc.

This panel shall be as listed by the Underwriters' Laboratories, Inc. and bear label.




**Main Experimental Control Board, Physics and Chemistry Building, Wellesley College**

**Storage Battery**—Install on a heavy, 2-tier battery rack, 12 cells of 40-amp. hr. capacity storage battery of the sealed glass jar type, with all accessories, this to be Exide DMGO-5 or equal.

**Motor Generator**—Install a "Standard" 750- [500] [1000] watt motor generator set with a 220-volt 3-phase (110-volt single phase) motor, directly connected to a 125-volt d-c. compound wound generator. Install a combination line and magnetic starter switch with no voltage and overload protection, on wall near motor generator set.

**Table Receptacles**—Table receptacles shall be Type TR-2J5, consisting of 2 single-pole, dead front jacks, similar in design to those on main board, mounted on a bakelite plate, engraved with circuit number and polarity symbols and provided with suitable outlet box. One jack cap shall be red bakelite for positive and the other black for negative. Each receptacle shall be furnished with a pair of 4-ft. extension cords with moulded bakelite handles and brass plugs on one end and rubber insulated spring clips on the other. One bakelite handle and rubber shield shall be red and the other black.

**Conduit, Wiring and Installation**—Each branch circuit shall be 2 No. 12 wires in ½-in. conduit. Run 7 No. 10 wires from battery to panel, and 2 No. 12 wires from 110-volt a-c. lighting cabinet. Provide a power circuit for motor generator set of 220-volt 3-phase (110-volt a-c. single phase) from main switchboard.

Install equipment in accordance with manufacturer's drawings and instructions.

Receptacles which occur in tables are to be sent to the furniture manufacturer who will fit same into his equipment. Connection of table receptacles to the conduit and wiring above the floor is to be done complete by [the electrical contractor] [furniture manufacturer].

## Special Layouts

Special layouts and equipment are required on many large high schools and colleges and the Company is pleased to cooperate with architects, engineers and owners in this work.

# "STANDARD" TELEPHONE SYSTEM

## Description

The "Standard" Telephone System is of the common talking, selective ringing type, consisting of a combination of Bell Control Board and Central Station, designed primarily for use in schools or other buildings where such equipment answers the requirements. It provides a thoroughly practical and reliable system of the simplest type, free from complicated switchboard or automatic control to get out of order.



**Combination Bell Control Board and Master Telephone Station**

## Operation of System

The "Standard" Telephone System operates in conjunction with the Program Bell System, using the same transformer or rectifier for the bells with a filtered rectifier of improved design for the talking circuit, thus eliminating all batteries.

When the receiver of any room telephone is removed from its hook, a buzzer warning calls attention to the Clerk or Principal at the master station.

With this system, teacher-to-teacher conversation can be supervised. Also, several teachers can be called and given instruction simultaneously.

# TYPE MC CLOSED CIRCUIT FIRE ALARM SYSTEM

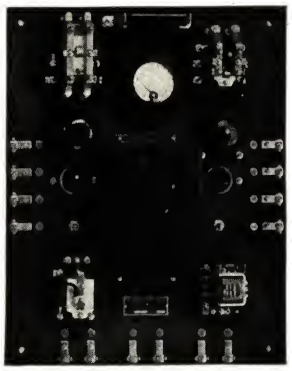
### General Description

A supervised, closed circuit system, comprised of Master Code Control Panel, Non-code "Break-Glass" Boxes, and single-stroke gongs or horns.

Made for either battery, 110-volt D-C, or A-C operation.

When box is operated (by breaking glass in case of fire, or opening door with key in case of drill), a common code of 2-3 is sounded for four rounds on all signals through code transmitter on control panel.

At completion of alarm, emergency bell on control panel continues to ring until glass has been restored in station originating the alarm.



Type MC Control Panel

### Control Panel

Made of ebony asbestos and contains supervisory milliammeter, relays, transmitter, pilot lamps, silencing switches, trouble bell, etc.

**Cabinets**—Made of steel, for surface or flush mounting. Furnished with knockouts in bottom and sides. Doors are provided with either full ¼-in. plate glass panel or a small glass window over meter. Cabinets are 18 ins. wide, 22 ins. high, 7½ ins. deep, with trim extending 2¾ ins. all around for flush type.




**No. 451-H Break Glass Type Fire Box with Hinged Hammer**

Can be had with hammer and chain

### Double Supervision

When specified, system may be furnished with double supervision; that is, in addition to supervising the operating current, the trouble bell current is also supervised.

### Switches and Pilot Lights

When so ordered, panels are furnished with switches for silencing the trouble bells, and at the same time causing red bullseye lamp to show until all trouble on system is rectified.

### Signals

Either horns or single-stroke, electrically operated gongs in 6, 8, 10 and 12-in. diameters are used. Special outlet boxes furnished for gongs, permitting close setting to wall.

### Current Supply

System may be operated from either 110-volt A-C or D-C or from 24-volt storage battery, 12-amp. hour or larger. When 110/220-volt service is available, power may be taken from one leg of the 220-volt service and neutral, with supervision taken from the other leg and neutral. When service is straight 110-volt, supervision may be had from 6-volt primary battery, or from any other reliable source of current, such as a storage battery.



Single-Stroke Gong

### Wiring

All stations wired in multiple on two continuous circuits. All signals wired in series, with up to 10 on a circuit for 110 volts, and up to 5 on a circuit for 24 volts. No wire smaller than No. 14 should be used.

# TYPE BC CLOSED CIRCUIT FIRE ALARM SYSTEM

### General Description

A supervised, closed circuit system consisting of Central Control Panel, Coded Boxes, and single-stroke gongs or horns. Made for battery, or 110-volt A-C operation.

### Control Panel

Made of ebony asbestos, and contains supervisory milliammeter, relays, pilot lamps, silencing switches, trouble bells, time limit cut-outs, etc.

Cabinets—20 ins. wide, 24 ins. high, 5 ins. deep.

### Double Supervision

Same as used with Type MC System.

### Switches and Pilot Lights

Same as used with Type MC System.

### Fire Boxes

Boxes used with this system are coded, furnished in two types: the open-door, pull-lever type, and the "Break-Glass," pull-lever type. Either may be furnished for surface mounting (open conduit work) or for semi-flush mounting. Mechanism is furnished with code wheels cut for desired code for each box. When lever is pulled, four rounds of code signal are given.

All stations are provided with arrangements for running test signals by the use of a test key, indicating the perfect condition of the full operating circuit by giving one stroke on all the signals. The mechanism of the station may also be tested by holding the break springs closed with the test key turned in reverse position, and pulling the lever, without sounding the signals.

Special cast iron outlet boxes furnished with proper provision made for terminating conduit.

### Signals

Same as used with Type MC System.

### Current Supply

Same as used with Type MC System above.

### Wiring

Same as used with Type MC System, except that all stations are wired in series on one 2-wire circuit.

# TYPE 450 OPEN CIRCUIT FIRE ALARM SYSTEM

### General Description

The "Standard" Type 450 Fire Alarm System is a very simple, yet completely reliable warning that has been successfully used in buildings for many years. It is of the open circuit, non-supervised type, comprised of a Master Code Panel, Non-code "Break-Glass" Boxes, and either single-stroke gongs, vibrating bells or horns. It is made for A-C or D-C operation.

# TYPE BCR PRE-SIGNAL CLOSED CIRCUIT FIRE ALARM SYSTEM

A supervised, closed circuit system arranged so that the normal operation of any box sounds signals (usually small tapper gongs) at certain designated places, such as superintendent's or engineer's office, permitting a preliminary investigation.

# "STANDARD" HOSPITAL EQUIPMENT

## Nurses' Calling System—Lock Button Type

"Standard" Bedside Stations are equipped with a pilot lamp and automatic jack. Slight pressure on the button lights the corridor dome pilot, duty station and annunciators which remain lighted until reset at the button by the nurse.

Further pressure operates a buzzer at duty stations and annunciators if desired.

The button is housed in a chromium plated metal shell and is securely fastened to the Tirex rubber cord with all connections soldered. If plug is accidentally removed the call goes in just as if the button had been operated. Reinserting the plug cancels the call. If the plug and button is to be left out, for instance, in an unoccupied room, pressing the center button on the plug cancels the call.

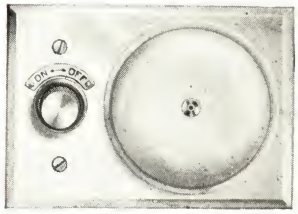
**Emergency Service**—Stations may be furnished equipped with an additional switch if desired for operating an emergency red light at duty and utility stations as well as annunciator.

Stations may also be furnished with extra gangs to take standard radio jacks, convenience receptacles, etc.

Stations are regularly furnished with struck up brass plates—buff lacquer finish as standard. Special finishes, solid brass or bronze plates or natural bakelite plates can be furnished to meet specifications.



HN-300
Bedside Station




HN-311 Duty Station



Bedside Cord and Button




HN-314 Nurses'
Lamp Annunciator

## Nurses' Lamp Annunciator

Numbered panel—made of metal with stenciled numbers covered with white pyralin.

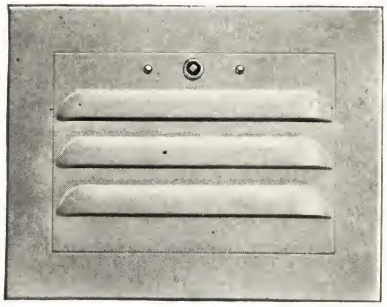
Lamps are easily accessible on a separate hinged plate with special easily removed lamp sockets.

## Night Lights

"Standard" night lights *(see top of adjoining column)* are made with three or four louver openings, also with revolving shields, covering all essential requirements. The three-louver night lights are flush type, the four-louver, semi-flush.



HG-303 Revolving
Shield Type
Night Light



HG-302 Louvered Flush Type Night Light

## Doctors' Staff Register

This improved type register provides complete illumination, from the rear, of the doctor's name placed on transparent cards.

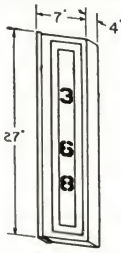
May be equipped with three-way switch control so that doctor may enter and register at one door, leaving and cancelling registration at another door if desired.

Lamps are easily accessible for quick replacement. Mounts in flush cabinet with cabled leads to screw connector block.

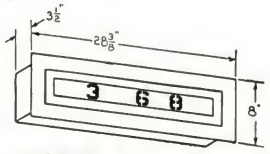
## Doctors' Paging System

Permits telephone operator to set up coded calls for as many as three doctors at a time which show on lamp annunciators located in corridors of building. All numbers are of three digits to avoid confusion in case of accidental failure of one lamp.

Annunciators are made in various styles to meet requirements with metal cases and numerals stenciled on metal plate, covered with white pyralin—a clean unbreakable construction.




HD-304
Double Face
Annunciator,
Side Wall
Mounted




HD-300 Single Face Annunciator, Flush Mounted



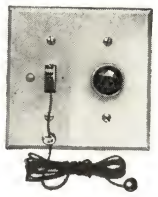
HD-310
Selector Keyboard

## Nurses' Calling System—Pull Cord Type

For use where simplicity and low cost are paramount considerations, sacrificing some safety and other advantageous features of the lock button type.

**Bee Hive Type Corridor Dome Station**—This type station is recommended for use with the toggle switch system as simple, effective and of low cost.

**Bullseye Annunciator**—The bullseye pilots used on this type annunciator are opalescent with room, ward or section numbers marked thereon. Buzzer sounds momentarily whenever an indicator is illuminated.



HT-300 Ward
Type Station

# SOUND DISTRIBUTION SYSTEMS

THE STANDARD ELECTRIC TIME COMPANY offers its customers the complete unexcelled line of equipment manufactured by RCA Manufacturing Co.

Equipment for schools comprises a central control cabinet of handsome, convenient design providing single or double channel reception, phonograph table, monitor and master switch control of all room speakers and two-way conversation.

Room speaker units are of the permanent field dynamic type with full dynamic type for auditoriums.

Microphones are of the improved, highly sensitive velocity type. This type of microphone in conjunction with these improved speaker units ensures the utmost faithfulness of tonal reproduction in both speech and music.

We will gladly co-operate with architects and engineers in writing specifications covering sound distribution systems.



Central Control Panel for "Standard"
Sound Distribution Systems




Combination Clock and
Radio Speaker

MEMORANDA

# WHEELOCK APPARATUS







*Wheelock* STANDARDS

MANUFACTURED BY

**SIGNAL**

ENGINEERING & MFG. CO.

150 WEST 14th ST., NEW YORK

# Wheelock STANDARDS

For more than a quarter century, Signal Engineering & Mfg. Company has always set the pace in design and construction. Having engineered and developed the alternating current Fire Alarm System . . . the Solenoid Underdome Bell . . . the patented Automatic Master Code Fire Alarm System . . . the patented March-Time Fire Alarm System (continuous ringing) with single stroke instead of vibrating bells or horns, and other achievements . . . the outstanding superiority of Wheelock Standards in Interior Fire Alarm equipment, as in other Wheelock products, is generally recognized.

Likewise with Wheelock Code Call Systems . . . the same pioneering and development in advanced design and construction have resulted in many patented features and the general recognition of "Wheelock" as Standard in code call equipment.

A signal system is no better than its relays. The prominent position in the relay field, maintained by this company year after year, has been largely responsible for the broad acceptance of Wheelock Relays as Standard.

Signal Engineers are available to assist architects, engineers, contractors and manufacturers in problems within the scope of Wheelock Apparatus; in supplying circuit diagrams, estimates, specifications, and in the development of special apparatus to meet specific requirements.

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| Fire Alarm | Pages 3 to 9 |
| Call Systems | " 10, 11, 15 |
| Signals | " 12 to 15 |
| Relays | " 16 |


Wheelock Standards call for—

Designs, circuits, materials and workmanship to excel, and laboratory tests to exceed—essential requirements of "approval" laboratories, agencies, and jurisdictional boards.



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Wheelock STANDARDS

# FIRE ALARM SYSTEMS

The two general types of Fire Alarm Systems in common use are:

(1) Systems using non-code break glass stations in which the location of the particular operated station is not indicated.

(2) Systems using pull lever coded stations, in which the location of the operated station is indicated by the particular code sounded.

(1) Systems using non-code stations are furnished in two types: (a) March-Time System (continuous-ringing), in which breaking glass or opening door of station automatically sends a continuous series of single strokes on all signals, until the station is restored to normal; and (b) Master Code Alarm System, in which breaking glass or opening door of station automatically sends a definite number of rounds of a code — such as 3-3 or 4-4 — on all signals, after which trouble bell rings until the station is restored to normal.

These systems have exclusive patented features in the use of the Wheelock Automatic Interrupter, in that they require no winding or resetting of any kind, and that they have an adjustment for timing the interval between strokes.

(2) Systems using coded stations are also furnished in two types: (a) General Alarm System, in which every signal device operates when a station lever is pulled, giving a general alarm corresponding with the number of the station; and (b) Presignal Alarm System, in which only signal devices on the preliminary alarm circuit are operated when a station lever is pulled. These signals are located within hearing of a fire squad or other emergency force having authority to investigate cause of the alarm. In case of fire of proportions to endanger occupants of building, a key is inserted in the station and the lever pulled again, thus causing operation of all signal devices. This system is designed for use in such buildings as hospitals, hotels, etc., where it is not desirable to sound a general alarm unless there exists an actual fire which is serious enough to require evacuation of premises.

These systems may use either the "Open Door, Pull Lever" type of station or the "Break Glass, Open Door, Pull Lever" type, the latter being particularly suitable for such buildings as hotels or schools.

All coded stations may be provided with means to prevent mixing of signals when two stations are pulled at the same time, at no extra cost.

Panel wiring and all signal and station loops of all systems are fully supervised.

It is impracticable to enumerate the many possible modifications of above basic principles, but it is only necessary to specify "Wheelock Standards" and state just what is to be accomplished.

Wheelock STANDARDS

# FIRE ALARM SYSTEMS

## March-Time

(Continuous Ringing)

NON-CODE STATIONS

(Detailed Specification opposite)



Trouble Bell



Fire Alarm Bell
Sizes: 4"-6"-8"-10"-12"

Are those in which breaking of glass or opening of door of station automatically causes the sounding on all signals of a continuous series of single strokes. (The Wheelock Standard System is the only one in which the timing is adjustable to such as march-time.)

Not more than 14 signals per circuit may be used with 110 volts direct current, not more than 10 per circuit with 110 volts 60 cycle alternating current, and not more than 8 per circuit with 24 volts direct current.




Non-Code, Break Glass

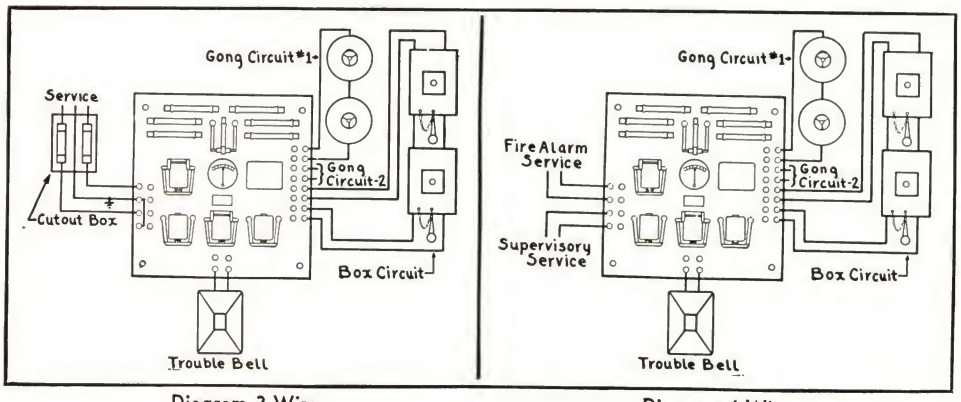
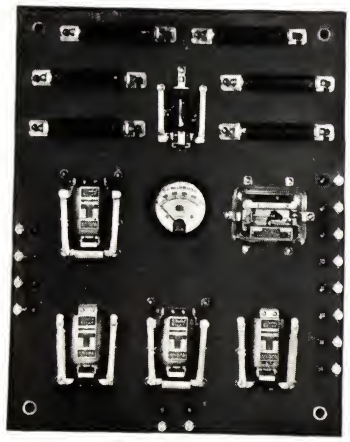



Diagram 3-Wire

Diagram 4-Wire



Control Panel Type G201

## Master Code

NON-CODE STATIONS

(Detailed Specification opposite)



Trouble Bell



Fire Alarm Bell

Are those in which breaking of glass or opening of door of station automatically causes the sounding on all signals of four rounds of a code such as 3-3 or 4-4. (The Wheelock Standard System requires no winding or resetting, and time between strokes is adjustable.)

Not more than 14 signals per circuit may be used with 110 volts direct current, not more than 10 per circuit with 110 volts 60 cycle alternating current, and not more than 8 per circuit with 24 volts direct current.




Non-Code, Break Glass

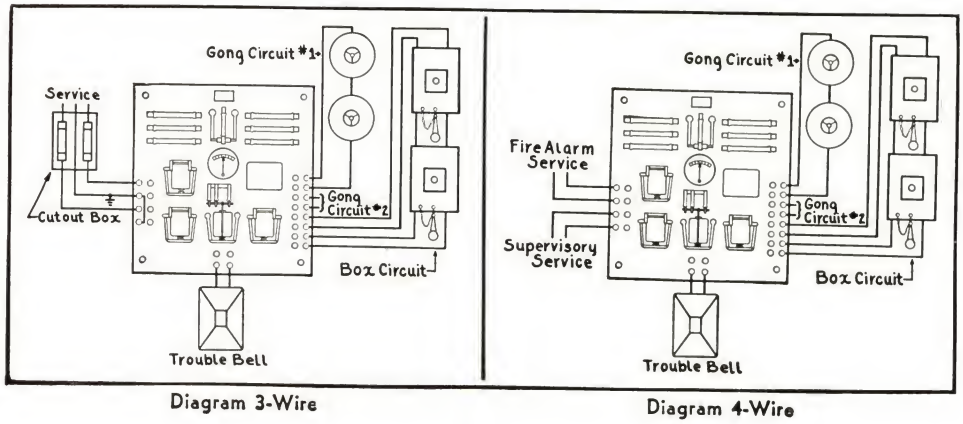
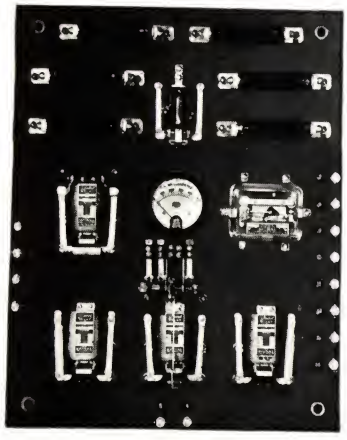



Diagram 3-Wire

Diagram 4-Wire



Control Panel Type T201

The contractor shall furnish and install complete with all conduit, wiring and connections a complete fire alarm system, all in accordance with the following and as shown on plans which form part of this specification.

**System:** The system shall be the Wheelock Standard March-Time (continuous ringing) Type as manufactured by the Signal Engineering & Mfg. Co.

**Operation:** Breaking glass or opening door of station shall transmit a continuous series of single strokes on all signals, until the glass is replaced and the station door closed. The trouble bell shall continue to ring until the glass is replaced and the station door closed. The apparatus must be so made as to *allow adjustment of timing between strokes.*

**Control Panel:** Shall be located in apparatus room in basement as shown on plans (locate in a conspicuous and accessible place). Panel shall be of Ebony Asbestos and equipped with necessary supervisory and control equipment, and furnished and installed complete with surface (or flush) type cabinet. Conduits shall enter cabinet through knockouts only on sides or bottom.

**Relays:** Shall have laminated cores. Armatures shall be hinged on stainless steel shafts in suitable bearings. Coils shall be form wound, cotton impregnated, and baked so as to be moisture-proof, and *shall stand a breakdown test of 2500 volts 60 cycles for 5 seconds between winding and core.*

**Supervision—Single:** Panel wiring and all signal and station loops shall be fully supervised. Trouble bell shall sound in the event of a break or a ground on either the bell or station circuit, while any station glass is broken or door is open, or in the event of main power failure.

**Supervision—Double:** (Same as above, and) Arrangements shall also be made to sound a trouble bell in the event of failure of the auxiliary power supply.

**Trouble Bell:** External trouble bells of the number needed to correspond with the supervision required shall be provided and located as specified.

**Stations:** Shall be of the plain non-code break glass type operating on a *supervised* circuit and shall be adapted for use in a single gang switch opening. There shall be a total of (  ) stations, arranged on (  ) loops.

**Signals:** Bells shall be (  ) in. single stroke solenoid type with form wound moisture-proof coils, underdome, rust proofed and finished in dull black. Coils *shall stand a breakdown test of 2500 volts 60 cycles for 5 seconds between winding and frame.* The bell shall be so designed that the mechanism will mount into a universal outlet box, 3¼x4x2⅛ inches with ½ inch knockout on each side and at the back, equipped with a terminal block which eliminates splicing and soldering. The bell shell shall cover the entire mechanism. (8", 10" or 12" bells may be specified). There shall be a total of (  ) bells, arranged on (  ) loops, located as follows (  ).

**Current Supply:** (Four Methods, Select one)

*Single Supervised:* The system shall be connected to the 3-wire (  ) volt commercial supply with grounded neutral, with trouble bell arranged to indicate power failure on the side of the circuit which supplies the alarm system.

*Single Supervised:* The system shall be connected to a 2-wire (  ) volt supply to operate the alarm system and to a separate 2-wire (  ) volt supply for supervision, with trouble bell arranged to indicate power failure on the circuit which supplies the alarm system.

*Double Supervised:* The system shall be connected to the 3-wire (  ) volt commercial supply with grounded neutral, with trouble bells arranged to indicate power failure in either side of the circuit.

*Double Supervised:* The system shall be connected to a 2-wire (  ) volt supply to operate the alarm system and to a separate 2-wire (  ) volt supply for supervision, with trouble bells arranged to indicate power failure in either supply circuit.

**Wiring:** Stations on each loop shall be connected in parallel across the two sides of the loop, starting from two of four station terminals on the panel and after connecting through all stations on that loop returning to the other two terminals of that loop. For signal circuits provide two No. 14 wires per loop, on which the signals of that loop are connected in series. Connection diagram shall be furnished by manufacturer, and all wiring is to be according to standard requirements as given for lighting and power elsewhere in the specifications.

The contractor shall furnish and install complete with all conduit, wiring and connections a complete fire alarm system, all in accordance with the following and as shown on plans which form part of this specification.

**System:** The system shall be the Wheelock Standard Master Code Alarm Type as manufactured by the Signal Engineering & Mfg. Co.

**Operation:** Breaking glass or opening door of station shall send four rounds of the code (such as 3-3 or 4-4) on all signals. Operation of the system shall then cease automatically, but the trouble bell shall continue to ring until glass is replaced and station door closed. The apparatus must be so made as to *allow adjustment of timing between strokes.*

**Control Panel:** Shall be located in apparatus room in basement as shown on plans (locate in a conspicuous and accessible place). Shall be of Ebony Asbestos and equipped with necessary supervisory and control equipment, and Master Code Transmitter, and furnished and installed complete with surface (or flush) type cabinet. Conduits shall enter cabinet through knockouts only on sides or bottom.

**Relays:** Shall have laminated cores. Armatures shall be hinged on stainless steel shafts in suitable bearings. Coils shall be form wound, cotton impregnated, and baked so as to be moisture-proof, and *shall stand a breakdown test of 2500 volts 60 cycles for 5 seconds between winding and core.*

**Supervision—Single:** Panel wiring and all signal and station loops shall be fully supervised. Trouble bell shall sound in the event of a break or a ground on either the bell or station circuit, while any station glass is broken or door is open, or in the event of main power failure.

**Supervision—Double:** (Same as above, and) Arrangements shall also be made to sound a trouble bell in the event of failure of the auxiliary power supply.

**Trouble Bell:** External trouble bells of the number needed to correspond with the supervision required shall be provided and located as specified.

**Stations:** Shall be of the plain non-code break glass type operating on a *supervised* circuit and shall be adapted for use in a single gang switch opening. There shall be a total of (  ) stations, arranged on (  ) loops.

**Signals:** Bells shall be (  ) in. single stroke solenoid type with form wound moisture-proof coils, underdome, rust proofed and finished in dull black. Coils *shall stand a breakdown test of 2500 volts 60 cycles for 5 seconds between winding and frame.* The bell shall be so designed that the mechanism will mount into a universal outlet box, 3¼x4x2⅛ inches with ½ inch knockout on each side and at the back, equipped with a terminal block which eliminates splicing and soldering. The bell shell shall cover the entire mechanism. (8", 10" or 12" bells may be specified). There shall be a total of (  ) bells, arranged on (  ) loops, located as follows (  ).

**Current Supply:** (Four Methods—Select one)

*Single Supervised:* The system shall be connected to the 3-wire (  ) volt commercial supply with grounded neutral, with trouble bell arranged to indicate power failure on the side of the circuit which supplies the alarm system.

*Single Supervised:* The system shall be connected to a 2-wire (  ) volt supply to operate the alarm system and to a separate 2-wire (  ) volt supply for supervision, with trouble bell arranged to indicate power failure on the circuit which supplies the alarm system.

*Double Supervised:* The system shall be connected to the 3-wire (  ) volt commercial supply with grounded neutral, with trouble bells arranged to indicate power failure in either side of the circuit.

*Double Supervised:* The system shall be connected to a 2-wire (  ) volt supply to operate the alarm system and to a separate 2-wire (  ) volt supply for supervision, with trouble bells arranged to indicate power failure in either supply circuit.

**Wiring:** Stations on each loop shall be connected in parallel across the two sides of the loop, starting from two of four station terminals on the panel and after connecting through all stations on that loop returning to the other two terminals of that loop. For signal circuits provide two No. 14 wires per loop, on which the signals of that loop are connected in series. Connection diagram shall be furnished by manufacturer, and all wiring is to be according to standard requirements as given for lighting and power elsewhere in the specifications.

# FIRE ALARM SYSTEMS

## General Alarm

### CODED STATIONS

(Detailed Specification opposite)



Trouble Bell



Fire Alarm Bell
4"-6"-8"
10"-12"

Are those in which every signal device operates when a station lever is pulled, giving a general alarm coded to correspond with the number of the operated station.

Not more than 14 signals per circuit may be used with 110 volts direct current, not more than 10 per circuit with 110 volts 60 cycle alternating current, and not more than 8 per circuit with 24 volts direct current.




Break Glass, Open Door, Pull Lever

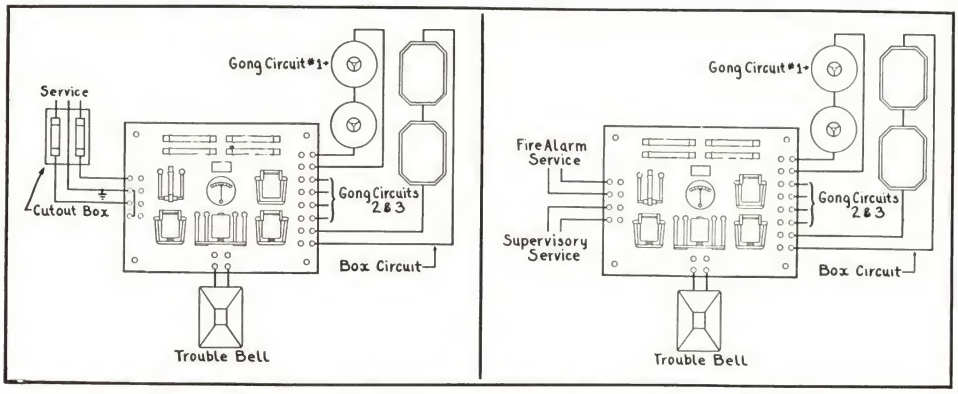
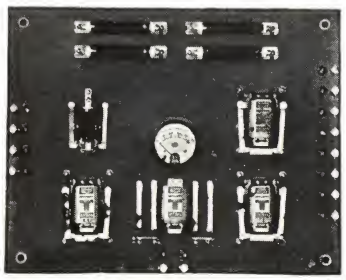



Diagram 3-Wire

Diagram 4-Wire



Control Panel
Type C301

## Presignal Alarm

### CODED STATIONS

(Detailed Specification opposite)



Trouble Bell



Fire Alarm Bell

Are those in which only the signal devices within hearing of a fire squad or other emergency force are operated when a station lever is pulled. In case of actual fire a key is inserted in the station and the lever pulled again, thus causing the operation of all signal devices.

Not more than 14 signals per circuit may be used with 110 volts direct current, not more than 10 per circuit with 110 volts 60 cycle alternating current, and not more than 8 per circuit with 24 volts direct current.




Break Glass, Open Door, Pull Lever

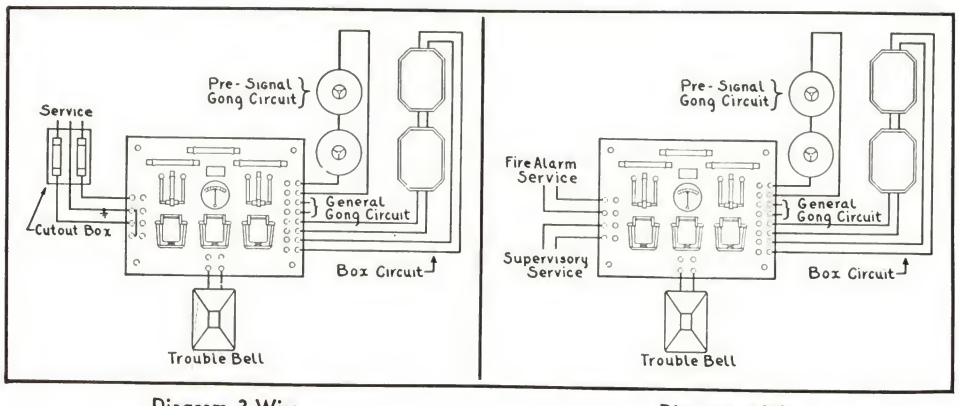
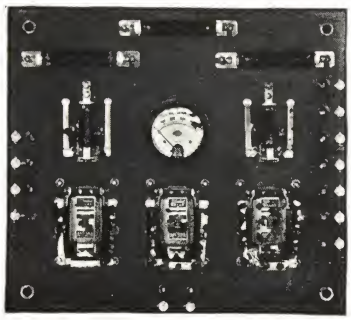



Diagram 3-Wire

Diagram 4-Wire



Control Panel
Type CD111

The contractor shall furnish and install complete with all conduit, wiring and connections a complete fire alarm system, all in accordance with the following and as shown on plans which form part of this specification.

**System:** The system shall be the Wheelock Standard Coded General Alarm Type as manufactured by the Signal Engineering & Mfg. Co.

**Operation:** Pulling down the lever of any station shall cause four rounds of the code of that station to be sounded on all signals. At the completion of the four rounds the system shall automatically restore itself to normal.

**Control Panel:** Shall be located in apparatus room in basement as shown on plans (locate in a conspicuous and accessible place). Panel shall be of Ebony Asbestos and equipped with necessary supervisory and control equipment, and furnished and installed complete with surface (or flush) type cabinet. Conduits shall enter cabinet through knockouts only on sides or bottom.

**Relays:** Shall have laminated cores. Armatures shall be hinged on stainless steel shafts in suitable bearings. Coils shall be form wound, cotton impregnated, and baked so as to be moisture-proof, and *shall stand a breakdown test of 2500 volts 60 cycles for 5 seconds between winding and core.*

**Supervision—Single:** Panel wiring and all signal and station loops shall be fully supervised. Trouble bell shall sound in the event of a break or a ground on either the bell or station circuit, or in the event of main power failure.

**Supervision—Double:** (Same as above, and) Arrangements shall also be made to sound a trouble bell in the event of failure of the supervisory power supply.

**Trouble Bell:** External trouble bells of the number needed to correspond with the supervision required shall be provided and located as specified.

**Stations:** There shall be ( surface), ( semi-flush), ( flush) coded type stations, with codes as follows ( ), installed and connected at locations as shown on plans. Stations shall be open door, pull lever type with normally closed contacts. (Alternate, for schools, etc.—Stations shall be hinged hammer or hammer and chain, break glass, open door, pull lever type with normally closed contacts). The pull lever shall be so arranged that the pull is forward and downward, so as to permit the use of four fingers in operating. When the door is closed, the lever shall be in vertical position, flush with the surface of the movement plate. When the door is opened, the lever shall move forward to a position which will permit an easy grasp by the operator. The lever shall be so affixed to the mechanism that it cannot be removed without removing the mechanism cover and mechanism. Main spring shall be held symmetrically wound with a cup retainer. Code wheels shall be interchangeable and self locating on shaft.

**Signals:** Bells shall be ( ) in. single stroke solenoid type with form wound moisture-proof coils, underdome, rust proofed and finished in dull black. Coils *shall stand a breakdown test of 2500 volts 60 cycles for 5 seconds between winding and frame.* The bell shall be so designed that the mechanism will mount into a universal outlet box 3¼x4x2⅛ inches with ½ inch knockout on each side and at the back, equipped with a terminal block which eliminates splicing and soldering. The bell shell shall cover the entire mechanism (8", 10" or 12" bells may be specified). There shall be a total of ( ) bells, arranged on ( ) loops, located as follows ( ).

**Current Supply:** (Four Methods—Select one)

*Single Supervised:* The system shall be connected to the 3-wire ( ) volt commercial supply with grounded neutral, with trouble bell arranged to indicate power failure on the side of the circuit which supplies the alarm system.

*Single Supervised:* The system shall be connected to a 2-wire ( ) volt supply to operate the alarm system and to a separate 2-wire ( ) volt supply for supervision, with trouble bell arranged to indicate power failure on the circuit which supplies the alarm system.

*Double Supervised:* The system shall be connected to the 3-wire ( ) volt commercial supply with grounded neutral, with trouble bells arranged to indicate power failure in either side of the circuit.

*Double Supervised:* The system shall be connected to a 2-wire ( ) volt supply to operate the alarm system and a separate 2-wire ( ) volt supply for supervision, with trouble bells arranged to indicate power failure in either supply circuit.

**Wiring:** For each loop of stations provide two No. 14 wires to form a loop on which the stations of that loop are connected in series. (Not more than twenty stations on one station loop. Panels shall be provided with extra terminals on this basis.) For signal circuits provide two No. 14 wires to form a loop on which the signals of that loop are connected in series. Connection diagram shall be furnished by manufacturer, and all wiring is to be according to standard requirements as given for lighting and power elsewhere in the specifications.

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The contractor shall furnish and install complete with all conduit, wiring and connections a complete fire alarm system, all in accordance with the following and as shown on plans which form part of this specification.

**System:** The system shall be the Wheelock Standard Coded Presignal Alarm Type as manufactured by the Signal Engineering & Mfg. Co.

**Operation:** Pulling down the lever of any station shall cause four rounds of the code of that station to be sounded on the presignals. At the completion of the four rounds the system shall automatically restore itself to normal. To sound a general alarm, a key must be inserted at the station and the lever again pulled—sounding on all signals, four rounds of the code of that station.

**Control Panel:** Shall be located in apparatus room in basement as shown on plans (locate in a conspicuous and accessible place.) Panel shall be Ebony Asbestos and equipped with necessary supervisory and control equipment, and furnished and installed complete with surface (or flush) type cabinet. Conduits shall enter cabinet through knockouts only on sides or bottom.

**Relays:** Shall have laminated cores. Armatures shall be hinged on stainless steel shafts in suitable bearings. Coils shall be form wound, cotton impregnated, and baked so as to be moisture-proof, and *shall stand a breakdown test of 2500 volts 60 cycles for 5 seconds between winding and core.*

**Supervision—Single:** Panel wiring and all signal and station loops shall be fully supervised. Trouble bell shall sound in the event of a break or a ground on either the bell or station circuit, if any presignal key is inserted, or in the event of main power failure.

**Supervision—Double:** (Same as above, and) Arrangements shall also be made to sound a trouble bell in the event of failure of the supervisory power supply.

**Trouble Bell:** External trouble bells of the number needed to correspond with the supervision required shall be provided and located as specified.

**Stations:** There shall be ( surface), ( semi-flush), ( flush) presignal, coded type stations, with codes as follows ( ), installed and connected at locations as shown on plans. Stations shall be open door, pull lever type with normally closed contacts. (Alternate, for schools, etc.—Stations shall be hinged hammer or hammer and chain, break glass, open door, pull lever type with normally closed contacts.) The pull lever (same as above).

**Signals:** Presignal bells shall be 4 in. single stroke solenoid type. General alarm bells shall be ( ) in. single stroke solenoid type. All bells shall be underdome, rust proofed and finished in dull black, with form wound moisture-proof coils. Coils *shall stand a breakdown test of 2500 volts 60 cycles for 5 seconds between winding and frame.* The bell shall be so designed that the mechanism will mount into a universal outlet box 3¼x4x2⅛ inches with ½ inch knockout on each side and at the back, equipped with a terminal block which eliminates splicing and soldering. The bell shell shall cover the entire mechanism (8", 10" or 12" bells may be specified). There shall be a total of ( ) presignal bells, arranged on ( ) loops, and a total of ( ) general alarm bells, arranged on ( ) loops, located as follows ( ).

**Current Supply:** (Four Methods—Select one) (Same as above).

**Wiring:** For each loop of stations provide four No. 14 wires to form 2 loops connected through the stations in series. (Not more than twenty stations on one station loop. Panel shall be provided with extra terminals on this basis.) For signal circuits provide two No. 14 wires to form a loop on which the signals of that loop are connected in series. Connection diagram shall be furnished by manufacturer, and all wiring shall be according to standard requirements as given for lighting and power elsewhere in the specifications.

Wheelock STANDARDS

# FIRE ALARM STATIONS




Non-Code, Break Glass, (Hinged Hammer)
Type NCFI (Flush)
Type NCSI (Surface)
Type NCSFI (Semi-flush)



Standard Switch Box




Coded, Break Glass, (Hinged Hammer) Open Door, Pull Lever
Type FHP210 (Flush)
Type SHP210 (Surface)
Type SFHP210 (Semi-flush)




Coded, Break Glass, (Hammer and Chain) Open Door, Pull Lever
Type FGP210 (Flush)
Type SGP210 (Surface)
Type SFGP210 (Semi-flush)



Back Box for Coded Stations

## Non-Code Break Glass Stations

Are used only with the March-Time and Master Code Alarm Systems and may be of either the hinged hammer or the hammer and chain type, and either surface, flush, or semi-flush. Breaking glass or opening door of station causes alarm to be sounded. Keys are provided for testing and for Fire Drill. Stations are designed to fit either a standard rectangular switch box or a standard square outlet box.

## Pull Lever Coded Stations

Are used with Coded General Alarm and Coded Presignal Alarm Systems and may be of the plain open door, pull lever type or of the hinged hammer or hammer and chain, break glass, open door, pull lever type. These stations are all "local non-interfering", that is, after the lever has been pulled and released, further manipulation thereof will have no effect upon the sounding of the alarm. The pull lever is "L" shaped and arranged so that the pull is forward and downward, permitting use of four fingers in operating, and obviating the catching of fingers between lever and movement plate. The lever is vertical when door is closed, and moves forward to a position permitting an easy grasp when door is opened.

A special key is furnished which may be used either to test the electrical circuit without operating the mechanism or to operate the mechanism without sending in an alarm. This key also serves to open the screw lock of inner door. For presignal stations another key is furnished to control operation of general alarm signals. All coded stations may be provided with means to prevent mixing of signals when two stations are pulled at the same time, at no extra cost. Back boxes are arranged for ½ in. and ¾ in. conduit and may be "roughed in" so that all wiring work may be completed before mechanism is installed. Weatherproof housings are available for use on loading platforms and the like, where the exposure is more severe.



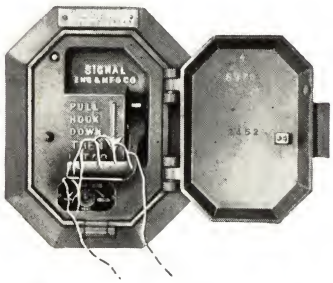

Non-Code, Break Glass, (Hammer and Chain)
Type NCF (Flush)
Type NCS (Surface)
Type NCSF (Semi-flush)



Standard Outlet Box




Coded, Open Door, Pull Lever
Type FP210 (Flush)
Type SP210 (Surface)
Type SFP210 (Semi-flush)




Showing Completion of Downward Pull




"W" Weatherproof Housing for All Types of Stations

Wheelock STANDARDS

# FIRE ALARM EQUIPMENT



Universal Back Box



Bell Adapter Plate



Standard Outlet Box

## Signals

We advocate single stroke bells as the only logical signals for interior Fire Alarm Systems. While the Wheelock Duplex horn is recognized as the ideal horn and while the Wheelock vibrating bell is the most satisfactory vibrating bell manufactured, we do not advocate their use for interior Fire Alarm Systems. (See pages 12 and 13.)

## Trouble Bell

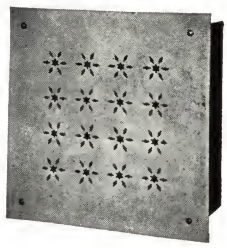
The preferred trouble bell is the rectangular cow gong type which employs the standard 4-in. vibrating mechanism with a rectangular bell metal gong shell. This bell may be attached directly to a surface type housing.



Trouble Bell

## Grille

Fancy grilles and back boxes are available for recessed bells. The grilles can be supplied in steel, brass or bronze in various designs and finishes. The back box is of heavy gauge steel with knockouts, and drilled for bell mounting.



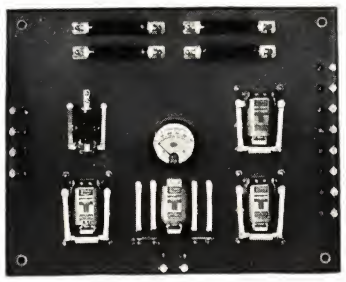
Grille

## Panel

The Control Panel is made of Ebony Asbestos and is equipped with the necessary supervisory and control equipment, including relays, resistors, terminals, etc. When provision for future expansion is necessary, the ultimate number of circuits may be provided, those not needed being strapped out.

## Housings

Housings are constructed of code gauge steel and fitted with Yale Lock. Conduit may enter on sides or bottom. Ample wire gutter space is provided. Either glass window or full glass door may be obtained. (Removable trim is special).



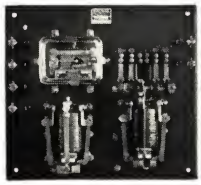
Typical Control Panel

## Sentinel Panel

The Wheelock Sentinel Panel is a safeguard device through which an interior Fire Alarm System may be connected to a municipal box. Operating an interior box will send a signal via the sentinel panel through the municipal box to the Fire Department Headquarters. When the alarm has been completed the sentinel panel automatically returns to normal. An open or ground or derangement of the interior system will not send a signal through the municipal box or cause a stroke on the local signals.

## Register and Time Stamp

When a permanent record of all alarms is desired, a register and take-up reel may be provided. An electrically operated time stamp may be added when a record of the exact time of each alarm is desired.

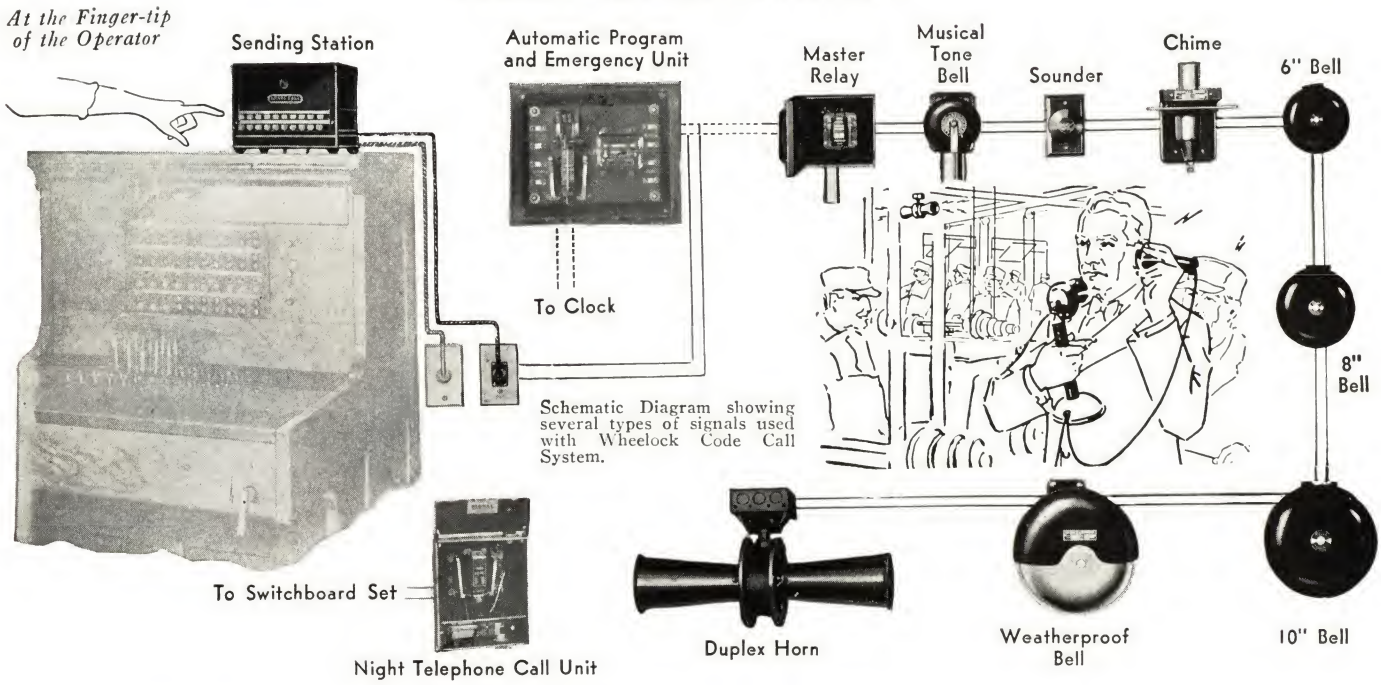


Sentinel Panel

**Pilot Lamp and Switch Furnished if Required**

Wheelock STANDARDS

# *CODE CALL SYSTEM




Schematic Diagram showing several types of signals used with Wheelock Code Call System.

The Wheelock Code Call System is primarily a means for promptly completing telephone calls by automatically reaching members of an organization and calling them to the nearest branch telephone and for broadcasting special messages or emergency signals. Wheelock Code Call service is in general use in factories, hospitals, large offices, banks, schools, garages, department stores, etc.

Code numbers are assigned to members of an organization. When one fails to answer his desk telephone, the operator presses code button which broadcasts his number three times on sounding devices so distributed as to be heard throughout the premises. The person called steps to nearest telephone and the call is *promptly completed.*

## *Specifications* For Code Call System and Auxiliary Service

A complete Wheelock Code Call System shall be installed, as manufactured by Signal Engineering & Mfg. Co., to operate on (  ) volts (specify voltage and cycles). It shall be complete with sending station, master relay and signals.

Sending Station: Shall be so designed that additional key sections may be added to meet future requirements without necessitating changes in wiring. All current interrupting shall occur at readily accessible Master Arcer contacts. The mechanism shall be a jeweled magnetic movement free from any motor. It shall be enclosed in a solid brass, dustproof case with standard black (or special) finish.

Master Relay: Shall be capable of handling 10 signals (Alternate for larger systems—25 signals). Coils shall be form wound cotton, impregnated and baked so as to be moisture-proof, and *shall stand a breakdown test of 2500 volts 60 cycles for 5 seconds between winding terminals and core.* The contact arrangement shall be such that there are two breaks per pole.

Signals: Shall consist of Wheelock (  ) (give number and type). All gongs shall be single stroke solenoid type with form wound moisture-proof coils, underdome, free from springs, contact points and hinges. Coils *shall stand a breakdown test of 2500 volts 60 cycles for 5 seconds between winding terminals and frame.*

## Auxiliary Service

Automatic Time Sender: Shall be so designed as to automatically broadcast 15 rapid signals from clock contacts or a push button.

Night Telephone Service: Shall permit incoming calls to be brought to the attention of the watchman when operator is not on duty. It shall consist of a Wheelock telephone relay, which shall have a form wound, impregnated, moisture-proof coil.

Watchman's Call: Shall be a weatherproof push button (key type contact switch) to be placed at main or other entrance. All signals shall sound once for each operation of the button.

**Names of Telephone Companies which Provide on a Rental Basis Furnished upon Request.*

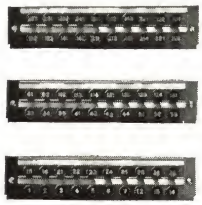
# ELEMENTS OF STANDARD CODE CALL SYSTEM



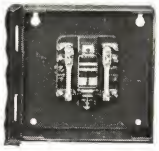
Central Sending Station
Operating Mechanism and Keyboard in One Unit
Type A1 (for A.C.)
Type D1 (for D.C.)



Central Sending Station
Showing Upper Casing, 10-call Section and Footed Base



Patented Sectional Units
Additional 20-call Sections

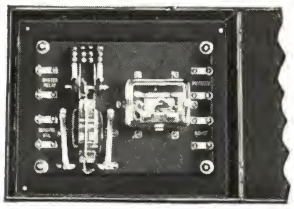


C7-M Master Relay



S7-G Master Relay

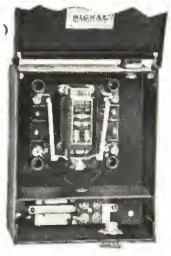
## AUXILIARY APPARATUS



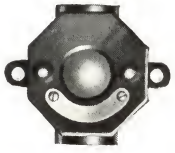
Automatic Program and Emergency Unit
Type AD2 (for A.C.)
Type DD2 (for D.C.)



Indoor Watchman's Push Button
2⅝" dia. x 1⅝" d.
Type POH



Night Telephone Call Unit
Type 3 HB



Weatherproof Watchman's Push Button
3¼" w. x 2⅝" h. x 2⅛" d.
Type POW

## Central Sending Station

Driven by magnetic movement with jeweled bearings. Free from noise or magnetic influence. May be placed on a switchboard, obviating necessity for remote control. All current interrupting is done by two readily accessible contacts of a Wheelock Master Arcer. The case is of solid brass, attractively finished in telephone black. Special finishes on request.

Station is furnished complete for 10, 20, 40, or 60 calls. To increase from 10 to 20 calls, the first 20-call section is substituted for the 10 call section. To increase to 40 and 60 calls, 20-call sections are added. More than 60 calls, made on special order. All electrical connections are made automatically when sections are added.

Dimensions: 10 or 20-call station, 7¾ x 6½ x 6¼ inches. Additional sections, each 1½ inches high.

Power consumption, 30 watts, when in operation.

## Master Relay

The C7-M relay is used to operate up to 10 signals. The S7-G relay is used to operate up to 25 signals. Additional relays connected in multiple or connected to signal lines can be used to operate signals beyond 25. The C7-M and S7-G relays are the Wheelock standard heavy-duty type.

Relay coils energized from the sending station; contacts close the signal circuits. One voltage may be used for the sending station and another for the signals.

Dimensions: C7-M housing, 5¼ x 5¼ x 2⅝ inches, ½ in. knockouts; S7-G housing, 6¾ x 5¼ x 2¾ inches, ½ in. and ¾ in. knockouts.

Current consumption: C7-M—110/60, 0.100 amp.; S7-G—110/60, 0.250 amp.

## Signals

See Pages 12 to 15.

## AUXILIARY APPARATUS

### Auxiliary Automatic Program and Emergency Unit

The Wheelock Code Call System can be used to sound a distinctive signal for starting and stopping of work, or for broadcasting special or emergency signals by the addition of this auxiliary unit. Operated automatically from a program clock, or manually from a push button. The signal given has the right of way over the code call signal, and will interrupt a code call signal, which will automatically continue after the special signal has been completed. When this auxiliary unit is used, the taps of the signals (bell or other) may be set at any speed desired.

Dimensions: 12 x 10 x 5 inches.

Power consumption: 30 watts, when in operation.

### Auxiliary Night Telephone Call Connection

The Wheelock Code Call System can be used for notifying the watchman of incoming calls when the switchboard is unattended. An incoming telephone call actuates a relay, and a predetermined code of the sending station is sounded on all signals. The code is sounded three times and stops automatically. Should it be desired to connect this unit to a leased telephone service, the Telephone Company will make installation of this apparatus. Should the Telephone Company prefer that the customer furnish the unit, we will supply direct.

### Auxiliary Watchman's Call Connection

The Wheelock Code Call System can be used for calling the watchman to the main entrance of the premises when the establishment is closed. A special push button is located at the main entrance. All signals sound once for each operation of the button.

Wheelock STANDARDS

# BELLS SINGLE STROKE VIBRATING


Indoor


Weatherproof


Weatherproof Guarded


Single Stroke


Vibrating

All Wheelock Bells are of the Underdome type with Solenoid and Plunger principle, originated by Signal Engineering & Mfg. Co.

## SINGLE STROKE BELLS

**For Multiple or Series Circuits**

Only moving part is sturdy rust-proof plunger, which is drawn up quickly when coil is energized. After striking gong a quick single blow, plunger drops back instantly due to force of gravity, rebound, and action of solenoid, allowing gong to vibrate freely, resulting in a true extended sound wave.

Coils form-wound, moisture-proof, and capable of withstanding a 2500 volt 60 cycle breakdown test between coil terminals and frame.

### Indoor Bells

Bells equipped with either hot pressed steel shells, parkerized black (special finish when specified), or polished cast bell metal shells.

#### Universal Back Box (for Indoor Bells only)

Wheelock indoor bells, from 4-inch to 12-inch sizes, furnished with universal back box, 3¼ x 4 x 2⅛ inches, equipped with terminal block and having ½-inch knockouts on all sides and back. These are included in price. Shipped with bells or separately, as desired.

Optional:

(A) 4 or 5-inch standard outlet box with terminal block and adapter plate—add to type designation: 4-inch, "-N4"; 5-inch, "-N5."

(B) With adapter plate only (terminals on bell), for 4-inch box, "-U4"; for 5-inch box, "-U5".

### Outdoor Bells: Weatherproof Bells

Shell of polished cast bell metal. Cast metal hood covers upper half of bell shell, providing protection against rain, snow, ice, etc. Bell casting sealed to back box with rubber gasket.

#### Weatherproof Guarded Bells

Same as weatherproof bell with rigidly secured, heavy wire mesh covering lower half of bell.

#### Back Box (for Outdoor Bells)

Made of cast-iron. Equipped with outlets at top and bottom, terminal block to eliminate wire splicing, removable cover plate for access to terminal block, and rubber gasket. Tapped top and bottom with ½-inch pipe thread (one plug furnished).

## VIBRATING BELLS

**Available in both indoor and outdoor types**
**For Multiple (parallel) Circuits only**

Identical with Single Stroke Bell with addition of vibrating mechanism.

The unique construction of vibrator and its adaptability to the Single Stroke Bell assures long plunger travel and slower strokes, allowing full efficiency of the bell shell which is not obtainable in any other design of bell.

Vibrator mechanism is so designed that strokes are timed to allow gong to vibrate freely and completely without interference. The result is a true ring: clear, full, and singularly penetrating.

#### Grilles for Recessed Bell

Attractively designed grilles, furnished in various designs and finishes. Back boxes are of heavy gauge steel, equipped with ½ and ¾-inch knockouts on all sides.

#### Special Twenty-Inch Bells

**Exceptionally loud and penetrating, particularly suitable for use in such locations as power houses, substations, and the like. Vibrating 20-inch bell has adjustment for speed of strokes.**

*When ordering, specify operating voltage and frequency*

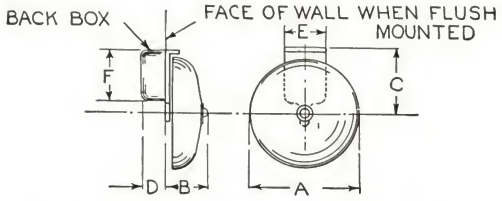
***Complete catalog on signals mailed upon request***

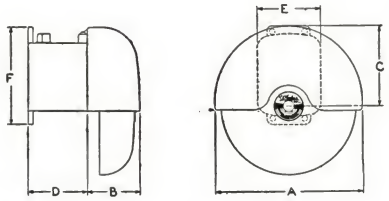
Wheelock STANDARDS

# BELLS SINGLE STROKE VIBRATING

| AVAILABLE IN FOLLOWING OPERATING VOLTAGES | | | | | | |
|---|---|---|---|---|---|---|
| Bell Size | Single Stroke Bells | | | Vibrating Bells | | |
| | D.C. | 25 Cycles | 60 Cycles | D.C. | 25 Cycles | 60 Cycles |
| | Volts | Volts | Volts | Volts | Volts | Volts |
| 4" | 3 to 250 | 4½ to 220 | 6 to 250 | 3½ to 250 | 6 to 220 | 12 to 440 |
| 6"- 8" | 3 to 250 | 7½ to 250 | 11 to 440 | 4 to 250 | 6½ to 350 | 14 to 440 |
| 10"-12" | 3½ to 340 | 9 to 250 | 11 to 440 | 4½ to 250 | 7 to 250 | 15 to 440 |
| 20" | 110 | 110 | 11 to 260 | 110 | 110 | 110 |

| APPROXIMATE WEIGHTS OF BELLS | | | | |
|---|---|---|---|---|
| Size | Indoor Bells | | Outdoor Bells | |
| | Lbs. Net | Lbs. Ship't | Lbs. Net | Lbs. Ship't |
| 4" | 3 | 6 | 8¼ | 17 |
| 6" | 6 | 14 | 10½ | 20 |
| 8" | 6½ | 15 | 13½ | 23 |
| 10" | 8½ | 18 | 17½ | 27 |
| 12" | 10½ | 20 | 20½ | 30 |



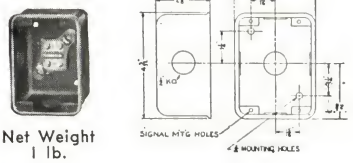




| Size of Bell | Dimensions Indoor Bells (in inches) | | | | | |
|---|---|---|---|---|---|---|
| | A | B | C | D | E | F |
| 4" | 4 | 2 | 2⅜ | 2⅛ | 3¼ | 4 |
| 6" | 6 | 2¾ | 3⅜ | 2⅛ | 3¼ | 4 |
| 8" | 8 | 2⅞ | 4⅜ | 2⅛ | 3¼ | 4 |
| 10" | 10 | 3½ | 5⅜ | 2⅛ | 3¼ | 4 |
| 12" | 12 | 3¾ | 6⅜ | 2⅛ | 3¼ | 4 |
| 20" | 20 | 7¼ | 10⅜ | 2½ | 5⅝ | 7 |

| Size of Bell | Dimensions Weatherproof Bells (in inches) | | | | | |
|---|---|---|---|---|---|---|
| | A | B | C | D | E | F |
| 4" | 5 | 2 | 2½ | 4 | 4¼ | 6¼ |
| 6" | 7 | 3 | 4 | 4 | 4¼ | 6¼ |
| 8" | 8¾ | 3¼ | 5¼ | 4 | 4¼ | 6¼ |
| 10" | 10¾ | 3½ | 5¾ | 4 | 4¼ | 6¼ |
| 12" | 12¾ | 4 | 6¾ | 4 | 4¼ | 6¼ |

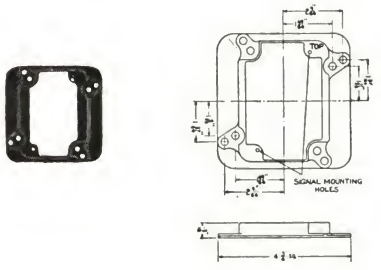
| Size of Bell | Dimensions Weatherproof Guarded Bells (in inches) | | | | | |
|---|---|---|---|---|---|---|
| | A | B | C | D | E | F |
| | | | | | | |
| | | | | | | |
| 8" | 9½ | 4¼ | 5¼ | 3¾ | 4¼ | 6¼ |
| 10" | 11½ | 5¼ | 5¾ | 3¼ | 4¼ | 6¼ |
| 12" | 13½ | 5¼ | 6¾ | 3¼ | 4¼ | 6¼ |

Universal Back Box for Indoor Bells

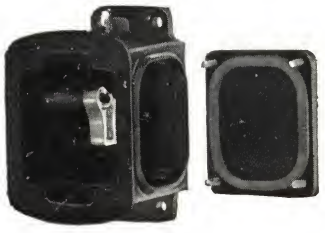


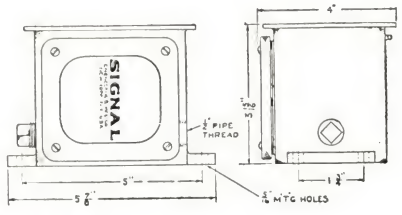

Net Weight 1 lb.

Bell Adapter Plate for Indoor Bells




Back Box for Outdoor Bells






Net Weight 5 lbs.

## Ordering Information

When ordering Bells, follow guide below for type designations:

- S = Single Stroke, Parkerized Finish (add size).
- V = Vibrating, Parkerized Finish (add size).
- SB = Single Stroke, Cast Bell Metal Shell (add size).
- VB = Vibrating, Cast Bell Metal Shell (add size).
- SBW = Single Stroke, Weatherproof, without guard (add size).
- VBW = Vibrating, Weatherproof, without Guard (add size).
- SBG = Single Stroke, Weatherproof, with Guard (add size).
- VBG = Vibrating, Weatherproof, with Guard (add size).

Specify operating voltage and frequency —see table above.

Example: to order an 8-inch vibrating, weatherproof Guarded Bell for operation at 110 volts 60 cycles, the type designation is: VBG8, 110 volts 60 cycles.

# SPECIAL SIGNALS



Musical Tone Bell
Single Stroke
Type S4-3
Vibrating
Type V4-3



Soft Tone Bell
Single Stroke
Type S (add size)-2



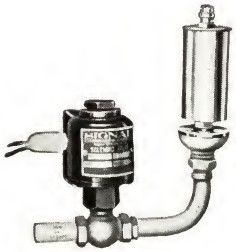
Cow Gong
Single Stroke
Type S4-4
Vibrating
Type V4-4



Tapper, S.S. Type S1
Buzzer, Vibr. Type V1



Duplex Horn without
Projectors, for Wall
or Ceiling Mounting
Type A1-2 (for A.C.)
Type D1-2 ( " D.C.)



Steam Whistle or
Air Whistle
Types WS (steam)
or WA (air)



Duplex Horn with one Projector,
for Wall or Column Mounting
Type A1-1 (for A.C.)
Type D1-1 ( " D.C.)



Duplex Horn with Two Projectors,
for Wall or Ceiling Mounting

| | | |
|---|---|---|
| Non-weatherproof, Type | A1 | (for A.C.) |
| " " " | D1 | ( " D.C.) |
| Weatherproof " | AW1 | ( " A.C.) |
| " " | DW1 | ( " D.C.) |

## Musical Tone Bells

Same as 4-inch bell, with resonator chamber. Suitable where a mellow tone is desired. Operating voltages same as 4-inch bells (see page 13).

## Soft Tone Bells

Standard single stroke bell with special plunger tip. All sizes. Operating voltages same as single stroke bells (see page 13).

## Chime Tone or Deaf Signals (tone adjustable)

*Type S5 has same mechanism as standard 4-inch single stroke bell with chime bar instead of gong. Gives a sustained musical tone of great penetration. Ideal for banks, department stores, offices, hospitals.

Types S7, S9 and S19 (see also page 15), have resonating chambers for sustaining the tone with remarkable penetration, each having a different frequency selected for various noise levels and for degrees of deafness.

*S7: Back box same as for standard bells.

S9 and S19: Aluminum back box with terminal block. Drilled at top for conduit. S9: Operating voltages same as 10-inch single stroke bell; S19: Same as 6-inch single stroke bell (see page 13).

S7-1: Cast-iron back box; S9-1, S19-1: Aluminum back box. All three furnished with back board for mounting, 8 ft. cord and plug.

## Cow Gongs

Same as standard 4-inch bell with rectangular bell metal shell. Especially adapted for use as trouble bell with fire alarm systems. Operating voltages same as 4-inch bells (see page 13).

## *Tapper (Sounder)

Gives single tap on sounder for each impulse. Bakelite cone aids sound effect. Plate also bakelite. Fits rectangular switch box. Suitable for locations where loud sound is not required.

Buzzer identical with Tapper in appearance and overall dimensions except has a vibrating mechanism. Operating voltages same as 4-inch vibrating bells.

## Duplex Horns

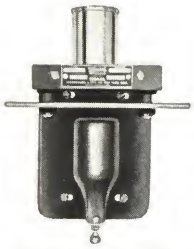
Scientifically designed to utilize the synchronized action of two diaphragms by means of a sturdy plunger moving in a bearing of long wearing quality which actuates both diaphragms in synchronism with frequency of alternating current. For direct current, a rugged and simplified vibrator is added. Diameter of diaphragms 5½ inches. Operating voltages: 6 to 260 volts 60 cycles; 24 to 250 volts D.C.

*When ordering any of the above Signals, it is necessary only to give type, voltage and frequency.*

## Steam Whistle or Air Whistle (with Electric Valve)

For use where noise level is exceedingly high. Recommended sizes, 1 to 2-inch diameter whistle, ⅜ to ½-inch steam or air line.

*Operating voltages same as 4-inch single stroke bells (page 13).*



Chime. Type S5
(Pitch 980 cycles per second)



Chime Tone or Deaf Signal
Type S7
(Pitch 980 cycles per second)



Chime Tone or Deaf Signal
Type S19
(Pitch 490 cycles per second)

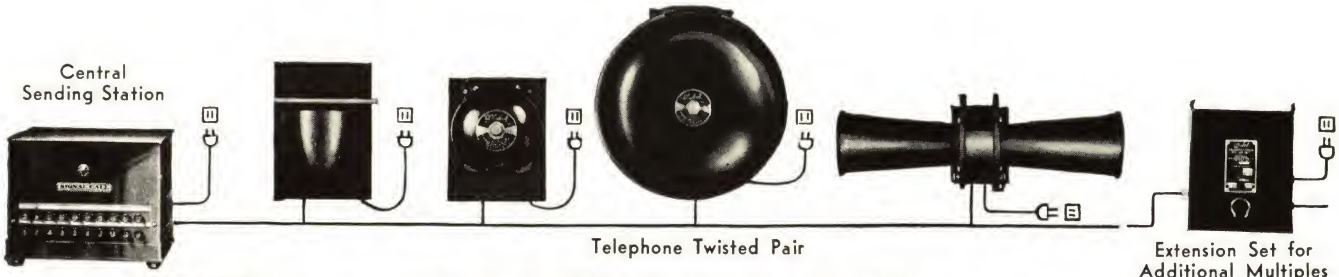


Chime Tone or Deaf Signal
Type S9
(Pitch 245 cycles per second)

Wheelock STANDARDS

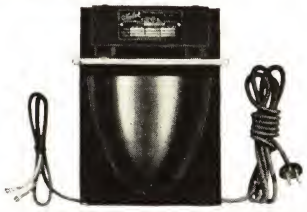
# PORTABLE DUO POTENTIAL CODE CALL SYSTEM

(Patent Applied for)




## DUO POTENTIAL APPARATUS

Approved by Underwriters' Laboratories as Portable Devices



‡Chime and Deaf Signal (Pitch 980 cycles)
Type SD7 (specify both primary and secondary voltage and frequency). Type SDT7 (primary 90 volts 20 cycles, specify secondary voltage).



‡Chime and Deaf Signal (Pitch 490 cycles)
Type SD19 (specify both primary and secondary voltage and frequency). Type SDT19 (primary 90 volts 20 cycles, specify secondary voltage).



‡Chime and Deaf Signal (Pitch 245 cycles)
Type SD9 (specify both primary and secondary voltage and frequency). Type SDT9 (primary 90 volts 20 cycles, specify secondary voltage).

‡Duo Potential.

### *Duo Potential System

For operation over wire similar to telephone pair. Commercial power outlets within 8 feet of signals required. Low voltage current for operating 25 signals provided at the sending station.

### *Extension Sets

These sets provide low voltage current for additional multiples of 25 signals and are connected to the system in the same manner as the signals, thus making unlimited the number of signals that may be operated from the sending station.

### Signals

Actuation of signals from commercial power, at nearby outlet, controlled by low voltage circuit (over telephone pair or similar wiring).

Each signal supplied with 8 ft. cord and plug for connecting to convenience outlet, and 2½ ft. spade-tipped cord for connecting to low voltage wiring.

Any standard bell or special signal can be supplied as Duo Potential signals.

Have same operating characteristics as standard signals (see pages 13 and 14).

### *Telephone Extension Signals

These signals may be furnished for control by telephone ringing current.

***Names of telephone companies which provide on a rental basis furnished upon request.***



Duo Potential Bell
Sizes 4"-6"-8"-10"-12"

Type SD (Single Stroke), VD (vibrating). Add size when ordering, for example: Single Stroke Duo Potential 6-inch Bell=SD6. Specify both primary and secondary voltage and frequency. When ordering with primary of 90 volts 20 cycles (for telephone extension) add "T" after last letter, for example: SDT6, and specify secondary voltage. For weatherproof bells add "W" after last letter, for example: VDTW6.



Duo Potential Horn

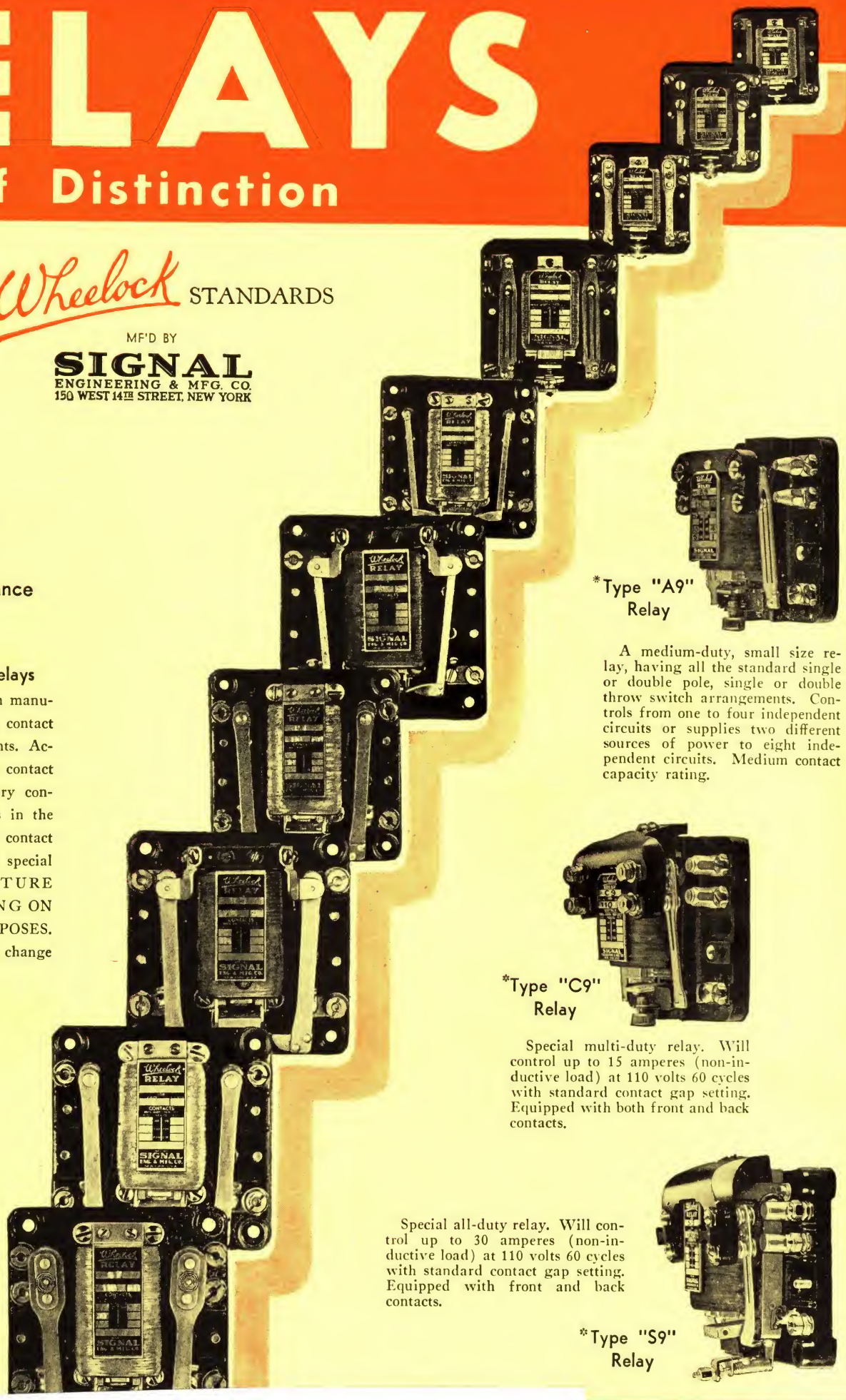
Type AD1 (specify both primary and secondary voltage and frequency). For D.C. secondary, substitute "D" for first "A." Type ADT1 (primary 90 volts 20 cycles, specify secondary voltage). Also without projectors AD1-2 or ADT1-2, with one projector AD1-1 or ADT1-1. Weatherproof: Add "W" after the last letter, for example: ADTW1-2.

*Note—Primary = low voltage supply. Secondary = commercial voltage supply.*

# RELAYS
## of Distinction

Wheelock STANDARDS

MF'D BY
**SIGNAL**
ENGINEERING & MFG. CO.
150 WEST 14TH STREET, NEW YORK



Recognized as superior in design and performance

**Types "C9" and "S9" Relays** are designed to allow setting in manufacturing assembly for various contact gaps to suit different requirements. Accomplished by adjustable back contact bridge and adjustable stationary contacts. Adjustment of bridge is in the same arc as the movement of contact arms. Movable contacts are of special floating design. THIS FEATURE ALLOWS STANDARDIZING ON ONE RELAY FOR ALL PURPOSES. Relay may be returned to us for change of adjustment.

RELAY catalog RS37 fully describing and illustrating all standard Wheelock Relays, with operating characteristic data, mailed upon request.



*Type "A9" Relay

A medium-duty, small size relay, having all the standard single or double pole, single or double throw switch arrangements. Controls from one to four independent circuits or supplies two different sources of power to eight independent circuits. Medium contact capacity rating.



*Type "C9" Relay

Special multi-duty relay. Will control up to 15 amperes (non-inductive load) at 110 volts 60 cycles with standard contact gap setting. Equipped with both front and back contacts.



*Type "S9" Relay

Special all-duty relay. Will control up to 30 amperes (non-inductive load) at 110 volts 60 cycles with standard contact gap setting. Equipped with front and back contacts.

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* Patents Applied For
Catalog SA38—PRINTED IN U.S.A.

# SETH THOMAS CLOCKS

DIVISION OF GENERAL TIME INSTRUMENTS CORP'N
OFFICES AND FACTORY
THOMASTON, CONN.

NEW YORK SALES AND SERVICE
107 Lafayette Street

CHICAGO REPRESENTATIVE
W. J. Buckley, 6156 Vernon Avenue

## TOWER, MONUMENT, SIGN AND BRACKET CLOCKS

*Clock Makers for More Than a Century*

For over seventy-five years architects have used Seth Thomas exterior clocks to add distinctiveness, service, and prestige to their projects. Booklet No. 8S giving full technical information and illustrations of Seth Thomas Clocks designed to harmonize with individual projects and a list of installations will gladly be forwarded upon request.

A separate factory is devoted exclusively to the manufacture of tower and exterior clocks, with engineers and draftsmen available to co-operate with architects on preliminary plans. Blue-prints covering complete clock details and suggestions for specific installation is also part of our service.

Seth Thomas weight-driven, electrically wound tower movements are guaranteed for ten years against original defects thus establishing a standard of quality and insuring permanency and reliability.

Other products are Monument Clocks, Street Sign and Bracket Clocks; also long-life Synchronous Motor Clocks especially arranged for exterior use. Electrically Amplified Sound Equipment for public address or amplified chimes with tower clocks are newly developed features.

Architects are invited to use the facilities of our Development and Engineering Departments.

### Tower Clocks

Both time and strike. Strike hours and half-hours; also Westminster chimes, angelus and ship's bells; quarter-hours on any number of bells up to eleven.

**Description**—Movements substantially constructed. Wheels are of cast bronze, machine cut, pinions of steel. Mechanism is mounted on heavy cast iron bed frame. On the clock is a small dial to indicate the position of the hands on the outside dial; also a seconds dial for close regulation; a safety catch to prevent the fall and breakage of the pendulum rod should the suspension spring break. Escapement either Graham's dead beat, mahogany pendulum rod, or Dennison's double 3-legged gravity escapement, the pendulum of stoic metal requiring no compensation.

**Silencing Devices**—On all striking movements we can fit an automatic attachment to silence the striking train for whatever hours desired; or a hand switch to silence the clock for special occasions.

**Automatic Light Switch**—We can attach a switch mechanism for automatically turning on and off the lights illuminating the dials.

**Self-winding Movements**—Movements can be equipped with motors to operate on any current with automatic mercury switches in approved iron boxes, automatically operated by the rise and fall of weight for automatic winding.

**Size of Dials**—In planning dials, we suggest that a good proportion is 1 ft. diam. for every 10 ft. in elevation.

**Glass Dials**—For illumination, dials may be safely used in whole plate not exceeding 4 ft. 6 in. diam.

For large sizes we advocate sectional glass and iron dials. The frame of the dial is cast in 6 sections with numerals and minute dots a part of the casting. The frame has rabbeted back to secure the glass which is installed in sections and fastened with brass clamps. Vitrolite Carrara or ground glass furnished optionally.

**Wood Dials**—Two layers of ⅞-in. seasoned wood, tongued and grooved with grain crossed to prevent shrinkage or warping, the two layers bolted together, the surface painted and smalted; metal numerals and minute dots painted black or gold leaf.

**Iron Dials**—Heavy galvanized iron with a wood backing 1¾ in. thick. Numerals and finish same as for wood.

**Skeleton Metal**—Cast Roman numerals and minute dots are part of the casting. All standard or special design dials cast in our own foundries. Finish to be in contrast to color or wall.

**Estimate**—Due to the various arrangements and individual requirements, each clock is made to specifications. For estimate it is necessary for us to know whether a time or strike movement is desired and the number, diameter and style of dials. We will gladly send a question sheet which, when properly filled in, will enable us to quote intelligently.

**Guarantee**—Our tower clock movements are guaranteed against original mechanical defects for 10 years, and, when fitted with Graham's escapement, to run within a variation of 1 minute per month, or with Dennison's double 3-legged gravity, 10 seconds per month with ordinary attention.

**Information Required for Estimates**—When requesting estimates the following details assist us in preparing quotations:

Size and number of dials.
Wood, glass, metal or stone type?
Is clock to strike hours?
Is clock to strike quarter-hours?
Approximate weight of bells.
For sound equipment, survey necessary.



**Westminster Chime Clock, Consolidated Gas Building, New York, N. Y.**
WARREN & WETMORE, Architects

### Mammoth Clock Installations

Consolidated Gas Building, New York, N. Y.—4 dials, 22-ft. diam.

Paramount Building, New York, N. Y.—2 dials, 25-ft. diam. and 2 dials, 22-ft. diam.

Colgate & Co., Jersey City, N. J.—1 dial, 50-ft. diam.

Emerson Drug Co., Baltimore, Md.—4 dials, 17-ft. diam.

Union Terminal, Cincinnati, Ohio—1 dial, 13-ft. diam.

C. Schmidt Sons, Philadelphia, Pa.—4 dials, 23-ft. diam.

### Bracket Clocks

Bracket Clocks are made with 30 and 40-in. dials operated mechanically by the smallest size tower clock movement. Movements can be furnished in the 8-day weight driven, hand wind type or with automatic electric power wind.

### Special Designs

We specialize in sheet bronze and cast bronze outside clock cases to suit the architects' conception of what is proper for each individual building.

### Synchronous Motor Clocks

Especially constructed for outside use and operated by very slow speed motors which have given many years of service.

# WARREN TELECHRON COMPANY

## Manufacturers of Telechron* Timekeeping Equipment

## ASHLAND, MASS., U. S. A.

DISTRIBUTORS AND REPRESENTATIVES IN PRINCIPAL CITIES. In Canada, Canadian General Electric Co., Ltd., Toronto, Ont.

**Telechron equipment is designed to meet the requirements of The National Board of Fire Underwriters**

### Telechron—What It Is

The modern, silent, simplified, accurate, timekeeper for Schools, Hospitals, Industrial Plants, Office Buildings, Federal, State, County, City and Town Buildings, Airports, Hotels, and every type of structure requiring economical time service at low initial, operating and maintenance costs.

*Telechron*

**Telechron is the trade-mark (registered in U. S. Patent Office) of the* WARREN TELECHRON CO.

### Principle of Operation

Each clock and timekeeping device is operated directly by a self-starting, synchronous motor whose moving parts are sealed in oil for quietness and long life. The speed of this motor is governed by the frequency of the alternating current. Correct frequency regulation is maintained at the generating station of the power company with the aid of a Telechron Master Clock. Therefore, all clocks on a Telechron system indicate correct uniform time because they all respond to the same accurately regulated impulses. A Telechron installation does not require an individual master clock.

### Products

**Master Clocks**—For installation in the central station of a public utility company or in a private power plant—to aid in maintaining constant average frequency regulation.

**Central Control Equipment**—Devices for controlling, manually or automatically, one or more clocks or timekeeping devices on a common wiring circuit from a convenient central point. Available for both single motor, two wire, double frequency—and dual motor, three wire, Telechron clock systems, the exact type to be installed depending on the sizes, quantities and styles of timekeeping equipment to be applied to the system.

**Indoor Clocks**—Surface, semi-flush, flush, double face, and multiple face clocks; skeleton and marble dial clocks; all in standardized or entirely special designs and finishes.

**Outdoor Clocks**—Protected dial, surface, semi-flush, double face and multiple face clocks with or without illumination features; exposed dials, skeleton with or without sectional glass and illuminated constructions for mounting on building walls or towers; direct illumination by lamp or gas tubing; all in standardized and special designs.

**Special Elapsed Time Indicators**—For hosptal operating rooms, special classrooms, laboratories, and for timing boxing, hockey, football, basketball, track, etc.

**Program Instruments**—Single and multiple circuit—metal and plastic foolproof construction—for controlling classroom schedules in schools and colleges. Also for factories, offices and other installations where time schedules must be maintained.

**Strike and Chime Program Instruments**—For controlling tower bell equipment; hour-strike, half hour strike, Westminster chimes, Angelus, and ship's bell programs.

**Signal Control Boards**—To allow wide flexibility in classroom program signal control; with or without manual push buttons for each signal circuit; plugs to connect any signal to any program schedule; open dead front construction of metal and plastic; for 115V or low voltage use.

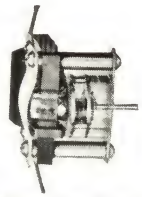
**Signals**—Classroom buzzers for surface or flush wall mounting, or within clock cases. Also tap bells for hospital or special classroom use, operating on 1, 15, 30 or 60 second intervals.

### Features

Simple, fool-proof construction throughout. Powerful, sealed in oil, self-starting, synchronous motor in each device. All equipment designed to operate at 115V, in accordance with requirements of National Board of Fire Underwriters, or 24V, assuring substantial, long-life construction. The Telechron Master Clock in the central station of the power company assures accurate time-keeping through maintenance of correct average frequency.

### Low Cost, High Quality

Carefully engineered; built of high grade materials; rigidly inspected during manufacture of parts and after final assembly, resulting in exceptionally high quality throughout. Large production of standardized parts for Telechron clocks makes possible low initial purchase price. Years of proven, trouble-free, accurate, quiet, service in schools, hospitals, government buildings, institutions, and all other types of structures, assures low operating and maintenance costs.



Telechron Motor

### Guarantee

Equipment manufactured by the WARREN TELECHRON COMPANY is guaranteed against original defects of material and workmanship for a period of one year from date of installation while in normal use and service.

### The Famous Telechron Master Clock

The Telechron Master Clock has been universally accepted by power companies throughout the world as the most satisfactory means of maintaining a correct average frequency. The Master Clock is built in two styles: Type "A" for floor mounting and Type "B" for wall mounting. Both Master Clocks contain a suitable Telechron Motor and a very accurate timekeeping movement governed by a pendulum. The motor and the pendulum movement are combined in such a manner as to show on a suitable dial the relation between average frequency and correct time. Thus, with the Master Clock, a station operator is able to maintain an accurate average frequency at all times. At present, hundreds of Telechron Master Clocks are in use.



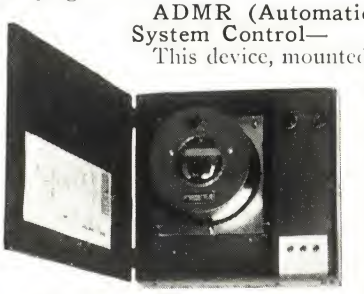
Master Clock



# CLOCK SYSTEM CONTROL

Although Telechron clocks can be installed individually or in groups, direct to any regulated AC power supply, group installation in schools, hospitals, factories, office buildings, airports, banks, etc., should be installed on a common wiring system, and to facilitate corrections for daylight saving or possible power interruptions, controlled from a central point by automatic or manual resetting devices. Resetting devices are available for 2-wire systems with single motored timekeeping devices and for 3-wire systems with dual motored timekeeping devices.

### ADMR (Automatic Dual Motor Resetting) System Control—



No. 92 Automatic Resetting Device—ADMR System

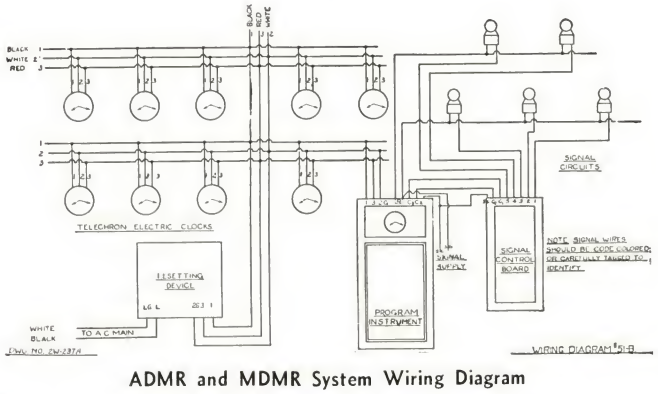
This device, mounted in a furniture steel cabinet, normally has no effect on the timekeeping of the clocks on the system. When a power interruption occurs, it measures the interruption period. When the power is resumed, it causes all timekeeping units on the 3-wire circuit to operate at an accelerated rate until the system returns to correct time, then it cuts out, resuming its normal position ready for the next resetting cycle. It is of fireproof construction throughout and is provided with manual control for daylight saving corrections. Dimensions 15⅜ in. wide x 14 in. high x 5¼ in. deep (semiflush trim 20 in. wide x 18 in. high with 4½ in. deep wall box). All timekeeping units require Telechron dual motor movements.



No. 97 Switch MDMR and MDFR Systems

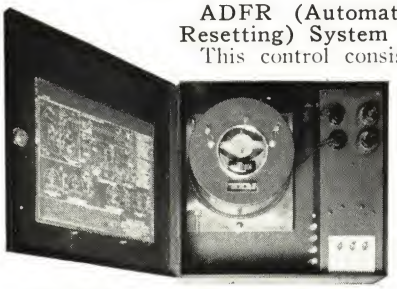
### MDMR (Manual Dual Motor Resetting) System Control—

A simple 4 gang flush mounting device with key type switches for starting, stopping, and resetting the entire system, on a 3-wire circuit. An interruption indicator is provided. Dimensions 8 3/16 in. wide x 4½ in. high (with 3½ in. deep wall box). All timekeeping units require Telechron dual motor movements.




ADMR and MDMR System Wiring Diagram

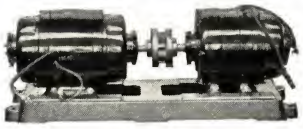
### ADFR (Automatic Double Frequency Resetting) System Control—



No. 93 Automatic Resetting Device ADFR System

This control consists of an automatic resetting device similar to the ADMR system control, a motor generator set for supplying double frequency power to the system during resetting periods, and an automatic starter for the motor generator.

The resetting device measures the interruption period and when the power is resumed causes the motor generator to operate, and supply power to the 2-wire clock system at double normal frequency. This causes all timekeeping equipment on the system to operate at double normal time rate until the system is back to correct time. Then the resetting device cuts out the motor generator, returns the clock system to normal power supply and resumes its normal stand-by position ready for the next resetting cycle. The motor generator only operates during resetting periods. The resetting device includes manual control for daylight saving corrections. Dimensions etc. of the resetting device are the same as the ADMR system device. Motor generator size varies with the quantities, size, and design of the clocks on the system. All timekeeping units require Telechron single motor movements.



Motor Generator Set MDFR and ADFR Systems



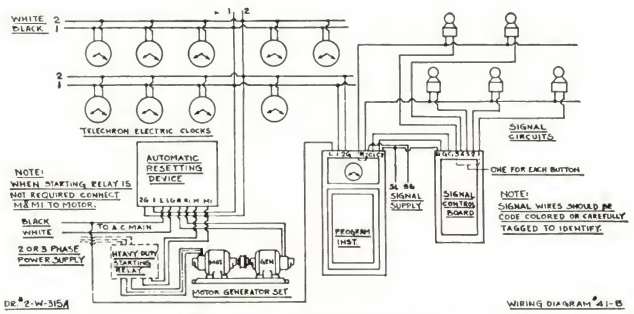
Motor Generator Starter MDFR and ADFR Systems

**MOTOR GENERATOR SETS, DIMENSIONS (Inches)**
Subject to change without notice

| Style | Length, in. | Height, in. | Depth, in. | Weight, lbs. | Motor phases |
|---|---|---|---|---|---|
| * 19 | 29½ | 9½ | 8⅜ | 165 | 1 |
| * 34 | 32 | 11¾ | 10 | 240 | 1 |
| 16M | 20¾ | 8 | 7⅛ | 155 | 3 |
| 33M | 22½ | 9¾ | 9⅜ | 215 | 3 |
| 50M | 24½ | 9¾ | 9⅜ | 275 | 3 |
| 84M | 30¼ | 14⅝ | 11¼ | 457 | 3 |
| 125M | 30 | 11¾ | 11½ | 450 | 3 |
| 208M | 34 | 14⅜ | 11¼ | 568 | 3 |
| 260M | 31¼ | 16⅛ | 15¾ | 635 | 3 |
| 330M | 31¼ | 16⅛ | 15¾ | 635 | 3 |
| 410M | 39 | 16⅛ | 15¾ | 680 | 3 |

* 4-bearing machines—all others 2-bearing.

Machine capacity in clocks varies with size and style of clocks. Supply W.T. Co. with list of proposed equipment to permit recommendations for proper machine.



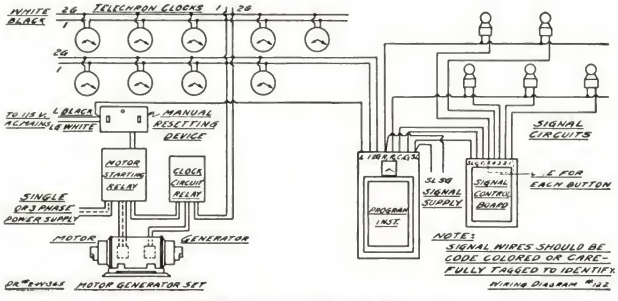

ADFR System Wiring Diagram

### MDFR (Manual Double Frequency Resetting) System Control—

Consists of flush mounting control switch same as MDMR system, double frequency motor generator and starter same as ADFR system, and clock circuit relay for switching the system from normal power supply to the motor generator set. All timekeeping units require Telechron single motor movements.



Clock Circuit Relay MDFR System




MDFR System Wiring Diagram

# TELECHRON CLOCKS FOR INDOOR USE

The extremely simple principle of operation; sturdy, trouble free construction; and ample reserve power of the Telechron motor; plus the variety of Telechron movements; make it possible to manufacture almost any type of indoor clock regardless of size or detailed features of design.

Each clock is provided with a complete self-contained movement for direct operation from the A. C. power supply. The exact features of the movement vary with the size and construction of the clock dial and the dimensions, weight, material and construction of the hands.

When relief numeral dials are supplied, the crystal is usually eliminated, except on flush clocks.

To meet the usual clock requirements for the majority of projects, a complete line of standardized clock designs are available at attractive prices. Modifications in case finish, dial design and finish, hand design and finish, and final assembly provide many attractive variations from the basic standardized designs. Clocks in these modified designs are available on short notice and at nominal prices because of the use of large quantity of stock materials and parts.

In addition, a trained staff of engineers and designers is maintained to work out the most exacting specifications of architects and engineers to suit the special clock requirements of any specific project.

All clock designs shown in this bulletin are available for use in any Telechron central control clock system.

## 5100 Type Semiflush Clocks

Designed for school classrooms, hospitals, offices, etc. where attractive "built-in" appearance at low initial cost is desired. This clock is constructed much the same as the surface clock, but includes a suitable wall box to accommodate the movement and a special type of hanger that connects the clock directly to the wall box in a convenient, substantial manner, with allowances for the usual wall box mounting variations.



5100 Type Semiflush Clock

Designs with variations similar to those available in the surface clock designs are also available at nominal additional cost in the semi-flush clock.

## 5000 Type Surface Clocks



5000 Type Surface Clock

Designed for use in school classrooms, hospitals, offices, etc. where low initial cost is paramount, the round surface clock presents an attractive appearance. It consists of a metal case of modern, simple lines, convex crystal glass*, metal hands, metal dial, movement with long leads for connection to wiring circuit and hanger with special wall fitting to insure substantial mounting to a flat surface.

The standardized design has the case finished in statuary bronze lacquer with hands of attractive design finished in black. The dial has clear, legible, black, Arabic characters on a white background.

Variations from the basic design at nominal extra cost include cases of materials to meet any special finish requirements such as natural metal or electroplate finishes to match samples; special colored lacquer finishes; lithographed aluminum Arabic dials; etched, satin-silver Arabic dials; or dials with relief Arabic numerals; and special design hands of cast or cut metal construction in special finishes. Glass dials, for use with or without illumination features, and dials of various building finish materials can also be supplied.

**24-in. size furnished with flat crystal only.*

## 400 Type Flush Clocks

This attractive clock is designed for private offices, assembly rooms and similar locations, and consists of round metal crystal frame hinged to metal dial plate, with convex crystal glass, dial, hands, etc., similar to the surface clock. The dial back fastens directly to the wall box, and hands are conveniently accessible for setting. Standard finish is oxidized statuary bronze. Variations from standardized construction, similar to the surface and semi-flush models, are available at nominal extra cost in the flush line of clocks.



400 Type Flush Clock

## 2500 Type Boiler Room Clocks

This clock is designed for use in boiler rooms, laundries, foundries, and similar locations where moisture and dust proof case construction is desired. The case is of cast metal with hinged door; having rubber-set, flat, crystal glass, dial, movement and hands attached to it. Finish is in dull black lacquer. Designs of dials and hands are the same as the 5000 type clock.

**TELECHRON CLOCKS FOR INDOOR USE, DIMENSIONS (Inches)**
Subject to change without notice

| Style No. | Dial diameter | Overall diameter | Projection |
|---|---|---|---|
| **Round Metal Surface Clock** | | | |
| 5008 | 8 | 10 3/8 | 3 9/16 |
| 5010 | 10 | 12 3/8 | 3 9/16 |
| 5012 | 12 | 14 3/8 | 3 9/16 |
| 5015 | 15 | 17 3/8 | 3 9/16 |
| 5018 | 18 | 20 3/8 | 3 11/16 |
| *5024 | 24 | 26 3/4 | 3 9/16 |
| **Round Metal Semi-Flush Clock** | | | |
| 5108 | 8 | 9 5/16 | 1 7/8 |
| 5110 | 10 | 11 5/16 | 1 7/8 |
| 5112 | 12 | 13 5/16 | 1 7/8 |
| 5115 | 15 | 16 3/8 | 2 |
| 5118 | 18 | 19 3/8 | 2 |
| *5124 | 24 | 25 1/2 | 1 7/8 |

| Style No. | Dial diameter | Overall diameter | Projection |
|---|---|---|---|
| **Round Metal Flush Clock** | | | |
| 444 | 6 | 6 5/8 | 1 5/32 |
| 445 | 8 | 8 5/8 | 1 5/32 |
| 446 | 12 | 13 1/8 | 1 1/2 |
| 447 | 15 | 15 5/8 | 1 1/2 |
| 448 | 18 | 18 5/8 | 1 3/8 |
| **Round Cast Metal Case Clock** | | | |
| 2508 | 8 | 12 | 3 7/8 |
| 2510 | 10 | 14 | 3 7/8 |
| 2512 | 12 | 16 1/8 | 3 15/16 |
| 2515 | 15 | 19 3/8 | 4 1/8 |
| 2518 | 18 | 23 | 4 1/4 |
| 2524 | 24 | 29 1/4 | 5 3/4 |


2500 Type Boiler Room Clock

## 700 Type Skeleton Clocks



700 Type Skeleton Clock

The standardized skeleton clock shown here consists of cut metal Roman characters superimposed on metal rings; with or without minute dots mounted on metal ring; cut metal hands and plain center plate to which the movement is attached. The center plate attaches to a wall box set into the wall. The box is completely covered by the wall surface except for an opening large enough to clear the clock movement. Dial, hands and center plate are finished oxidized statuary bronze.

Variations from this standardized design at nominal cost include use of Arabic or special shaped characters; mounting of characters direct to wall or background surface by spurs or screws; special cast or cut metal hands; and special finishes to match samples.

These open face clocks are designed for use in special locations such as lobbies, foyers, auditoriums, and important public spaces in all types of buildings.

**SKELETON CLOCKS, DIMENSIONS (Inches)**

| Subject to change without notice | 3 ring design (Minute dots on outer ring) | | 2 ring design (Without minute dots) | |
|---|---|---|---|---|
| Dial, in. | Style No. | Diam., in. | Style No. | Diam., in. |
| 12 | 756 | 12½ | 776 | 11 |
| 15 | 757 | 15 | 777 | 13¼ |
| 18 | 758 | 18 | 778 | 16¼ |
| 24 | 760 | 24 | 780 | 21⅝ |
| 30 | 761 | 30 | 781 | 27½ |
| 36 | 762 | 37 | 782 | 33½ |
| 42 | 763 | 43 | 783 | 39½ |
| 48 | 764 | 49 | 784 | 45½ |

## 1300 Type Marble Clocks



1300 Type Marble Clock

Marble clocks are suitable for wall mounting in lobbies, foyers, auditoriums, banking rooms, and other public spaces. They consist of marble dial blank with honed or dull finish; relief characters and minute dots pinned to dial blank; special cut metal hands; movement; and wall box.

Dial blanks of all kinds of foreign and domestic marble are available. Various designs of hands and characters are likewise available in various finishes to match samples, at nominal extra cost.

**MARBLE CLOCKS, DIMENSIONS (Inches)**
Subject to change without notice

| | Metal trim ring | | Square edge | |
|---|---|---|---|---|
| Dial, in. | Style No. | Diam., in. | Style No. | Diam., in. |
| 12 | 1361 | 13¼ | 1391 | 12½ |
| 15 | 1362 | 15¾ | 1392 | 15 |
| 18 | 1363 | 18¾ | 1393 | 18 |
| 24 | 1364 | 25 | 1394 | 24 |
| 30 | 1365 | 31 | 1395 | 30 |
| 36 | 1366 | 37 | 1396 | 36 |

## 5300 Type Suspension Clocks



5300 Type Suspension Clock

The double face saddle suspension clock consists of two No. 5000 type clocks of standard design, mounted by the usual hanger fittings to a cast center ring and saddle suspension unit. The suspension unit is designed for wall or ceiling mounting, attaching directly to the special terminal box supplied with it. This clock is designed for use in office building, school and hospital corridors where ceilings are low. Wall mounting is recommended when projecting ceiling light fixtures interfere with the clock visibility. Equipped with illuminated glass dials, this clock makes a very practical unit for hospital corridors, providing clearly visible time, and subdued corridor lighting. Standard finish and details are similar to the No. 5000 type clocks. These models are also available with variations similar to the No. 5000 type clocks at nominal extra cost.

## 5400 Type Suspension Clocks



5400 Type Suspension Clock

The double face chain suspension clock consists of two No. 5000 type clocks of standard design, mounted by the usual hanger fittings to a cast center ring, with chains and cast saddle for attaching to ceiling terminal box. Chain length may be varied to suit individual requirements. Standard finish and details are similar to the No. 5000 type clocks. These clocks are also available with variations similar to the No. 5000 type clocks at nominal extra cost. They can also be equipped with illuminated glass dials.

**SUSPENSION CLOCKS, DIMENSIONS (Inches)**

| Dial, in. | Shell diam., in. | Overall depth, in. | Style No. | Overall height, in. | Style No. | Overall height, in. | Subject to change without notice |
|---|---|---|---|---|---|---|---|
| 10 | 12⅝ | 8 | 5310 | 15⅝ | 5410 | 27 | |
| 12 | 14⅝ | 8 | 5312 | 17⅝ | 5412 | 31⅝ | |
| 15 | 17 1/16 | 8 | 5315 | 21¼ | 5415 | 36⅝ | |
| 18 | 20 1/16 | 8¼ | 5318 | 24¼ | 5418 | 42¾ | |

## 3700 Type Suspension Clocks



3700 Type Suspension Clock

Occasionally required for ceiling mounting in the center of large offices, department stores and similar locations—this model is available in wood or metal case construction with chains for suspension or with rigid tube mountings. Variations in design details similar to the surface clocks are available at nominal extra cost.

**DIMENSIONS (Inches)**
Subject to change without notice

| Style No. | Dial size | Case (cube) | Standard overall height |
|---|---|---|---|
| 3712 | 12 | 16 | 34 |
| 3715 | 15 | 19 | 41 |
| 3718 | 18 | 23 | 49 |
| 3724* | 24 | 29 | 59 |

## PROGRAM INSTRUMENTS

Telechron program instruments are available to meet the simplest routine requirements of the grade, grammar, or country day school; the varied and complex schedules of the modern junior and senior high schools, junior colleges, colleges, and universities. They are equally suitable for controlling working schedules in factories, office buildings, and all plants where a time schedule must be maintained.

Each device is a complete, self-contained unit, consisting of a Telechron motor-driven timing element mounted in a heavy gauge, furniture steel cabinet, with pilot clock, cutout and momentary contact switches, relays and terminal connection block. It is of all metal construction, with various operating parts interconnected by heavy gauge rubber covered wire; all designed for 115 volt operation, and in accordance with requirements of the National Board of Fire Underwriters. Cabinets are finished in statuary bronze lacquer and equipped with cylinder locks to protect against tampering.

A combination of unique design features, high grade materials and expert workmanship assure foolproof, quiet and efficient program timing service with a minimum of attention. Designed for 115 volt operation; also available for 24 volt operation.

### Single Circuit Type

Consists of a five-minute interval, 24-hour cycle, 7-day calendar, adjustable signal duration program element; with 5-inch clock; with external cutout and momentary contact switches; marked terminal block and metal cabinet.



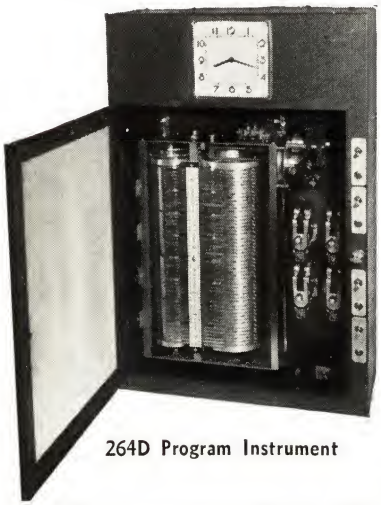
Single Circuit Program Instrument

The program schedule is cut in a 24-hour metal disc, graduated to five minute intervals. The disc is easily exchanged or replaced while the device is operating. The signal load is carried through a mercury switch of 6-amperes capacity, thereby completely eliminating contact and relay problems. By insertion of pins in the seven-day calendar wheel, any 24-hour period can be cut out. The calendar shifts at 2:15 A.M. The signal duration period is easily adjustable from one to six seconds. Designed for surface or semi-flush mounting, the installed device presents a neat, businesslike appearance and is a decided asset to any school, or factory. Dimensions, 13 in. high x 8 in. wide x $5\frac{5}{16}$ in. deep. Flush trim 17 in. high x 12 in. wide x 4 in. deep wall box.

### Multiple Circuit Type

Consists of a one-minute interval, 12 or 24-hour cycle, 7-day calendar, multiple circuit, adjustable signal duration, program element; element drive unit; a heavy duty relay for each signal circuit; external cutout and momentary contact switches for manual control; 5-inch clock; and marked terminal connection block; all in a glass paneled metal cabinet. The clock and connection block are in a separate upper compartment.

The timing element includes two cylinders, mounted in vertical position. The timing cylinder makes one revolution in every two hours, and has circumferential rows of equally spaced, radially drilled holes (120 holes per row) grouped into 12-hour sections of 6 rows or 24-hour sections of 12 rows, number of sections varying according to the number of circuits). The calendar cyclinder shifts periodically by 2-hour steps, one revolution in 7 days, and is divided into 12 or 24-hour sections according to the style. By insertion of pins in the proper holes, as indicated by minute graduations on the cylinders and the vertical scale mounted between these cylinders, signal circuits can be operated any minute of a day during a 7-day period.



264D Program Instrument

Two signal duration contacts are provided; one controlling one circuit of the instrument, and the other controlling the remaining circuits of the instrument. They are adjustable for from two to six seconds' duration, for indoor and outdoor signals.

The element drive unit is a complete unit in itself, easily repaired or replaced when necessary, in a matter of a few minutes.

An attractive square pilot clock operates from a separate movement and is located above the main cabinet door, providing an attractive finished appearance.

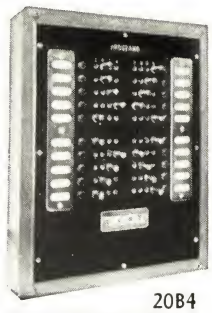
Circuit cutout and momentary contact switches with identity plates, mounted on the right side of the cabinet face, permit surface or semi-flush installation without modifications.

A combined white nickel, aluminum and steel finish on all exposed metal parts provide an attractive appearance that will last indefinitely.

The 2, 4 and 6 circuit, 12-hour cycle, and 2 and 4 circuit, 24-hour cycle instrument cabinets are $27\frac{3}{8}$ in. high x 18 in. wide x $6\frac{7}{8}$ in. deep. The 6-circuit, 24-hour cycle instrument cabinet is $33\frac{7}{8}$ in. high x 18 in. wide x $6\frac{7}{8}$ in. deep. Flush trim $10\frac{7}{8}$ in. longer, 3 in. wider, with 7-in. deep box.

## SIGNAL CONTROL BOARD

The extremely varied program schedules of modern junior and senior high schools frequently necessitates switching individual class and study rooms from one program schedule to another, quickly and easily. The Telechron combination signal control board provides this convenience. This dead front unit, designed for use in conjunction with a Telechron multiple circuit program instrument is of modern design and of high grade construction throughout.



20B4
Signal Control Board

Built entirely of metal and plastic material and completely insulated, it can be used on a 115 volt or a 24 volt system. Push-fit circuit plugs permit connecting any outlying signal or signal circuit to any program circuit. A push button is provided for each outlying signal or signal circuit, permitting use of the outlying signal as a special call bell or telephone signal. The board is designed for either surface or flush mounting.

The combination of glossy black plastic panel, plastic knobbed plugs, and push buttons, plus metal trim finished in statuary bronze lacquer, results in an attractive modern panel. Nickel plated identity plates add further to its practicability and attractiveness. All wire connections are made on the back of the panel to substantial terminals. Master circuit buttons and grand master buttons are also available when desired. Sizes range from 2-circuit, 10 point board measuring 12 in. high x 9 in. wide x 3 in. deep, to 6-circuit, 100 point board measuring 24 in. high x 18 in. wide x 4 in. deep.

## TELECHRON SIGNALS

In conjunction with program instrument installations in schools, offices, factories, etc., audible signal devices play an important part. Signal units embracing equivalent design and engineering features, materials, manufacture and workmanship equal to Telechron clocks and devices, are of paramount importance if the usual Telechron satisfactory results are to be secured. Telechron signals have been developed to meet these requirements.

**Telechron Type "B" Buzzer**—Designed for school classroom use, or any other application where a dependable, high grade signal is desirable. For mounting direct to the back of a clock dial, with long leads for connection to the power supply, or supplied with screw terminals, suitable for surface mounting, or flush mounting in a single gang switch box.



Type "B" Buzzer

Supplied for any commercial voltage and frequency. No contacts or adjustments to get out of order. Designed for continuous operation, and requiring very little power, the buzzer matches Telechron clock quality in every respect. Overall dimensions: $3\frac{35}{64}$ in. long, $1\frac{13}{16}$ in. wide, $1\frac{7}{16}$ in. high. Power rating: 2 watts at 115 volts, 60 cycles.

**Corridor Bells**—Under dome, tuned frequency, vibrating plunger type construction for direct mounting to wall box; 3, 4, 6, 8 and 10-in. size. For 115-volt or 24-volt.



Corridor Bell

**Yard Gongs**—Similar to corridor bell but weatherproofed, and with slow vibrating plunger, without contacts, with cast bell metal gong and with cast aluminum grid or screen protecting housing. 8, 10 and 12-in. sizes.

**Tap Bells**—Designed for use in hospital operating rooms, school laboratories, and special study classrooms where an audible, fixed cycle, time signal is desirable. Consists of a Telechron motor fitted with a cam for lifting a striking hammer, a cast bell-metal gong and provision for mounting. Installed inside of a clock case or inside a wall box.



Tap Bell

Available in 1, 15, 30, or 60-second intervals, for 115-volt or 24-volt operation. Controlled through a single gang switch of any type. Dimensions, 4 in. high x $3\frac{1}{4}$ in. wide x $2\frac{3}{4}$ in. deep.



Yard Gong

# OUTDOOR CLOCKS

Telechron clocks for outdoor application are available in a variety of standardized sizes and designs to meet most architectural requirements. Entirely special designs or modified standardized designs can be produced, however, when necessary, to meet most exacting requirements and specifications.

Outdoor clocks are generally divided into two distinct groups; protected dial type and exposed dial type. Each of these types are available for use with or without illumination.

## PROTECTED DIAL OUTDOOR CLOCKS

These clocks are available in standardized designs and sizes with semi-flush and flush cases either with or without provision for illumination. Surface, double face and multiple face adaptors are also available to permit converting these semi-flush or flush clocks into surface, double face or multiple face clocks.



6100 Type Semi-flush Clock



Clock Only



Surface Adapter and Clock



Double Face Adapter and Clocks

**DIMENSIONS (Inches)**
Subject to change without notice

| Dial size | Clock Style No. | Outside diam. | Overall depth* | Wall opening diam. | Depth with surface adaptor | Depth with double-face adaptor |
|---|---|---|---|---|---|---|
| 18 | 6118 | 27 | 5 15/16 | 24 1/4 | 5 7/8 | 11 5/8 |
| 24 | 6124 | 33 | 5 15/16 | 30 1/4 | 5 7/8 | 11 5/8 |
| 30 | 6130 | 38 1/4 | 5 15/16 | 35 1/2 | 5 7/8 | 11 3/4 |
| 36 | 6136 | 44 1/4 | 6 3/4 | 41 1/2 | 6 3/4 | 13 3/8 |

* Includes 4½-in. deep movement and transformer covers, which are below the mounting surface.

**Semi-flush Clocks**—Consist of metal dial, hands, movement, crystal glass, crystal mounting bezel and weatherproof housing. Dials are furnished with white background and black Arabic numerals and minute dots. Illumination is provided by a hidden ring of gas tubing, mounted between the dial and crystal. The tube electrodes extend through the dial for connection, by porcelain receptacles, to the transformer attached to the dial back (electrodes, receptacles, and transformers protected by a weatherproof housing). Gas tubes are available in red, blue, green and white colors. Elimination of the gas tube and transformer provides a non-illuminated clock.

The clock mounting flange is sufficiently wide to permit mounting an external tube for decorative purposes. Crystal glass bezel and mounting flange are finished in statuary bronze lacquer.

**Flush Clocks**—Consist of an angle iron case ring, crystal glass, crystal ring, and white glass dial with etched Arabic characters and minute dots filled with black enamel; movement and hands — all complete, ready to install. To properly protect this type of clock from the elements and assure satisfactory operation, it is necessary to attach it in a weatherproof manner to a weatherproof structure. When illumination is required, lamps, or gas tubes must be installed as part of the mounting to which the clock is attached, or provided as part of the clock. Crystal glass ring and frame are finished in statuary bronze lacquer.




2400 Type Flush Clock

**DIMENSIONS (Inches)**
Subject to change without notice

| Style | Dial size | O. D. | Opening |
|---|---|---|---|
| 2430 | 30 | 33 3/8 | 31 3/4 |
| 2436 | 36 | 39 3/8 | 37 3/4 |
| 2442 | 42 | 45 3/8 | 43 3/4 |
| 2448 | 48 | 51 3/8 | 49 3/4 |
| 2454 | 54 | 57 3/8 | 55 3/4 |
| 2460 | 60 | 63 3/8 | 61 3/4 |

**Surface Adaptor**—Designed to permit surface mounting of a semi-flush or flush clock. Of all metal construction with ears for mounting and provisions for wire connections. When used with flush clocks, it is equipped with lamps, receptacles and wiring for illumination and hand holes for convenient lamp replacements. All exposed surfaces are finished statuary bronze lacquer.

**Double Face Adaptor**—Designed to permit the mounting of semi-flush or flush clocks to a suspension bracket or post. Construction and finish features are similar to the surface adaptor.

**Multiple Face Adaptor**—Designed to permit the mounting of semi-flush or flush clocks to a suspension bracket or post. The construction usually consists of an angle iron frame covered with sheet copper, bronze or steel, with hand hole provisions for access to the inside when necessary.

Exact construction features usually vary with the installation requirements. All exposed surfaces are finished in statuary bronze lacquer.



**Mounting Posts** — Posts for mounting double or multiple face clock constructions consist of fluted steel shaft and base section, with saddle for attaching clock-assembly.

The complete post is anchored into place by steel rods set into a concrete foundation. All exposed surfaces are finished in statuary bronze lacquer.

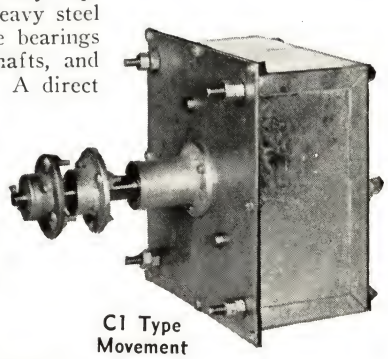
**Suspension Brackets**—Brackets for mounting double and multiple face clocks can be supplied. The construction is of steel or bronze according to exact specifications. As suspension brackets vary considerably with the size of clock, location, building codes, etc., it is usually necessary to design them entirely special to meet the requirements of each installation. Standard finish is statuary bronze lacquer.

**Movements**—Protected dial clocks are available with single motored movements for individual or MDFR or ADFR system application; with dual motored movements for MDMR or ADMR system application.

## EXPOSED DIAL OUTDOOR CLOCKS

Clocks of this construction are usually confined to the larger sizes (36 in. and over), and vary considerably in detail features. Basically, they consist of movement, movement supports, hands and dial structure.

**Movements**—Telechron exposed dial clock movements are of heavy duty construction, mounted directly behind the center of each dial, and directly support the clock hands. Heavy steel plates with oilless bronze bearings support stainless steel shafts, and cut iron and steel gears. A direct reading pilot dial is provided to permit convenient manual resetting. The weatherproof housing is an integral part of the movement. Studs are provided for attaching the movement to steel supports. These movements are produced in five sizes to suit dials



C1 Type Movement

ranging from 3-ft. diameter up to and including 40-ft. diameter. Larger sizes can be produced when necessary.

All are of the *single motor type only,* for individual installation, or as part of a Telechron centrally controlled system of the manual or automatic double frequency resetting (MDFR or ADFR) type. When required, these movements are equipped with brushes and collector rings for direct illumination of the hands by gas tubing or lamps.

**Hands**—Standardized hands are of wood or metal and are of simple taper-shaped design. Variations in outline design and in materials can be made to suit architects' requirements, provided such requirements come within the weight, length, and wind resistance requirements of the standardized designs.

**Dials**—Standardized designs in skeleton, glass insert skeleton, monopiece glass, and built-in construction are available. Special designs to meet architects' requirements can also be supplied.

***Skeleton Type***—Skeleton dials in sizes of from 3 to 16 ft. diameter consist of cast iron, bronze or aluminum sections bolted together, with mounting screws, anchors, etc., to suit installation conditions. Each dial section consists of Roman numerals and minute dots integrally cast with the ring section.



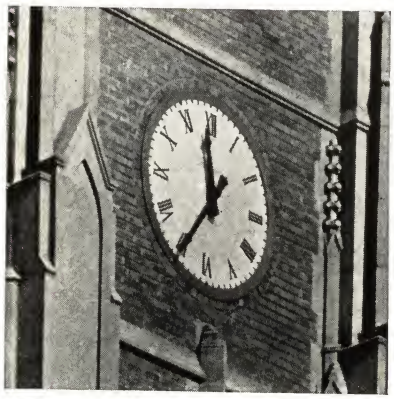
Skeleton Dial

**DIMENSIONS (Inches)**
Subject to change without notice

| Style | O. D. | Wall opening |
|---|---|---|
| 804 | 48 | 46¾ |
| 805 | 61½ | 60 |
| 806 | 72 | 70¾ |
| 807 | 84 | 82¾ |
| 808 | 96 | 94¾ |
| 809 | 108 | 106¾ |
| 810 | 120 | 117½ |
| 811 | 132 | 129½ |
| 812 | 144 | 141½ |
| 813 | 156 | 153½ |
| 814 | 168 | 165½ |
| 815 | 180 | 177½ |
| 816 | 192 | 189½ |

The cast iron dial sections are cadmium plated and finished in statuary bronze lacquer to withstand the elements. Bronze sections are left unfinished and aluminum sections are statuary bronze lacquer finished. These dials are suitable for mounting to the face of a wall or tower structure, with or without flood illumination. Movement mounts to wall, behind center.

When desired for mounting into a wall or tower opening, the skeleton dial can be fitted with white glass segments and center plate, permitting lamp or gas tube illumination from the back of the dial. With this construction the movement supports and movement are attached to the dial sections.



Monopiece Glass Dial

***Monopiece Glass Type*** — Available in sizes of from 3 to 5 ft. diameter, this dial consists of milk white glass with etched numerals and dots filled with black enamel, "Tee" iron ring, finished in statuary bronze lacquer with gasket, bolts and anchors for mounting into wall or tower opening. Movement supports attach to the wall surrounding the opening. Illumination may be by lamps or gas tubing.

**DIMENSIONS (Inches)**
Subject to change without notice

| Style | Dial size | O. D. | Wall opening |
|---|---|---|---|
| MT36 | 36 | 38⅝ | 37¾ |
| MT42 | 42 | 44⅝ | 43¾ |
| MT48 | 48 | 50⅝ | 49¾ |
| MT54 | 54 | 56⅝ | 55¾ |
| MT60 | 60 | 62⅝ | 61¾ |



Typical Built-in Dial Construction

***Built-In Type*** — Modern structures can be designed with "built-in" dials constructed of the same materials as the facing of the building. Numeral openings are of metal, casement-type sash, construction fitted with glass for inside lamp illumination, and with metal for direct illumination by gas tubing. Tube transformers can be mounted directly to the metal panel. The center section of the dial is also of casement-type sash construction to permit mounting of the hands direct to the movement from the inside of the building. These unique features permit lower installation costs and simplify illumination service problems.

Depending upon the size and construction, exposed dial clocks can be illuminated by flood lighting; by lamps located in back of the dial; by gas tubing mounted in back of the dial; or by gas tubing mounted directly on the face of the hands and dial; or by a combination of any or all of these methods.

**Illumination**—The means for illumination should be supplied from a separate source of power, independent of the clock movement, thus assuring constant time service and permitting the use of automatic time switch control of the clock lighting system.

**Installation**—All Telechron outdoor clocks in sizes up to and including 16 foot diameter can be installed by local riggers, with the aid of blueprints and instructions supplied with the clock equipment. Larger installations may require the services of a factory engineer to supervise the erection.

## Tower Bell Program Instruments

Clock installations in towers frequently require means for controlling the operation of tower bells. Telechron strike and chime program instruments are available for this purpose. These instruments are similar in basic design, to the Telechron multiple circuit program instrument, except that they operate on a predetermined fixed program schedule. They are available in a number of style combinations, including hour strike; hour and half hour strike; hour and quarter hour strike; Angelus; and Westminster or Canterbury chimes; operating from 1 to 5 bells, according to requirements. These instruments consist of motor driven timing element, timing relay, bell circuit relays, and manual control switch, — all mounted in a metal cabinet, finished in statuary bronze lacquer and fitted with a cylinder lock.

This device is designed to control the operation of bell relays, solenoids, hammers and bell equipment, as recommended and supplied by tower bell manufacturers. The cabinet dimensions are 27⅜ in. high x 18 in. wide x 6⅞ in. deep.



TSIC4 Strike and Chime Program Instrument, Series C

## ELAPSED TIME INDICATORS



10-Minute Basketball Timer with Sweep-second and 10-Minute Hands



12-Minute Hospital Timer with Sweep-second and 12-Minute Hands, Accelerated Reverse Reset and Zero Stop Latch




15-Minute Football Timer (Boston College, Newton, Mass., Installed 1934)

Telechron special elapsed time indicators of the conventional clock dial type are available in standardized sizes, designs, and constructions suitable for hospital operating room use; special school classroom use; school and industrial laboratory use; special process timing; and for timing various sports including boxing, basketball, hockey, wrestling, football, swimming and track.

Depending on the exact requirements of the operation that is to be timed, devices can be supplied for time cycles varying from one minute to 30 days elapsed time.

Dial sizes range from 3 in. diameter for the small semi-portable types to a 10-foot diameter for football spectator units.

Movement constructions vary according to dial size and application. These constructions range from the simplest gear train, designed for continuous operation use to more elaborate constructions having provisions for instantaneous starting, stopping, high speed resetting, "zero" synchronizing, and contacts for operating fixed cycle start, stop, and warning signal circuits, such as bells, buzzers, horns and lights.

Although the recommended sizes and types of equipment vary with the exact application, generally an installation consists of: a wall mounting timer, having dial size to suit the anticipated range of vision; a control unit having necessary switches, and possibly with a small pilot dial timing unit; signal units (horns, bells, lights, etc.); and necessary wiring from source of power to the control, and from the control to the timing and signal units.

The wide variety of standardized equipment available makes it possible to take care of innumerable timing problems at nominal cost. Detailed information, recommendations, and estimates on equipment concerning any particular timing problem will be supplied on request.

A typical Telechron football timer installation consisting of 10 ft. spectator unit; semi-portable sideline control with pilot dial having Sweep-second and 15-Minute hands; control switches; green and red semaphore lights to show play and time-out, respectively; and necessary wiring.

## TELECHRON SYSTEM SPECIFICATIONS

**For MDMR (Manual Dual Motor Resetting) System**—Use Nos. 1 to 4, incl., 9 to 11, incl., 16 to 22, incl..

**For ADMR (Automatic Dual Motor Resetting) System**—Use Nos. 1 to 3, incl., 5, 9 to 11, incl., 16 to 22, incl.

**For MDFR (Manual Double Frequency Resetting) System**—Use Nos. 1 to 4, incl., 6 to 22, incl.

**For ADFR (Automatic Double Frequency Resetting) System**—Use Nos. 1 to 3, incl., 5 to 7, incl., 9 to 22, incl.

**For Individual Installation Without Control**—Use Nos. 1, 3, 9 to 22, incl.

*Fill in italicized spaces to suit the particular system being specified.*

All single motored equipment can be individually installed.

**1.** In accordance with plans and specifications, install a Telechron clock system, to operate direct from a (115 v. or 24 v.) a-c. circuit.

**2.** Provide an a-c. multiple connected *(manual or automatic)* centrally controlled *(dual motor or double frequency)* resetting clock system. Mount control with top edge 44 in. above floor in the *(location)* on (N., E., S., or W.) wall—a clean, dry location.

**3.** Provide each clock face and timing device with a movement driven by a self-starting sealed in oil, synchronous motor.

**4.** Provide a flush mounted, manual control switch, with interruption indicator and key switches, for stopping and resetting the system.

**5.** Provide a *(surface or semi-flush)* automatic control; consisting of sealed timing element, fused cutout switch, manual control switches and terminal connection block, all mounted in a metal cabinet with flush cylinder lock; to automatically reset the clock system to correct time when power returns, following an interruption of 12 hrs. or less.

**6.** Provide a ball bearing motor-generator protected against dirt and water; with 115 or 230 volt (60) cycle (1, 2, or 3) phase induction motor limited to 50° C. temperature rise; and with 220 volt (120) cycle (1 or 2) phase generator limited to 55° C. temperature rise; all set on a cork base, on the floor or on a pedestal, directly below the resetting device, or other equally satisfactory clean, dry location.

**7.** Provide when necessary an enclosed motor starter with manually reset thermal cutout.

**8.** Provide an enclosed generator operated clock system relay with silver contacts for carrying the normal and resetting power.

**9.** Provide indoor surface, semi-flush and flush clocks with round steel, aluminum, or copper cases, convex crystals, white dials of metal with Arabic numerals and minute dots, black hands and movement. Special wall boxes with provisions for attaching semi-flush or flush clocks shall be furnished with these clocks. Surface and semi-flush clocks shall be finished in statuary bronze lacquer and have concealed setting knob. Flush clocks shall be front setting with hinged crystal frame, and shall be finished in oxidized bronze. Skeleton clocks shall have *(Arabic, Roman, or special shaped)* characters mounted to wall surface *(on rings or by spurs)*, cut metal balanced hands, center plate with movement attached and special wall box. Marble clocks shall have *(Arabic, Roman, or special shaped)* characters mounted by spurs to *(square edge, or metal ring trimmed)* dial blank of *(kind)* marble, cut metal balanced hands, movement and special wall box. Double face clocks shall consist of saddle and *(direct or chain)* connected center shell fitted with two surface clocks, and terminal box.

**10. Outdoor Clock**—*Protected Dial*—Provide in *(location)* round, metal, semi-flush, statuary bronze lacquer finished, weatherproof clock, with front mounted crystal, white dial with black Arabic characters, black hands, concealed *(color)* gas tube illumination between dial and crystal, compression type electrode connectors, transformer, and necessary weatherproof covers.

**11.** Provide in the *(location)* a weatherproof mounted round angle iron ring flush statuary bronze lacquer finished clock, with front mounted crystal, white glass dial having etched Arabic characters, black hands and shadowproof mounted movement. Locate *(quantity)* lamps in opening 4 in. back from dial and cover opening with hinged light baffle.

**12. Outdoor Clock**—*Exposed Movement and Hands*—Provide in the *(location)* and *(size)* exposed dial clock with weatherproof housed single motor movement; having oilless bronze bearings, stainless steel shafts, pilot dial, setting knob, and clutch; mounting directly behind each dial; with simple tapered balanced hands, of *(channel section aluminum or seasoned white pine)* dull black lacquer finished, mounted to movement.

**13. Skeleton Dial**—Provide a self-supporting bolted-together sectional cast *(bronze, aluminum, or iron)* dial consisting of rings with Roman numerals and minute dots, with anchor bolts and spacers for mounting *(in or to) (material)* wall.

**14. Glass Inserts for Skeleton Dial**—Drill Tee section dial rings to hold white glass inserts in place by rustproof clips and screws. Weatherproof joint between mounting surface and outer dial ring.

**15. Built-in Dial**—Clock dial shall be the finished building wall, with in-swinging hinged metal paneled sashes at numeral locations, fitted with *(color)* gas tubing and transformers; with center of dial similarly constructed to permit swinging metal hands into building, for access to *(color)* gas tubing and waterproof transformers on hands. Clock movement shall be attached to swinging dial center and shall include commutation features for hand illumination.

**16. Program Instrument**—*Single Circuit*—Locate in *(location)* on N., E., S., or W.) wall with lower side of cabinet 48 in. above floor; in a *(surface or semi-flush)* metal cabinet with flush cylinder lock; an all-metal and Bakelite single circuit 5-min. interval, 24-hr. cycle, 7-day calendar program instrument with mercury relay, and 1-6 second signal duration adjustment, and identified external cutout, and push button switches; with pilot clock.

**17. Program Instrument**—*Multiple Circuit*—Provide in *(location)* on (N., E., S., or W.) wall, with bottom side of cabinet 48 in. above floor; in a *(surface or flush)* glass paneled metal cabinet with flush cylinder lock; an all-metal and plastic (2, 4, or 6) circuit (12 **or** 24-hr.) cycle, 7-day calendar, minute interval program instrument; with adjustable long and short duration contacts with relays equipped with silver contacts with identified external cutout and push button switches for each circuit and separately accessible connection block and pilot clock.

**18. Signals**—*Buzzer*—Provide metal and Bakelite *(flush or clock case)* mounted contactless, vibrating reed buzzers.

**19. Bells**—Provide all-metal *(gong size)* vibrating, contactless mechanism concealed under bell-type gongs for corridors.

**20. Yard Gong**—Provide all-metal cast bell metal *(size)* gong slow vibrating, contactless, weatherproof bell mounted with *(protecting grid or screen housing.)*

**21. Guarantee**—All Timekeeping equipment shall be guaranteed against mechanical and electrical imperfections for a period of 1 year from date of written acceptance by architect.

**22. Wiring**—Wiring shall be code colored, black, white, and red, for No. 1, No. 2, and No. 3 wires, of respective clock systems; tagged for signal systems; and installed in accordance with local building codes to clock manufacturer's diagram (No. 41B-ADFR) (No. 51B MDMR and ADMR) (No. 122 MDFR). The No. 2 wire shall be grounded.

## CATALOGS

Additional detailed information on equipment listed in this bulletin will be supplied on request to Warren Telechron Company, Special Clock Sales Department, Ashland, Mass.

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## PRODUCTS OF INTEREST TO ARCHITECTS AND CONTRACTORS

AUTOMATIC ELECTRIC P-A-X (PRIVATE AUTOMATIC EXCHANGE) SYSTEMS

PRIVATE MANUAL TELEPHONE SYSTEMS.

INTERCOMMUNICATING SYSTEMS.

## INTERIOR COMMUNICATION—AN IMPORTANT PART OF BUILDING DESIGN

Interior communication, as provided by Automatic Electric P-A-X (Private Automatic Exchange) systems, saves time and labor, and increases comfort, convenience and efficiency in every building in which it is provided.

Automatic Electric P-A-X systems provide interior communication at its best. They are completely automatic—require no telephone operator or other attendant. Thus, they make private telephone service entirely practical in small organizations. They employ the same dependable equipment as is used for public telephone service in many of the largest cities in the world, and can therefore be relied upon also to handle the telephone traffic of organizations of the largest size.

Automatic Electric P-A-X systems can be supplied to serve any number of telephones from five or six to several hundred. In organizations of all sizes, these systems will quickly pay their way, and thereafter, for many years, return a very satisfactory profit on the investment.

## AUTOMATIC ELECTRIC P-A-X SYSTEMS

A complete Automatic Electric P-A-X system consists merely of the required number of automatic (dial-equipped) telephones, a compact, self-contained automatic switchboard, and two or three wires connecting each telephone to the switchboard. The system requires no operator. It is always on duty—twenty-four hours a day, every day of the year. It never makes mistakes, but renders service with the efficiency, speed and accuracy of the automatic machine.

The automatic switchboard itself is similar in principle to that of the public automatic telephone system. Calls are completed by automatic mechanisms which are controlled by a dial on each telephone, the dial being operated in the same manner as in making calls from a public automatic telephone.

The various types of Automatic Electric P-A-X switchboards, their capacities and uses, and the special services available with each, are shown in Table A. Specifications of each type are given herein, and will be of value in selecting a system for any particular purpose.

In selecting the type of system required in any installation, it is advisable always to anticipate future requirements, as far as possible. It is ordinarily not safe to choose a switchboard which will be filled to capacity immediately upon installation. Consideration should also be given to the present, and probable future, requirements for special services, as all services are not offered with all types of systems.

### Special Services

The Special Services listed below are secured as "by-products" of automatic operation. They employ the P-A-X switchboard, the telephone wiring and cabling, and the telephones themselves, and the operating current required is usually secured from the power supply of the private automatic system. Supplementing its regular telephone service, these Special Services further expand the usefulness of P-A-X, and increase its value as a time-and-step-saver to the organization in which it is employed.

Special Service facilities, when provided, are built into the switchboard itself, or in small supplementary units associated with it.

**Code Call Service**—When an individual cannot be reached at his own telephone, code call service makes it possible quickly to establish communication with him. The calling party merely dials a code call number, which indicates the person desired.

The code signals are then automatically repeated on audible or visible signals—bells, horns, lamps, etc.—distributed about the premises. The desired person, recognizing his code, steps to the most convenient telephone and dials a code call answering number, which connects him to the code call unit, and thus to the calling telephone.

**Conference Service**—Provides for bringing a number of persons in on one connection, so that they may hold a conference without leaving their desks. There are two general types. One type provides facilities for any one to call a conference of any other stations he may choose, and permits any one to join such a conference at any time, or to drop out before it is concluded. The second type provides quick connection to a pre-

TABLE A—CONDENSED SPECIFICATIONS OF AUTOMATIC ELECTRIC P-A-X'S

| Type No. | Capacity | | Type of Service | Special Services Available |
|---|---|---|---|---|
| | Number Telephones | Max. Number Calls at one time | | |
| 34A16 | Up to 10 | 1 | Selective Ring; Secret Service | Executive Right-of-Way |
| 32A1 | Up to 10 | 2 | Full Automatic; Selective Ring; Secret Service | None |
| 32A21 | Up to 22 | 3 | Full Automatic; Selective Ring; Secret Service | None |
| 32A38 | Up to 100 | 1 (or 2, under certain conditions) | Selective Ring; Common Talk | Conference, Master Station, Code Call, Direct Line |
| 32A31 | Up to 100 | 7 | Full Automatic; Selective Ring; Secret Service | Conference, Code Call, Direct Line |
| 25 | 25 to 100 | 7 | Full Automatic; Selective Ring; Secret Service | Conference, Code Call, Direct Line, Executive Key-Calling, Executive Right-of-Way, Fire Reporting and Recording, Watchman's Supervisory |
| 50 | 50 or more | 7 or more | | |

determined group of stations from one telephone, and limits the conference to those who are called in this way.

**Direct-Line Service**—This service provides a direct, and permanent, two-wire circuit between two telephones, entirely separate from the regular switching circuits, and arranged so that when the hand set is lifted at either station the bell at the other station is automatically rung. Used for a pair of telephones that call one another very frequently.

**Fire Reporting and Recording Service**—More than an "alarm" service, because it provides facilities for telephone communication between the person reporting and the fire chief. Fire reports may be made from any of the telephones, and alarms may be sounded on signals distributed about the premises, and recorded on a punch-tape register.

**Watchmen's Supervisory Service**—Available in two forms. Type 1 is simply a recording service, the watchman's dialed number being automatically recorded on an Automatic Electric Multiple Time Recorder. Type 2 Watchmen's service provides, in addition, a telephone, and an alarm bell, for signaling any error, or failure to report.

*Note:* Other special services are described in the specifications of the various systems.

## The Type 34A16 P-A-X

**Capacity**—10 telephones, 1 conversation at a time.

**Type of Service**—Selective ring, secret service (or some of the telephones may have "Right-of-Way" service, described below).

**Switchboard and Cabinet**—Switching equipment and power equipment in two standard surface cabinets, assembled together, for wall or table mounting. Dimensions, complete: height, 1 ft. 11½ in.; width, 10½ in.; greatest depth, 9¼ in. Neatly finished in aluminum paint.

**Power Equipment**—Switching equipment and telephone transmission require D-C; D-C or A-C may be used for telephone signals. Where 110-125 volt, 50-60 cycle A-C is available, power unit contains battery eliminator and separate transformer to provide A-C ringing current of approximately 50 volts. Cord and plug are provided for connection to commercial current.

If commercial A-C is not available, cabinet is provided with ten standard dry cells, and telephones are equipped with D-C signals.

**Telephone Lines**—Three wires from each telephone to switchboard.

**Telephone Numbers**—Two digits each—"10", "20", "30", etc., to "00". Signal at called station gives one long ring when the second digit ("0") is dialed. Ring can be repeated by redialing "0".

**"Right-of-Way" Stations**—Can overhear conversations on system, and interrupt, if desired, to make a call.

**Installed Weight**—Switchboard, complete, 45 lbs.

*Further detailed specifications on request.*

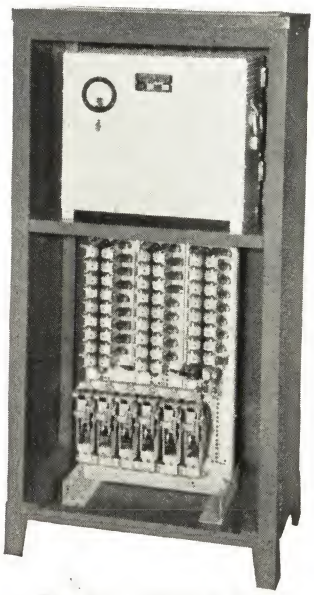
## The Type 32A21 P-A-X

**Capacity**—22 lines, 3 conversations at a time.

**Type of Service**—Full automatic, selective ring, secret service.

**Switchboard**—Mounts, together with power equipment, in cabinet described below. Or, can be hinged on wall or placed on a table. Dimensions: height, 1 ft. 11¼ in.; width, 1 ft. 2 in.; depth, 9½ in. Neatly finished in aluminum paint.

**Cabinet**—Floor type sheet steel cabinet, for switchboard and power equipment. Finished in olive green enamel (or other finish on special order). Dimensions, for switchboard and battery eliminator: height, 4 ft. 1½ in.; width, 2 ft.; depth, 1 ft. 2 in. If storage battery, with rectifier or D-C charger, is used, an upper section is added to the cabinet, increasing height to 5 ft. 4½ in. Cabinet is provided with holes for 1-in. conduit for line and power wiring.



**The Type 32A21 P-A-X Switchboard Installed in Cabinet with Automatic Electric Battery Eliminator**

**Telephone Lines**—Two wires from each telephone to the switchboard.

**Telephone Numbers**—"1" to "9", "01" to "09", and "001" to "004." Ringing is automatic and intermittent until call is answered or abandoned.

**Installed Weight**—Maximum, 200 lbs.

*Further detailed specifications on request.*

## The Type 32A1 P-A-X

**Capacity**—10 lines, 2 conversations at a time.

**Type of Service**—Full automatic, selective ring, secret service.

**Switchboard**—Identical with Type 32A21, except height is 1 ft. 3¾ in.

**Cabinet**—As described for Type 32A21.

**Telephone Lines**—Two wires from each telephone to the switchboard.

**Telephone Numbers**—Single-digit ("1" to "9", and "0"). Ringing is automatic and intermittent until call is answered or abandoned.

**Installed Weight**—Maximum, 200 lbs.

*Further detailed specifications on request.*

## The Type 32A38 P-A-X

**Capacity**—100 telephones, 1 conversation at a time (or 2, under conditions outlined below under "Secret Group" service).

**Type of Service**—Selective ring, common talk.

**Switchboard**—Similar in appearance to Types 32A1 and 32A21, and mounts, together with power equipment, in the same cabinet as described for those boards. Or can be hinged on wall, or placed on a table. Dimensions: height, 2 ft. 1¾ in.; width, 1 ft. 3 in.; depth, 1 ft. Neatly finished in aluminum paint.

**Cabinet**—As described for Type 32A21. When the board is mounted in this cabinet, the regular switchboard doors are omitted.

**Telephone Lines**—Three wires from each telephone to the switchboard.

**Telephone Numbers**—Two digits each—from "00" to "99". Signal at called station rings once when number is dialed. Ring can be repeated by redialing number.

**Special Services**—***"Secret Group" Service***—The telephones of officials and others who may desire secrecy of service may be placed in a "Secret" group of not more than thirty telephones. A call between any telephones in this group cannot be overheard from stations outside the group. And, while any such call is in progress, another call can be made between any two stations outside the "Secret" group. Thus, it is possible, in the order outlined, to set up and carry on two conversations at the same time.

***Master Station Service***—This method of operation is often used in schools and other institutions where it is desired to provide service only to and from one central point. Under this plan, one telephone is designated the "master" station. Regular stations can call the master station, or can be called by the master station (or, if desired, from certain other selected stations as well) but cannot call each other.

***Group Ringing Conference Service***—For this service, the principal, or other official, is furnished with a small key cabinet, placed on his desk. By flipping a key, he can then signal a selected group of telephones at one time. There can be as many as ten of these groups, and ten stations in each group.

***Other Services***—Code Call, Direct Line. (Direct-Line service cannot be provided if master station operation is employed.)

**Installed Weight**—Maximum, 350 lbs.

*Further detailed specifications on request.*

## The Type 32A31 P-A-X

**Capacity**—50 lines, 100 telephones (two stations on each line), 7 conversations at a time.

**Type of Service**—Full automatic, selective ring, secret service.

**Switchboard and Cabinet**—Two-section floor-mounting framework, switching equipment in upper section, power equipment in lower. Enclosed in sheet steel cabinet, with hinged double doors on both sides. Neatly finished in aluminum paint. Dimensions: height, 4 ft. 9¼ in.; width, 4 ft. ¼ in.; depth, 2 ft. Cabinet is provided with conduit openings, with removable porcelain bushings.

**Telephone Lines**—Two wires from each telephone to the switchboard (or three, if two-station lines are used).

**Telephone Numbers**—Two digits each—"10" to "59" for the first 50 telephones, from "60" up for the second stations on any lines. Ringing is automatic and intermittent until call is answered or abandoned.

**Special Services**—Conference, Code Call, Direct Line. Code call requires a separate wall- or shelf-mounted unit, which is wired directly to the switchboard. Dimensions: height, 1 ft. 3¾ in.; width. 9¼ in.; depth, 9¼ in.

**Installed Weight**—Approximately 800 lbs.

*Further detailed specifications on request.*

## The Type 25 P-A-X

**Capacity**—Recommended for use where 25 to 50 telephones are required initially, and maximum requirements will not exceed 100 telephones. Can be arranged for any necessary number of calls at one time. The usual requirements are shown in Table B. Where possible, the requirements of any organization are determined by our Engineers, from a study of the organization under working conditions.



Type 25 P-A-X Switchboard

TABLE B—STANDARD TYPE 25 P-A-X SWITCHBOARDS
Equipments and Installed Weights

| Number Lines* | Number Calls at one time | Weight, lbs. |
|---|---|---|
| 20 | 4 | 1200 |
| 25 | 4 | 1200 |
| 30 | 5 | 1350 |
| 35 | 6 | 1400 |
| 40 | 6 | 1400 |
| 45 | 7 | 1450 |
| 50 | 7 | 1450 |

*There may be one or two telephones per line.

**Type of Service**—Full automatic, selective ring, secret service.

**Switchboard and Cabinet**—Of sectional design, to simplify expansion as required. For initial installation of up to 25 lines, dimensions are: height, 4 ft. 9 in.; length, 4 ft. 6½ in.; depth, 2 ft. Can be expanded to 50 lines by adding a section on top (over-all height, 6 ft. 10⅛ in.); for further growth, sections are added at one end of original installation (over-all length, 9 ft. 1 in.). Cabinet has hinged doors front and rear, and is neatly finished in aluminum paint.

**Telephone Lines**—Two wires from each telephone to the switchboard (or three, if two-station lines are used).

**Telephone Numbers**—Two digits each—"01" to "99". Or, if two telephones are put on each line, three-digit numbers are used, to provide for selecting the desired station. Ringing is automatic and intermittent, until call is answered or abandoned.

**Special Services**—***Executive Key-Calling***—This service permits the executive to initiate calls by merely operating one of a number of keys in a small cabinet on his desk.

***Monitor***—Permits executive to supervise conversations.

***Other Special Services***—Conference, Code Call, Fire Reporting and Recording, Direct Line, Executive Right-of-Way, Watchmen's Supervisory Service. However, all of these services cannot be provided on one installation.

**Installed Weights**—See Table B. If storage battery is used, add 400 lbs. to figures given.

*Further detailed specifications on request.*

## The Type 50 P-A-X

**Capacity**—This system is generally specified when the initial installation is to be about 50 lines, or more. It can be expanded to any desired size by the addition of sectional units. The Type 50 P-A-X can be arranged for any necessary number of calls at one time, the usual requirements being shown in Table C. Where possible, the requirements of any organization are determined by our Engineers, from a study of the organization under working conditions.

**Type of Service**—Full automatic, selective ring, secret service.

**Switchboard and Cabinet**—For initial installation of 50 to 100 lines, two-section cabinet is usually provided. Dimensions: height, 4 ft. 9 in.; length, 6 ft. 3½ in.; depth, 2 ft. Additional sections, 2 ft. high, can be added on top or end, as required.

**Telephone Lines, and Special Services**—As described for Type 25.

**Telephone Numbers**—Two digits each—"01" to "99"—for up to 100 lines. Three digits each for 100 to 1000 lines, or for two telephones on a line.

**Installed Weights**—See Table C. If storage battery is used, add 400 lbs. to figures given.

*Further detailed specifications on request.*

TABLE C—STANDARD TYPE 50 P-A-X SWITCHBOARDS
Equipments and Installed Weights

| Number Lines* | Number Calls at one time | Weight, lbs. |
|---|---|---|
| 50 | 7 | 1800 |
| 55 | 7 | 1900 |
| 60 | 8 | 1900 |
| 65 | 8 | 2000 |
| 70 | 8 | 2000 |
| 75 | 9 | 2100 |
| 80 | 9 | 2100 |
| 85 | 10 | 2200 |
| 90 | 10 | 2200 |
| 95 | 10 | 2300 |
| 100 | 10 | 2300 |
| 125 | 14 | 3000 |
| 150 | 17 | 3300 |
| 175 | 19 | 3600 |
| 200 | 20 | 4000 |

*There may be one or two telephones per line.

## P-A-X Telephone Instruments

The telephone instruments offered for use with Automatic Electric P-A-X systems are equal to the finest dial telephones regularly used for public telephone service. They can be depended upon to render a long lifetime of useful service, and their fine finish and distinctive design make them objects of pride wherever they are installed.



Type 34A3—Self-contained Desk Monophone



Type 1A—Desk Monophone



Type 35A5—Wall-Mounting Monophone

P-A-X Monophones

The newest and finest of these instruments are the Type 34A3 Self-Contained Desk Monophone and the Type 35A5 Wall-Mounting Monophone, illustrated. These instruments are of the modern handset design, and are strikingly handsome in appearance. The Type 1A Desk Monophone, also illustrated, is of somewhat more conservative design, and requires a separate bell box. These types are available in a range of jewel-like colors, with gold- or chromium-plated trim, to harmonize with any decorative scheme.

Telephones of more conventional designs can also be supplied, of the same high quality of construction. And for special purposes, there are special telephones—flush wall instruments for corridors, elevators, etc.; outdoor telephones for use in locations exposed to dampness or dust; switching-key telephones; extension telephones, etc.

Catalog of P-A-X Telephones will be gladly sent, on request.

### Installation

As the operation of the Automatic Electric P-A-X switchboard is entirely mechanical, and rarely requires personal attention, it is not necessary to place it in valuable open space. Because of its small size it can be located in a small room, under stairs, etc.—in any place which is dry and reasonably free from dust. However, for ease and economy of wiring, the location should be fairly well centralized with respect to the telephones.

The room in which the switchboard is placed should be provided with a connection to commercial power, for operation of the system. If A.C. is available, the system may be operated from an Automatic Electric battery eliminator, or from a storage battery charged by means of an Automatic Electric rectifier from the commercial current. If the commercial power is D.C., a storage battery is used, and is charged through an Automatic Electric D.C. charging unit. Ordinarily, no special power wiring nor outlets are required.

Automatic Electric P-A-X systems may be installed by the electrical contractor or by the Automatic Electric installation engineers, as desired.

### Telephone Wiring

The telephone line wiring may be carried in paired or triplex wire (depending upon the type of P-A-X installed), or in telephone cable. Cable is recommended, particularly on larger systems, since it is most easily installed, and provides protection for the line conductors. Lead-covered cable is recommended for use in locations where it may be exposed to moisture. Such cable may be run from the switchboard to various points about the building, and there terminated in building terminal boxes. From these boxes, the lines are then distributed in telephone wire.

When possible, conduit and ducts should be provided, to afford protection for cable and wiring. Flush wall terminal boxes may then be employed, to improve the appearance of the installation.

Ordinarily all the telephones connected to a P-A-X are located within the same building. In some cases, however, a number of telephone lines may be run out-of-doors, and thereby exposed to lightning or to contact with electrical power lines. Suitable protection should be provided for each exposed telephone line. Protective equipment for this purpose may be connected to the lines where they enter the building. Such protective equipment, when required, is mounted on suitable wall- or floor-type racks.

### Maintenance

The maintenance of an Automatic Electric P-A-X system can be handled by any reasonably competent mechanic—for example, the building engineer or electrician. And, in all territory served by our offices, we are prepared to provide services of routine inspection and adjustment, to supplement the work of the local maintenance man.

### Engineering Consultation

Provisions for interior communication and signaling should preferably be planned at an early stage in the development of a project. Special commercial power supply, where required on larger installations, can then be provided at the proper places, and ducts for wiring may be concealed, so that the completed building will not be disfigured with exposed wires.

The information given in these pages will serve as a guide in the tentative selection of an Automatic Electric P-A-X system for any particular installation. Before specifying any system, however, you are invited to call upon us. AUTOMATIC ELECTRIC COMPANY maintains a staff of thoroughly experienced telephone engineers, who are well qualified to advise in the selection and application of its products to any particular requirements. The services of these engineers are available without obligation. Simply telephone, write, or telegraph our nearest office.

## MONOTYPE MANUAL TELEPHONE SWITCHBOARDS

Occasionally situations arise when manually operated telephone systems are preferred. To meet such requirements we are prepared to furnish manual telephones and switchboards of any capacity. Monotype manual telephone switchboards are of modern design—compact and sturdy, and equipped for easy operation and long life.

The telephones for manual telephone systems are similar to those offered for Automatic Electric P-A-X, differing only in the omission of the dial. If desired, telephones arranged for later conversion to dial service can be furnished, without extra charge.



Monotype Floor Type Manual Telephone Switchboard



Type 32A14 Manual Wall Telephone



Type 32A14 Manual Desk Telephone



Monotype Cordless Manual Telephone Switchboard

## AUTOMATIC ELECTRIC INTERCOMMUNICATING SYSTEMS

These small intercommunicating (generally known as "Intercom") telephone systems provide an inexpensive and practical solution to the interior communication problems of the smaller residence, club, or industrial organization. They require no operator and have no central switching equipment—the person making a call merely depresses a pushbutton on his telephone to signal the station desired. Signaling is selective—that is, only the desired station is rung.

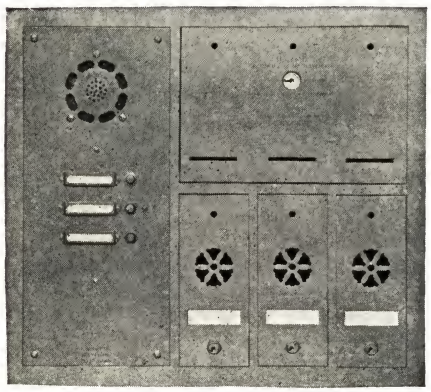
The telephones provided in these systems are of the modern handset type, and are designed and made to render a long lifetime of useful service. They are equipped with either one, six, or ten pushbuttons, depending upon the capacity of the system in which they are used.

A complete catalog of Automatic Electric intercommunicating systems is available, and will be sent on request.

# CONNECTICUT TELEPHONE & ELECTRIC CORPORATION

MERIDEN, CONN.

REPRESENTATIVES IN ALL PRINCIPAL CITIES



86W Vestibule Phone Combined with 3-gang Mail Box

## CONNECTICUT APARTMENT HOUSE TELEPHONE EQUIPMENT

Connecticut Apartment House Telephone Equipment meets all requirements of the modern and up-to-date apartment. The vestibule telephone can be furnished with cord type receiver, cordless type loud speaker, and swing arm transmitter and receiver. The No. 600W Connectaphone which we recommend for the apartment is an all-bakelite phone furnished in brown or black which harmonizes with the modern scheme of decoration. This was designed principally for apartment house installation and the shape was the selection of some of the leading architects specializing in apartment house building.



600W Connecta-phone

## INTERCOMMUNICATING TELEPHONE SYSTEMS

Connecticut Intercommunicating Telephone Equipment can be furnished to take care of any type of telephone service desired. This equipment is adaptable for use in schools, banks, libraries, nurses' homes, dormitories, factories, offices, etc. All of the equipment is of high quality. Wall phones are of steel with black japan finish. Cradle phones are of bakelite and are very neat in appearance and outstanding in performance.



6008W-8 Cradle Phone Button Sizes 4, 6, 8, 10, 12



621W Wall Phone

41W Suite Wall Phone

## CONNECTICUT HOSPITAL SIGNALING EQUIPMENT

### Connecticut Nurses' Call System — A Complete Low Voltage Automatic System

Connecticut Nurses' Call Equipment is the result of forty years of development and experience in the manufacture of all types of signaling equipment. The Connecticut Locking Type Nurses' Call System is, we claim, the most efficient type of system on the market today. The all-metal button is of rugged construction and stands considerable abuse. A slight pressure on the button, which is connected to the wall by a plug and rubber covered cord, indicates on the corridor station, nurses' duty room station, and on nurses' annunciator. The Connecticut Safeguard Feature which is incorporated in all stations assures the patient that he can always obtain the service desired.



No. 9014W



No. 4033W Duty Station



No. 9026W Corridor Station



No. 9043W

### Doctors' Paging Equipment

Connecticut Doctors' Paging Equipment is of real importance to the modern up-to-date hospital. The flashing type of Doctor's Paging System is the most effective and is silent in operation. The system is made up of the No. 9043W selector. No. 9044W contractor and annunciator located at all necessary points.




No. 9045W

### Complete Catalogs

Write for our complete catalogs:

No. 404, Hospital Signal System.

No. 405, Telephone Signaling Equipment.

### Doctors' In-and-Out Registering Equipment

Connecticut Doctors' In-and-Out Registering Equipment is neat in appearance and efficient in operation. The No. 9062W master annunciator, which is located at the entrance, is furnished with easily replaceable names which do not indicate until toggle switch is thrown to "on" position. This equipment can be furnished to meet any type of service desirable.



No. 9062W-12

### Connecticut Night Lights

Connecticut night lights are of different design to fit all conditions that exist in the up-to-date hospital. In wards we recommend the No. 9049W dome type and, in the corridors, the No. 9074W louvre type.



No. 9074W

# THE BELL TELEPHONE SYSTEM

AMERICAN TELEPHONE AND TELEGRAPH COMPANY AND ASSOCIATED COMPANIES

## PLANNING FOR TELEPHONES IN RESIDENCES AND BUILDINGS

Telephone service in homes, apartments, hotels, hospitals, business and public buildings requires the installation of wires, cables, terminals, and in many cases switchboards and associated equipment.

The provision of facilities for telephones during construction makes possible the concealment of the telephone cables and wires in the walls and floors. These facilities, together with the provision where required, of space for switchboards and terminals, make for the general betterment of the buildings and the telephone service and the satisfaction of the owner and tenants. They avoid the necessity of drilling holes through finished walls and floors, the exposure of wires and cables in rooms, halls, and offices, and the defacement of walls and trim by the wire and cable attaching devices. They provide flexibility which makes possible rearrangements and changes in the location or number of telephones which are often necessary to meet changing requirements for service both in commercial and residential buildings and the mechanical protection afforded serves to prevent, interruptions to the telephone service. These facilities are provided by the owners since in common with water and gas pipes, and electric light and power conduits, they must necessarily become a permanent part of the building. Therefore, it is essential that specifications for new and modernized residences and buildings cover the provision of conduits, cable shafts, cabinets, and space requirements for switchboard equipment.

Because of the wide variation in telephone service requirements, it is not practicable to furnish herein specific information on which the architect, engineer, or builder can, in all cases, plan the telephone facilities in detail. The Telephone Companies of the Bell System, however, furnish a telephone planning service without charge. Experienced telephone engineers will make detailed studies and submit definite recommendations to architects and builders as to facilities required for incorporation in building plans and specifications. This service, in any problem where the telephone service or facilities are involved, may be obtained by calling the nearest Bell Telephone Business Office and asking for "Architects' and Builders' Service."

To assist in preliminary studies of building projects, there is outlined below for various types of buildings the general scope of the telephone housing facilities recommended. Dimensions, clearances, sizes, and other technical details are purposely omitted, for the reason mentioned above, and may be obtained through the "Architects' and Builders' Service."

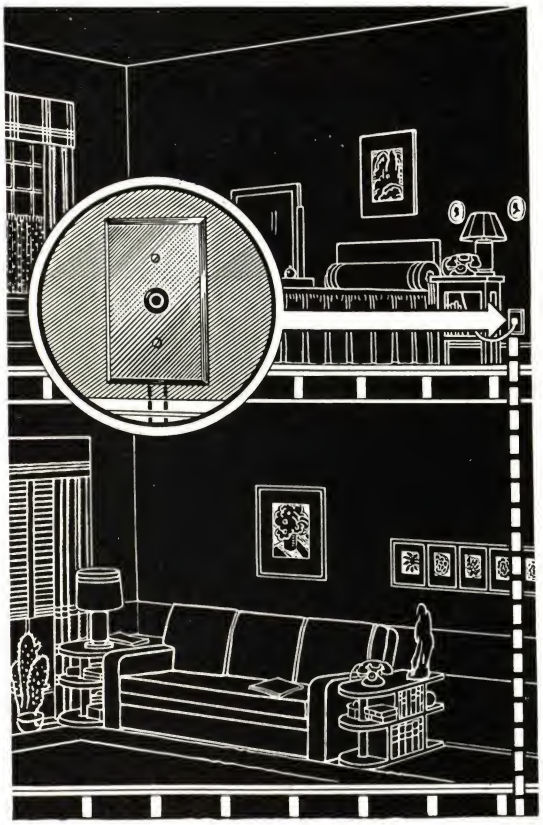


*Figure 1. In small and medium size homes conduit or pipes from basement to first and second floors, terminating in outlet boxes, is usually all that is needed.*

### RESIDENCES

To avoid exposed wires on finished inside trim, suitable conduit should be extended not only to the locations where telephones are required initially, but also to any other locations where telephones may be needed in the future, due to the growing or changing needs of the owner. Upstairs and kitchen locations should receive special consideration in view of the increasing popularity of extension telephones and the increasing difficulty of concealing telephone wires in the modern home due to fire stops, wall insulation, and finished basements. Outlets located at strategic locations can also be arranged for portable telephones which permit the use of the same instrument at various locations.

In addition to the outlets for the telephones, commercial cabinets with flush grilles are sometimes desirable to house telephone bells. Generally, one such cabinet on each floor in a location selected for general audibility of the telephone bells is sufficient.

To avoid exposed wires on the outside of the house, it is sometimes desirable to provide a conduit entrance, Figures 2, Page 2, similar to that generally used for lighting wire entrances. In some cases, to avoid aerial wires from the pole to the house, an underground entrance may be desired and the Telephone Company should be consulted on such installations.

In the larger and finer residences where more complete telephone service arrangements will usually be required, a conduit system in walls and floors, centering on closet space for an apparatus cabinet, should be provided. The Telephone Company should always be consulted where comprehensive residence systems of this kind are likely to be installed.

## BUILDINGS

### Service Entrances

The service connection from the building to the telephone plant is usually underground and the Telephone Company should always be consulted regarding these entrances.

### Office, Loft and Public Buildings

The telephone arrangements in office buildings are complicated and subject to frequent changes owing to the wide range of telephone service demands and the varying requirements of the tenants. It is possible, however, to meet these changing requirements properly by means of a permanent cable system extending up through the building with branch cables terminating in distributing terminal cabinets at suitable points on each floor. In these buildings the wires are usually run from the distributing terminal cabinets in underfloor ducts, floor conduit or other types of raceways to the telephones.

In loft buildings the floors as a rule are undivided and the location of the telephones is not known until the space is occupied. Advance provision for wire distribution therefore requires some general system of ducts or raceways in the various floors.

In public buildings, such as Federal, State and municipal buildings, banks, railway stations, docks, terminals, auditoriums, convention and exhibit buildings, etc., the problems involved in the design of facilities for telephones are in general the same as for office buildings, except that special provision is desirable in some cases, such as auditoriums and convention halls, for additional temporary services required for special occasions.

### Facilities for Cables and Wires

Figure 4 shows diagrammatically the entrance for the central office cable, the cable terminal or frame

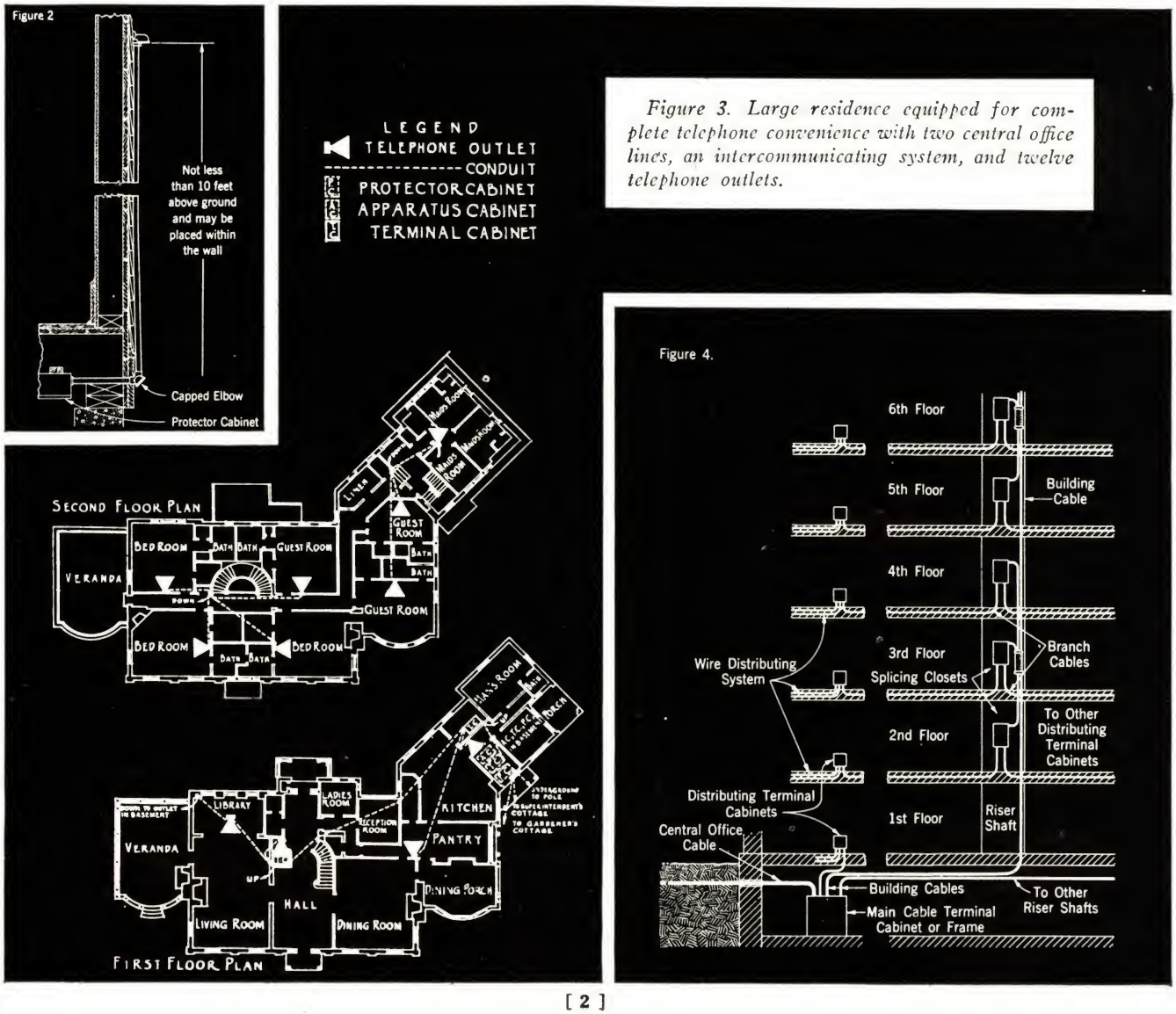



*Figure 3. Large residence equipped for complete telephone convenience with two central office lines, an intercommunicating system, and twelve telephone outlets.*

on which the cable terminates and from which the building cables extend up through the building in the riser shaft or shafts to the splicing closets. From the splicing closets, branch cables run to distributing terminal cabinets located on the various floors and from these cabinets wires extend through facilities, such as underfloor duct systems or conduits, depending on the character and occupancy of the buildings, to the telephone locations.

### Hotels, Hospitals and Apartment Houses

The ultimate requirements for telephone service in hotels can be fairly accurately forecast since the number of telephones required is closely determined by the number of rooms and as a general rule the location of the telephones in the various rooms are permanent. From the main cable terminal cabinet or frame (Fig. 4) where cable from the central office is terminated, building cable is run to the hotel switchboard and the riser shaft or riser conduit up which it extends to the floors above.

Hospital installations are largely similar to hotels in that the location of the telephone outlets are relatively fixed.

In apartment houses, where private branch exchange systems are not generally provided, the wires from each apartment connect to the building cables which in turn are connected to central office cables. The telephone outlets provided in the apartments should be sufficient in number and their location so arranged as to bring about the greatest comfort and convenience in the use of the service for both making and answering calls. It is desirable, therefore, that the conduits and related facilities installed be sufficient not only for the immediate but also for the ultimate telephone service which may be desired.

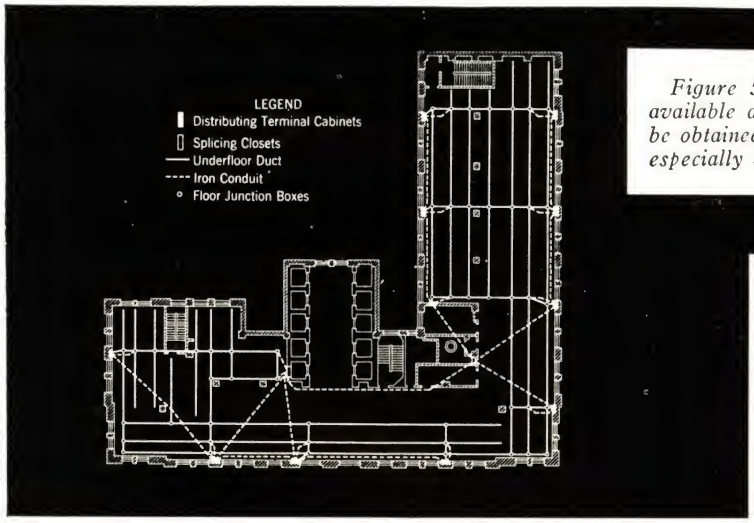



*Figure 5. Commercial under-floor duct systems are available and full details regarding these systems may be obtained from the manufacturers. These systems are especially advantageous for large buildings.*

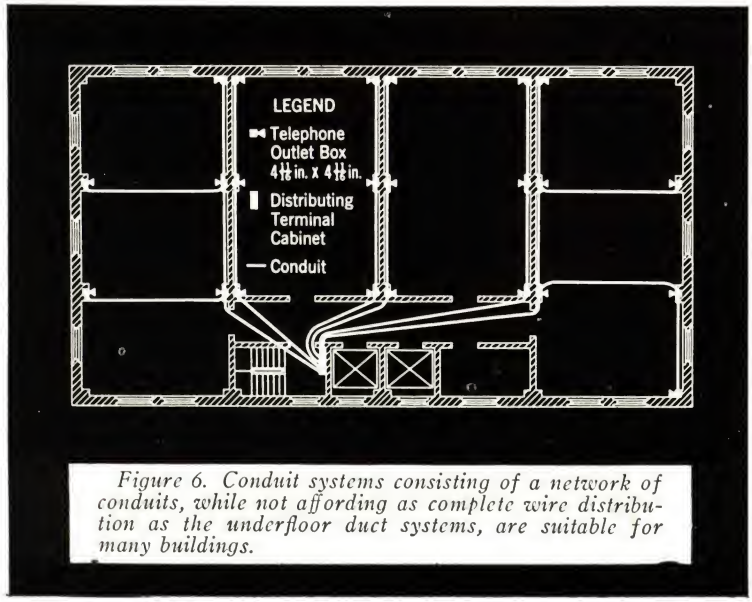



*Figure 6. Conduit systems consisting of a network of conduits, while not affording as complete wire distribution as the underfloor duct systems, are suitable for many buildings.*

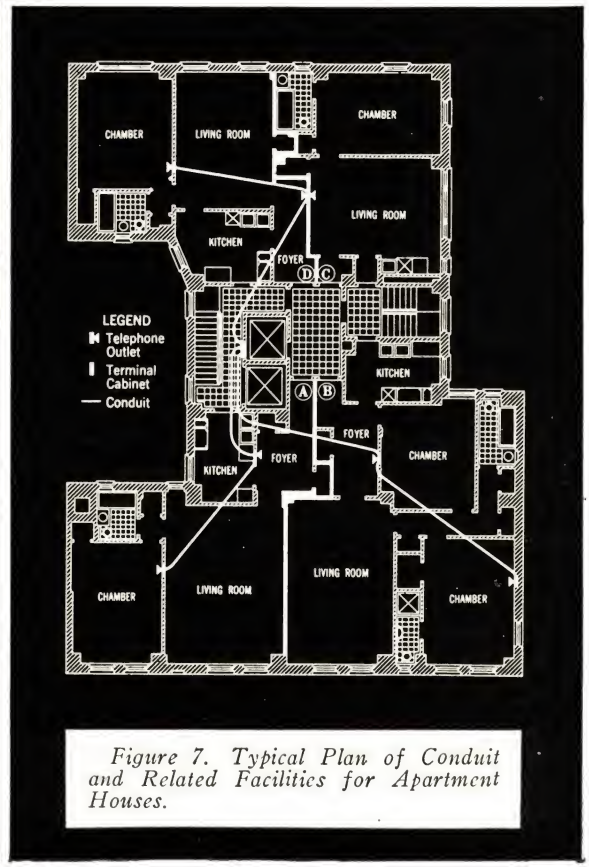



*Figure 7. Typical Plan of Conduit and Related Facilities for Apartment Houses.*

### Private Branch Exchange Switchboards and Associated Equipment

In many buildings, especially large office buildings, department stores and hotels, private branch switchboards are required for handling the intercommunicating telephone service in the building as well as the exchange telephone service. For the operation of the larger installations of these private branch exchanges, power machines, storage batteries and terminal frames are required and sufficient space should be provided for this equipment. In connection with the operation of the switchboards, floor space should also be provided for the telephone operators' quarters and it is important that adequate light and ventilation be provided in the space set aside for these purposes.

The requirements for this service vary widely and the Telephone Company should be consulted in all cases with a view to determining in the planning of the building the desirable amount and arrangement of the floor space required for the switchboard equipment and operators' quarters.

### Facilities for Public Telephones

Office buildings, hotels, theaters, clubs, hospitals, stores, etc., require public telephone facilities for the convenience of their occupants and patrons. These facilities include booths in which the telephones are placed and tables or shelves for the telephone directories.

The general appearance and usefulness of these facilities are enhanced by their inclusion in the design of the buildings so that they harmonize with their surroundings. It is, therefore, recommended that the builders provide the booths as a permanent part of the buildings together with any space that may be required for directories. Alcoves or rooms having easy access have been found generally satisfactory for these facilities.

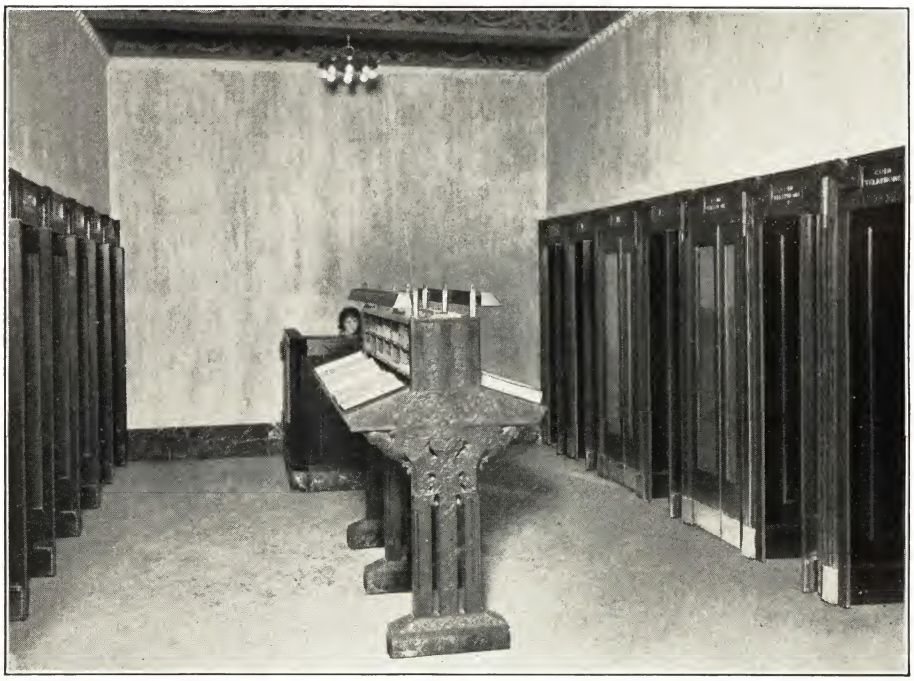


Figure 8. Built-in Public Telephones

Public convenience has indicated the desirability of adequate ventilation for the telephone booths by the use of doors which are open when the booths are not in use and in some instances for ventilating systems. Helpful information on the planning of built-in telephone booths may be obtained from the Telephone Company by calling the nearest business office and asking for "Architects' and Builders' Service."

## BELL SYSTEM SERVICES MEET EVERY COMMUNICATION REQUIREMENT

The Bell System offers a selection of services to meet any type of communication requirement. These services provide the following important features and advantages:

(1) Bell System services are charged for on a low monthly rental basis—no large initial investment required.

(2) Bell System maintenance is provided without charge—just call "Repair Service."

(3) Bell service means *one system* to handle both inside and outside telephone requirements. Separate systems mean duplication of telephones on desks, less flexibility and greater space requirements for switchboards.

(4) Bell System equipment is dependable—over 50 years' experience in the communication field.

(5) Changes in equipment can be readily made to meet current requirements—just call the Business Office.

---

*For information regarding telephone company services and facilities please call the Business Office. A representative will gladly call without obligation to you.*

# OPERADIO MANUFACTURING COMPANY

Manufacturers of Sound Equipment

ST. CHARLES, ILLINOIS

TELEPHONE
Mansfield 6446

## PRODUCTS

The Operadio Manufacturing Company is one of the outstanding manufacturers of Sound Equipment; are the pioneers in the idea of Unit Matched Equipment; and are manufacturing speakers for practically all of the well-known radio sets in use today. Operadio Sound Amplifying Equipment is in use in many of the well-known centers of education, amusement parks, and manufacturing concerns all over the country.

In addition to Radio Speakers and Amplifiers, Operadio manufactures Intercommunicating Systems, Paging Systems, Nowire Servant Calls, Radio Program Pre-selectors, Automatic Watering Systems, and combination Intercommunicating and Paging Systems.

## ENGINEERING SERVICE

Operadio conducts a well equipped laboratory with a thoroughly competent staff of technicians in charge. In addition to this, factory representatives are located all over the country and are always at the service or architects who may require them.

## NOWIRE SERVANT CALLS

Nowire Servant Call eliminates entirely all wires between the dining table and the floor, holes in rugs or floors, wires between the dining room and kitchen, or the embarrassment of fumbling for the buzzer button under the rug.

Kitchen unit, which is plugged into the regular 110-volt a.c. line, need only be switched on at meal times, and is equipped with a pilot light which indicates that the unit is in service. With reference to the dining room unit, nothing but the push button, which may be clipped on the table apron anywhere it may be desired, shows on the table.

## RADIO PROGRAM PRE-SELECTOR

By means of this device, built into the radio, or in the house itself and wired to the radio, the programs of various stations may be selected for 12 or 24 hours in advance. The clock may also be set for a minimum duration period of 15 minutes.

## AUTOMATIC WATERING SYSTEMS

Money and labor wasted by insufficient watering, watering at the wrong time, or an over abundance of watering is impossible with the Operadio Automatic System.

With this system, the estate is divided into zones according to conditions and the clock is set to give each zone the proper amount of water at night. For instance, a spot which holds moisture, might receive 15 minutes a night, whereas a sunny lawn, requiring more, would receive a half hour or more. Watering will be done each night in the required amount, except on those nights on which there is sufficient rainfall. The pre-selector clock, upon which the zones and the time required is set, may be installed on any underground watering system.

OPERADIO

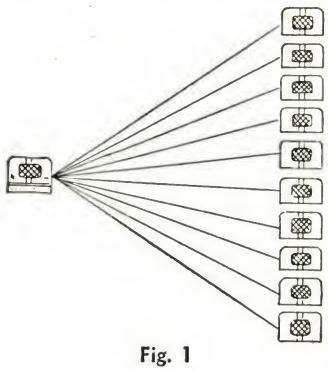


Fig. 1

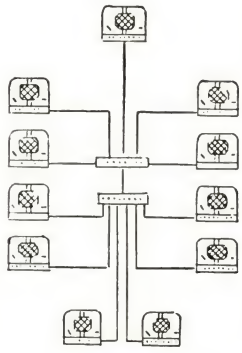


Fig. 2

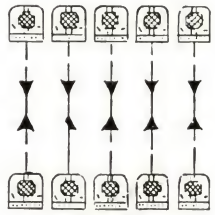


Fig. 3

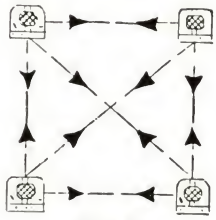


Fig. 4

## OPERADIO INTERCOMMUNICATING SYSTEMS

Intercommunicating systems, because of their flexibility, simplicity of operation, and low operating costs, are fast replacing other forms of internal communication. Operadio Intercommunicating Systems are sold outright to the users, thus eliminating costly rental fees. These systems are constructed to avoid intricate wiring problems. By following our directions, the electrical contractor is able to make the installation with no difficulty. The only possibility of further servicing is the replacement of tubes. In new construction, provision for the installation may be made between the walls or floor; conduit need not be used because of the low voltages involved.

The Operadio Intercommunicating Units are furnished with either black-stippled metal cabinets or with wooden cabinets finished in hand rubbed two-tone walnut. They may, if desired, be equipped with earphones rendering the incoming conversation audible only to the user, otherwise conversation emanates from the loud speaker.

The systems are made in four general types.

**Type "A" Intercommunicating System**—A two-way system consisting of two Model 135 Units and is the simplest of the Operadio Systems. The units are plugged into the regular power supply with a 10-ft. cord and connection between the two made by a twisted pair of No. 22 wires.

**Type "B" System**—For return speech only, consists of a Master Station and as many return speech units as may be desired. With this system the Master Station may call and converse with any of the units on the system. The units, however, can not call the Master Station nor call or converse with each other. (See Fig. 1.)

This system may be had with two Master Stations connected with all of the outlying stations and with each other by means of a junction box. In this instance, the Master Stations may call and converse with each other as well as with the outlying units.

A third wiring possibility with the Type "B" System is to wire three Master Stations with as many outlying stations as may be desired, but not with each other, thus restricting the Master Stations to outlying station calls.

A recently perfected feature of the Type "B" System, is an additional, inexpensive "call" switch on the return speech units, by means of which these remote units may call the Master Station which then carries on the conversation as usual.

With the Type "B" System, the Master Station is connected to each outlying unit by means of a twisted pair of No. 22 flexible wires.

**Type "C" System**—Operadio Type "C" Intercommunication System is, we claim, the most complete method of intercommunication on the market today. It combines beauty, utility and ease of operation at low cost.

With Type "C" System a junction box is ordinarily used for each six units, connecting them by means of a cable as shown in Fig. 2. Toggle switches are used throughout, and little need be said to the architect or the electrical contractor regarding the superiority of the toggle switch over the rotary type.

Conversational possibilities of Type "C" System are almost unlimited. The number of pairs which may converse with each other simultaneously without interference is limited by number of pairs in the system. See Fig. 3. Fig. 4 illustrates Operadio Conference Hook Up. Four people may confer with each other by this means as though they were together.

**How Sold**—All Operadio Intercommunicating Units are sold complete. The cabinet in either metal or wood, embodies a 6-in. permanent magnet dynamic speaker which is also used as a microphone, tubes, an "on-off" switch, a "talk-listen" switch, a pilot light which indicates that the unit is in use, and a 10-ft. power cord. Connecting cable may be supplied by the customer, but we recommend that it be ordered from the factory.

**Intercommunicating and Paging System**—Operadio's latest development is the high powered combination intercommunicating and paging system. In this one system are combined the advantages of both the intercommunicating and paging systems.

This system is of the return speech type with a Master Station and as many outlying stations as may be desired. The Master Station may call any of the outlying stations singly or collectively, but the outlying stations can not call the Master or each other, except where a "call" switch is installed.

# THE CAPEHART. INCORPORATED

## Manufacturers of Musical Instruments for the Finer American Homes

FORT WAYNE, IND.

Equipment providing for the distribution and complete control of music and entertainment from both automatic phonograph and radio throughout the home.

## PROVIDING FOR SUPERB COMMAND OF THE WORLD'S FINEST MUSIC

The Capehart, the musical instrument of the finer homes, gives superb command of the treasures of music, from the classics of the immortals to the masterpieces of modern artists; music for every occasion and desire, the formal or the informal dinner, the dance, the cocktail hour, the afternoon bridge . . . background music for social events, for reading or work in the library . . . specially selected concerts for the entertainment of guests . . . music of the masters . . . vocal, instrumental; solos, choruses, bands, orchestras, operas . . . music of the great artists, modern romantic or classic, for the students in the home to study, enjoy, appreciate . . . music for the mood . . . to entertain, to soothe, to relax, to exalt, to inspire.

The instrument that will fully meet all requirements for music in the modern home is the Capehart, the only phonograph-radio combination with the exclusive Capehart record changer. The Capehart is the only instrument which automatically plays complete operas, symphonies and album sets of music in their correct sequence. The Capehart has not only the highest fidelity, but this fidelity covers the full scale, including the bass and middle frequencies as well as the treble, bringing out all of the beauty of the original production. It is the one musical instrument which fully meets all the requirements for music in the modern home. It is truly the modern masterpiece and is considered indispensable in the finest homes.

## THE CAPEHART RADIO



**The Chippendale**

The cabinet expresses the ideals and individuality of the master designer and houses an instrument giving command of the world's finest music

The many exclusive features of the Capehart Radio, plus precise, individual construction, account for its reputation as the finest radio obtainable.

Triple-Unit design is one of these unique features. The Capehart Series 400 Radio is built in three separate units—Tuner, Bass Amplifier and Treble Amplifier. This *triple-unit* construction permits the segregation of parts and wiring, eliminating inter-set noise development and interference, and promoting increased efficiency.

Twenty-three tubes, including the newest type all metal tubes, are used as follows:

| Tuner | Bass Amplifier | Treble Amplifier |
|---|---|---|
| 12 tubes | 7 tubes | 4 tubes |

Automatic Frequency Control provides automatic center tuning and eliminates fine tuning.

Variable Selectivity Control provides high fidelity reception, giving reception over the entire broadcasting channel of any radio broadcasting station.

All-wave Reception covers the Standard Broadcast Band, all Short Wave Bands (including domestic and foreign Short Wave, Police and Amateur phone and code) as well as the Long Wave Band on which Government aeronautical stations broadcast hourly weather reports.

| Band | Frequency, kilocycles | Wave Length, meters |
|---|---|---|
| Long Wave | 150 to 400 | 2,000 to 750 |
| Broadcast | 540 to 1,700 | 555 to 176 |
| Entire Short Wave | 1,700 to 18,000 | 176 to 16 |

Designed and built, not to a price, but to a standard of quality, we believe, far above that of any other, the superiority of Capehart Triple-Unit Radio is unchallenged.

### Tone Color

Tone color, that almost indescribable something which makes tones rich, melodious, and pleasing to the ear, is present in abundance in Capehart reproductions.

Capehart tone color, tone purity and faithful reproduction are so perfect that it is difficult, if not impossible, to distinguish the rendition from the original of the artist's voice or instrument.



**Speaker Cabinet Style "A"**
Width 24 in.; height 27½ in.; depth 15 in.

It is this outstanding achievement in faithful reproduction which gives Capehart its unique place in the field of music — a place beyond the reach of any other instrument.

### Capehart Record Changer

Handles from 3 to 20 records (6 to 40 selections), any standard makes. 10-inch or 12-inch size, or both intermixed.

Plays both sides of each record in sequence, one side only, or repeats any record as desired.

Reproduces the operas, symphonies and album sets in their proper sequence.

Entirely automatic and continuous in operation, no manual attention whatever required.

Only the Capehart has all of these desirable features.

### Remote Control

Capehart Remote Control provides for the operation of speakers and control stations at any and as many desired locations throughout the home and grounds as required.

### Capehart Cabinets

The instrument is available in Adam, Empire, Modern, Chippendale (illustrated) and Louis XVI stylings, or in a plain cabinet where it is desirable to conceal it in a closet or similar location.

### Speaker Mounting and Location

Speakers are supplied mounted on baffles for mounting in the walls or in cabinets as illustrated. They may be located at any desired places throughout the home.




The Capehart Control Station

### Control Stations

Control Stations may be located at any desired places. Small and attractive, they may be placed on a small table at the chair side, davenport end, dining table or in any other convenient location.

All Control Stations provide for:

1. Tuning to any radio station. A Kilocycle Dial on each Remote Control Station shows to what wave length radio is tuned.
2. Turning all current off and on all speakers, the instrument, and all Control Stations.
3. Turning off and on each individual speaker—voice coil and a-c. leads.
4. Increasing or decreasing volume for all speakers.
5. Switching from phonograph to radio, or vice versa.
6. Rejecting any record.

### Remote Control Wiring

Wiring for Remote Control is very simple and can be installed by any electrician. Wires from the instrument to Remote Stations are bound into cables making wiring and installation easy. Special flat cable is supplied for laying under rugs and carpets.

### Information for Architect and Owner

When designing a residence in which remote control of radio and phonograph music is desired, architects should avail themselves of the service of Capehart Engineers by writing to the Architects' Consulting Division, THE CAPEHART INCORPORATED, Fort Wayne, Ind.

To specify and be responsible for the installation of a Capehart is to realize that there will be no feeling of inadequacy in future entertainment for the owners and their guests, for Capehart gives superb command of the great treasures of music of all ages—music for every occasion and desire.

Place your requirements in the hands of Capehart Engineers and be responsible for the selection of a musical instrument to match the other fine and dependable equipment that the world's finest engineering and manufacturing talent has provided elsewhere in the building for which you are responsible.

# WESTERN ELECTRIC COMPANY

## Western Electric Systems for Public Address, Music Reproducing, Announcing and Program Distribution

Distributor in the United States
**GRAYBAR ELECTRIC COMPANY**
Graybar Building, New York, N. Y.

Distributor for Canada and Newfoundland
**NORTHERN ELECTRIC COMPANY, LIMITED**
1261 Shearer Street, Montreal, P. Q.

Distributor for Foreign Countries
**INTERNATIONAL STANDARD ELECTRIC CORPORATION**
67 Broad Street, New York, N. Y.

## WESTERN ELECTRIC PUBLIC ADDRESS AND PROGRAM DISTRIBUTION SYSTEMS

### PURPOSE

***Western Electric***



Western Electric sound distributing equipment makes buildings *modern*—whether they are new or old, large or small. It performs many valuable services in hotels, schools, hospitals, department stores, auditoriums and other buildings—at an operating cost of a few cents an hour.

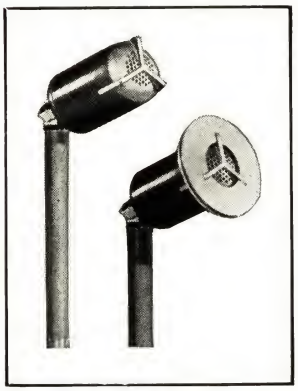
This Western Electric apparatus picks-up, amplifies and distributes speech or music to all parts of an auditorium—to any or all rooms in a building—or to a number of points out of doors. Program sources may be (1) Microphones, (2) Record Reproducer, (3) Radio Receiver.

Developed by Bell Telephone Laboratories for the WESTERN ELECTRIC COMPANY, these systems are included in the original plans for many new buildings—and will play an important part in many modernization projects.

### DESCRIPTION

WESTERN ELECTRIC COMPANY manufactures sound distributing equipment to meet every need. Each installation is skillfully engineered to meet specific requirements, including area to be covered.

The low cost unit illustrated is adequate for all but very large installations. In one compact cabinet it contains a combination microphone and monitoring loud speaker, a record reproducer, a radio receiver, amplifiers, and keys for selecting loud speakers in as many as 60 locations.



*The "Salt-Shaker" Microphone is non-directional (picks up sound equally well from all sides). Put on the acoustic baffle and it becomes directional*

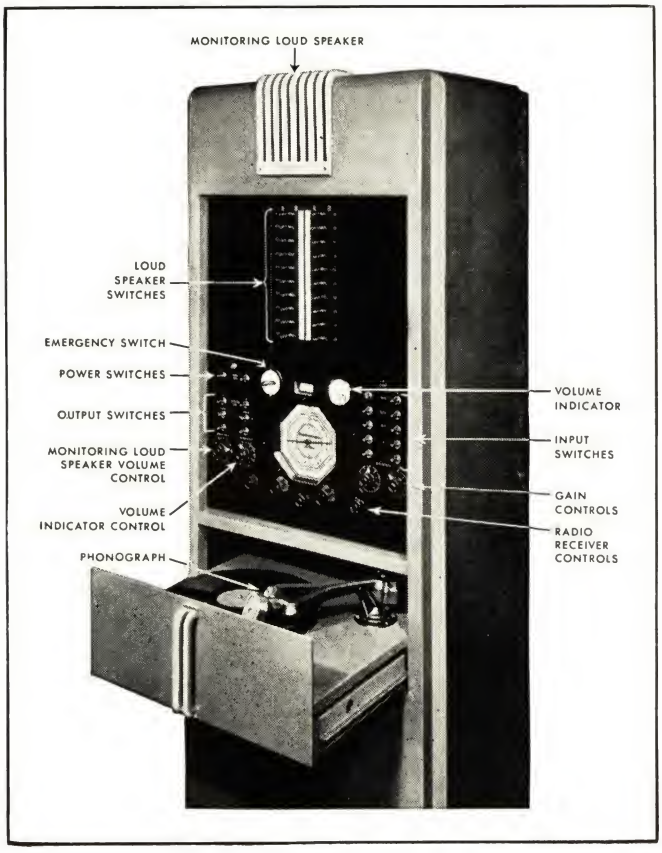
When two programs are to be reproduced simultaneously in different rooms or sets of rooms, *two* amplifiers are provided. If it will never be necessary to reproduce more than *one* program at a time, only one amplifier is necessary.

An interesting and valuable feature is the "talk-back" circuit which makes possible inter-communication service as well as sound distribution from a central source. When the "talk-back" switch is thrown, the various loud speakers in the system act as microphones. Circuit is so equalized that excellent quality of reproduction is assured.

**Microphone Circuits**—There are three circuits which may be used for microphones in various locations. The "Salt-Shaker" Western Electric microphone is especially recommended.

**Radio Receiver** — An all-wave, high fidelity receiver with a frequency range from 520 to 23,000 kc. It brings in domestic and foreign broadcasts and has an automatic volume control which largely eliminates the fading of foreign short wave stations.

**Record Reproducer** — A two-speed phonograph turntable which plays standard 10 and 12-in. records. It has a high quality pick-up and is ready for operation at the turn of a switch.



## DESIGN, WORKMANSHIP AND SERVICE

This equipment was engineered and developed by Bell Telephone Laboratories — the research laboratories of the American Telephone and Telegraph Company and the WESTERN ELECTRIC COMPANY.

Quality workmanship and performance are assured by the name Western Electric — manufacturer of sound transmission apparatus for the Bell System since 1882.

Spare parts are always available through distributors located at strategic points.

## USES OF SYSTEMS

Sound distributing systems —which can supply entertainment or other services 24 hours a day—have proved especially valuable in large buildings of the following types:

**Hospitals** — Convalescence may be speeded up by cheerful entertainment (distributed under strict control of doctors) by means of this system.

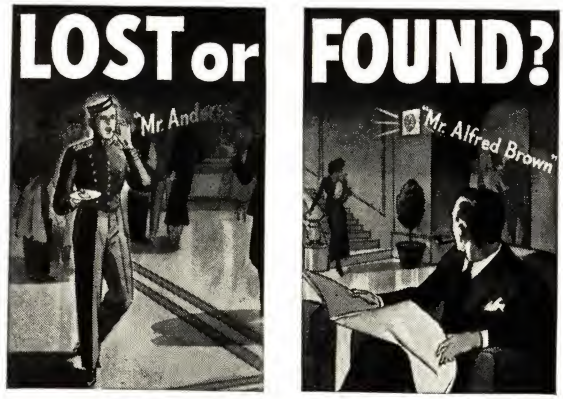
In private rooms, programs may be heard through loud speakers or headsets.

In wards, headsets are used.

This equipment also pages doctors quickly and quietly throughout the largest hospital—saves minutes that may save lives. To assure adequate coverage without undue loudness, each speaker has an individual volume control, which may be set and locked.



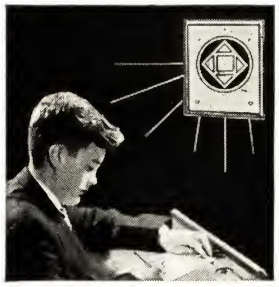
*It is fun to take this prescription: "Music every hour!"*




*Up-to-the-minute hotels from coast to coast find many uses for Sound Distributing Equipment*

**Schools**—Many leading schools find that a sound system is a valuable aid to teachers of languages, current events, music appreciation, home economics and other courses.

It enables the principal to address all classes from his desk; delivers fire drill instructions and emergency announcements instantly; supplies music or voice amplification in gymnasium or auditorium; makes administration more effective.



*Sound Systems have proved a valuable aid to teaching*

**Hotels** — Sound distributing equipment finds many uses in hotels. It pages guests quickly, clearly in public rooms; amplifies banquet and convention speeches; distributes music to guest rooms and public rooms. The record reproducer and radio receiver make entertainment available at all times.

**Other Uses** — In railroad stations, department stores, courtrooms, factories, penal institutions; at airports, stadiums and amusement parks; on movie sets and in theatres; in newspaper offices; on steamships; in vehicular tunnels and many other places—Western Electric sound distributing equipment is proving invaluable.

## COST

Because of the fact that every installation of sound distributing equipment must be planned and built to meet individual needs, it is impossible to quote prices, until a careful survey of the project has been made. Operating costs are surprisingly low—only a few cents an hour.




Planning a sound amplifying and distributing installation involves many technical problems that must be solved correctly while your building is still in the blueprint stage. Through long experience in working with leading architects, the distributors of Western Electric equipment are eminently qualified to help you with *"sound"* advice.

For further details, surveys of specific needs, estimates and engineering service, address any of the distributors listed on the preceding page.

MEMORANDA

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